NMIMS Management Review

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Editorial

Gurumurthy Kalyanaram

In this April-May issue of the Journal, we present seven important and interesting research manuscripts by thoughtful scholars and practitioners.

We are pleased to be able to have produced over nine high-quality issues of the Journal since April 2012 since my editorship.

In this issue, I am presenting below a thought piece on how to balance democratization of education and maintain high-quality. This article was published in the special issue produced on the occasion of the 89th Annual Meet of Association of Indian Universities.

Democratization of High-Quality Education and Effective Learning

Education is a driver of economic development, prosperity, social justice and empowerment. So, as stewards of learning and education we have an obligation and responsibility to enhance these outcomes. This not only requires an understanding of science and technology, commerce and business but also cultivation of values and critical inquiry.

Transformative discoveries in science and technology have come from compelling curiosity. For example, Newton did thought experiments and postulated the laws of motion, the gravitational theory and the differential calculus. Einstein's theory of relativity is more an outcome of his deep reflection, than work in large labs. All these exemplars advise us that our learners should be endowed with imagination and critical thinking. In India, where inclusiveness and innovation are central to our shared prosperity, such attributes are even more urgent.

Research shows that meaningful education and learning increases the lifelong earnings and productivity of individuals (Chetty et. al. 2014, 2011). The demographic shift to a younger population has made quality and democratized education even more important. For example, it is estimated over 60 percent of India's population is less than 30 years old. The estimated median ages for United States, United Kingdom, Russia and China are 36.7, 40.2, 38.4 and 34.1 respectively. But for India the estimated median age is 25.3, a dramatically lower number. The lower median age suggests higher potential work-force productivity for India, but such higher productivity will not materialize without education and skills development (Kalyanaram 2009). Here, our responsibilities and challenges are monumental but so are our potential rewards.

Accordingly, we have to design policies and programs to create high-quality education which is not exclusive or elitist but democratized. Thus, high-quality education should be relatively easily accessible and available. As demonstrated by researchers (Frei, 2006) in other areas, excellence and efficiency or accessibility can be complementary, and they do not have to adversely impact each other.

Such democratization of quality education is unlikely to come from traditional models of education and learning, particularly in India. Take for instance, higher education. For a moment set aside the matter of quality. Numbers don't add up. The number of universities in India is about 600-700. Compare this with over 1,000 universities in US for a population one-fourth of India's population or Japan with about 700 universities for a population almost one-tenth of

India's population.

There are many important elements to enriching education and enlarging the reach. In this manuscript, we address three such significant elements: open and distributed-learning, interdisciplinary education and an engaged model of education where learner is an active participant.

Open and Distributed Learning

Both in higher education and in school education, a seismic shift is happening in terms of availability and accessibility of high-quality material on a variety of subject domains. In higher education, the subject materials range from Aerospace to Materials Science to Economics to System Dynamics to Finance. And in school education, the domain of available material ranges from math to physics to chemistry to biology. These advanced material are available on-line, and they are free. There are no fees, no subscriptions.

This shift in higher education began about 2002 when, thanks to Ford Foundation, MIT placed large numbers of advanced course material – complete material including lecture notes, assignments, reading materials – on web portal for anyone in the world to access. This project was called Open Course Ware. Since then over the last decade, there have been wonderful such offerings, including edX and Coursera[1]. edX is an outcome of collaboration between MIT and Harvard. The partnership is growing, including the participation by Tsinghua University of China.

The original partners of Coursera were Michigan, Princeton, Stanford and the University of Pennsylvania. And now this partnership has expanded to large numbers of universities including California

Institute of Technology; Duke University; the Georgia Institute of Technology; Johns Hopkins University; Rice University; the University of California, San Francisco; the University of Illinois, Urbana-Champaign; the University of Washington; and the University of Virginia, the University of Edinburgh in Scotland, the University of Toronto and EPF Lausanne, a technical university in Switzerland.

These large-scale on-line material has been made possible because of technological advances — among them, the greatly improved quality of online delivery platforms, the ability to personalize material and the capacity to analyze huge numbers of student experiences to see which approach works best. While the initial offerings largely covered computer science, math and engineering, these distributed, on-line offerings are expanding into areas like medicine, poetry and history.

These programs not only offer the learner opportunities to learn at their pace, schedule and time, they also offer opportunities to learn college and university credits and certifications. It's now possible to get a quality college education without the hefty price tag. Recently, courses offered by MIT and Stanford have attracted tens of thousands of learners who participate. For instance, Stanford University's free online artificial intelligence course a few years back attracted 160,000 students from 190 countries. Only a small percentage of the students completed the course, but even so, the numbers were staggering.

The quality of education is high, and the learning is effective. In fact, learning is as effective as in the traditional mode. For example, research has shown that students who attended a MIT physics class online

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[1]There are other wonderful such efforts including Udacity, the company founded by Sebastian Thrun of Stanford, who taught the popular artificial intelligence course.

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learned as effectively as students who took the class in person. What's more, the results were the same, regardless of how well the online students scored on a pre-test before taking the class (Colvin et. al. 2014).

Essentially, these offerings are opening higher education to hundreds of millions of people. Now, countries as diverse as France, China, and perhaps most surprisingly, Saudi Arabia, have launched national education platforms powered by edX. In Saudi Arabia, the Ministry of Labor is using Open edX to educate more women, disabled citizens, and people living in rural areas.

In school education, Khan Academy[2] has become the proto-type of such free, high-quality, distributed material and learning. The material consists of short videos which explain the concepts, and varied exercises to test learning. Shorter videos engage the learners, particularly young learners[3]. The offering has composed over 4,500 videos on science topics such as biology, chemistry, and physics, and the humanities with tutorials on art, history, civics, finance, and other areas.

In an astounding illustration of this platform, today over 15 million students per month are learning, and they're learning through these video lessons, tutorials and practicing through interactive exercises.

Thanks to technological advances, Khan Academy material is now available on mobile devices. As the Academy states, it is "bringing interactive, personalized learning to the iPad with math exercises, handwriting recognition and more." According to the report, over 150,000 interactive, common core aligned exercises with instant feedback and step-by-step hints for each question.

What makes Khan Academy even more accessible and powerful is the contribution by Foundation for Learning Equality (FLE). FLE has designed an open source platform, KA Lite, which enables the Khan Academy material to be used even when no Internet is available. Thanks to KA Lite, learners can "connect to the server from within the classroom, on a laptop, tablet, or desktop computer, or it can be installed directly on a learner's computer for portable access."

Using KA Lite approach, the Motivation for Excellence Foundation in India has brought the interactive material – videos and exercises to almost 50 school class rooms in India – using tablets, and is engaged in a productive project to measure the effectiveness of learning through these material.

Interdisciplinary Education

Interdisciplinary thinking, learning and teaching is fundamental to creative solutions to challenges at hand. And this requires boldness in recruitment of faculty, reshaping of the curriculum and imagination. Empirically, it has been demonstrated that interdisciplinary programs promote cross-fertilization of ideas, creative problem solving, and greater productivity.

Here are two examples of interdisciplinary approach that Indian business schools and education and should adopt: one at a course-level, and the second at the program-level.

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[2] There are other education models such as Amplify.
[3] It is reported that edX has found, for instance, that the longer a video lecture runs, the less time students spend watching it. So if a video lasts 40 minutes, students may only watch it for 2. If it's 6 minutes long, they'll watch the whole thing.

An example of a course, among many other courses, that requires interdisciplinary approach is Product development and design. This course, taught in almost all business schools, has been and continues to be taught by marketing professors. This should not be the case. Product development and design involves understanding the voice of the customer (customer research), designing the robust specifications of the product/service (design engineering), manufacturing the product (manufacturing engineering), and launching the product in the market and developing appropriate strategies (marketing and strategy). So, a course in product development and design should be taught by professors who have substantial training and education in engineering and technology. As early as in early 1990s, MIT Sloan School of Management and Wharton recruited Dr. Steve Eppinger and Dr. Karl Ulrich to teach their product development and design courses, and both of them got their doctoral degrees in mechanical engineering and joined the business schools as young Assistant Professors. They are now highly-cited and well-received business school professors.

Two examples of interdisciplinary programs are Leaders for Global Operations (LGO) Program at MIT, and JD/MBA program at Stanford. As described by MIT, the "Leaders for Global Operations program brings together the rigor and technical expertise of the MIT School of Engineering, the business, leadership practice, and cutting-edge theory of the MIT Sloan School of Management and the real-world experience of the LGO manufacturing and operations industry partners." The students receive two degrees in two years: an MBA degree and an MS degree in engineering (such as mechanical engineering or electrical engineering). The students in the JD/MBA program at Stanford also get two degrees, one in law

and the other an MBA. Stanford describes this joint degree program as, "JD/MBA students experience two complementary intellectual cultures: the problem-spotting, analytical culture of law, and the problem-solving, practical culture of business."

We need our own indigenous interdisciplinary programs in India. That's our challenge and our opportunity.

Engaged Model of Education and Learning
In this model of active engagement, learners (users) are drivers of value and purpose. Von Hippel (2002), Kalyanaram (2014, 2011)and others have empirically shown that engaged users are the most successful drivers of innovation. Accordingly, learning must be interactive and endogenous (Kalyanaram and Saxena 2012).

That's why many colleges and universities are adopting what is called as a blended learning model. In a blended learning environment, students receive most of their lectures by video so they can spend class time doing hands on work. For instance, at MIT, two out of every three undergrads use edX as part of their on campus courses.

In-class students benefit from the online materials. So, it is productive to let the students do the online lesson first, then come to class for interactive projects and help with problem areas. "The fact that students learn so much from the videos gives me more time to cover the topics I consider more difficult, and to go deeper," said Dan Boneh, a Stanford professor who taught Coursera's cryptography course.

It is also demonstrated that hands-on, engaged learning is important to spur innovation. MIT

Professor Culpepper says that making things is key to innovation. "You can think about how you might do something, but cogitating will only get you so far. Sometimes it takes building a prototype to have that Eureka moment" where everything falls into place. Access to a prototype can also work in reverse, giving the inventor great ideas for other potential applications. Drawing upon his own experience, Culpepper says, "I built many machines that didn't work. Then I'd figure out what I'd done wrong with the math and physics and try again. Eventually, I succeeded."

Concluding Remarks

To democratize quality education, India must adopt and diffuse new platforms of open and distributed learning which promote inter-disciplinary, engaged and self-learning. Learning material has been designed, technology has evolved, and the approach has now been validated.

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Volatility patterns of stock returns in India

Dr. Rosy Kalra
Mr. Piyuesh Pandey

Abstract

This paper analyzes the time variation in volatility in the Indian stock market during 2009 - 2014. Analysis has been done to examine if there has been an increase or a decrease in volatility persistence in the Indian stock market on account of the process of financial slowdown in India after the global crisis. Further, an attempt to characterize the evolution of the stock market cycles over time in India has been made; for this purpose, monthly stock returns have been used for analysis. Asymmetric GARCH model has been used to estimate the element of time variation in volatility. A descriptive design has been adopted to conduct the research work. It is evident from the study that the adoption of liberal norms and allowing foreign investment in the form of FIIs does not impact or add to the volatility of returns of the stock market. There is no structural shift due to heavy trading of stocks by the foreign investors; it is revealed that it just adds to the volume of the shares traded by the investors which may be a cause of abnormal distribution of returns on stocks traded.

Keywords: *Volatility, Persistence, Asymmetry, GARCH, FIIs, Structural shift, Descriptive.*

Introduction

After witnessing a major crisis during the last decade, many economists are now in favour of returning to the basics of investment where they propose a controlled and restricted flow of investment and stringent policy making to ensure the safety of the investment. There has been a very strong demand from proponents of this school of thought for restricting capital inflow which was allowed to move freely after the adoption of liberalized norms in the 1990s; this is based on the notion that this free movement of capital investment causes an excessive and unexpected surge and fall in the market thereby creating an excessively volatile financial environment.

A volatile financial environment not only affects the investor but also has a very significant impact on the economy as a whole that results in uncertainty and thereby shaking the investor's confidence. However, it also has a positive side; it provides the policy makers a tool to gauge the sentiments of the market thereby predicting and taking a position just when the market becomes vulnerable. It also assists knowledgeable investors to estimate the intrinsic value of a particular stock by considering the public sentiments, which helps him take the right decision just when it is needed.

Thus, the estimation of volatility has become almost a mandatory part of forecasting the prices of stocks. It provides an opportunity to risk managers to advise investors to take technically correct decisions not only at the individual level but also helps economies to set the right course for the future path of the nation. Therefore, it is the core function of economies to understand volatility in order to manage risk. Referring to the theory of asset pricing models, volatility simply means the variability of the asset price. There are different approaches to measuring the price volatility; one approach could be by measuring the daily movement in the price of the share and the second approach is by taking simple or moving averages of the prices over a period of time by making use of econometric models.

The recent approach which can be considered is modelling volatility by making use of the GARCH model. It makes use of a large data size which can be further regressed to estimate the volatility and create a pattern to identify the trends of persistent volatility shock.

Here an attempt has been made to study volatility and persistent variation in the returns of the stock markets of India during the period of 2009 - 2014 which was the time when the global economies were striving to overcome the shocks of the 2008 crisis. Also it has been examined whether the liberalization reforms played any role in volatility of returns of the Indian stock market. Further, the shifts in volatility of stock prices and the causes of such shifts have been studied.

This gives an opportunity to examine whether there exists a correlation between volatility of stock returns in India and the global financial crisis; also through this, it can be identified whether during the last five years the stock market volatility has shown greater amplitude or not.

Further, this paper will assist in determining the behaviour of the bull and bear market over a period of time and will give a trend of stability during the above-mentioned phases. The overall aim of this paper is to give a solid base to any significant pattern or a change in the returns of stock markets of India after the global crisis.

In order to figure out the variation of time in volatility, the asymmetric GARCH model has been used. Also to study the persistence in volatility, this asymmetric GARCH model has been augmented with dummy /fake variables which have resulted from the structural change. From the study of volatility of this period, we may be able to identify the causes of sudden increased volatility in the returns of the stock market after the onset of the economic slowdown in India.

A major shift in policy making causes a structural change in volatility of the stock returns which is mostly augmented by any further major change in course of action of the policy makers. Policy making has a major impact on the consequences of excessive increase or decrease in the returns of the market.

When talking about the Indian market and its returns, another big influence is the political and bureaucratic events rather than global events since India is a mixed economy with major emphasis on socialist reforms which makes it a conservative country by and large. There is a preconceived notion that there is almost no correlation between volatility of stock returns in India and the global economic turnarounds as the Indian political system always takes conventional, conservative steps when it comes to free capital flow in the Indian market from abroad.

It has been observed that even after the adoption of liberalized reforms almost two decades ago, it did not have a major impact on intensifying the stock market cycle. However, governments claim that there has been relatively less instability in the stock returns after the adoption of the liberalized reforms in India. It is also to be noted that this phenomenon was prevailing in almost every emerging economy around the world; especially the BRICS nations. This thought is further strengthened by the fact that there was no significant link between the foreign markets and the Indian markets prior to the reforms.

On the other hand, when we observe the stock returns of US markets and the Indian markets in the 2000s, both the markets were almost at the peak at that point of time. So it can be said that after liberalization, there has been an existence of longer bull runs and the stock returns cycles have further extended. When we take the recent example of the month of August to December of 2014, there has been an incredibly longer bull run in the Indian stock markets. It is also observed that the recent bull runs are relatively stable when compared to the pre-liberalization era.

Theory of GARCH model

Although the phenomena of stock market volatility is so dynamic that there is almost no absolute science of measuring it to perfection, the GARCH model gives a theoretical explanation of the links between the stock market returns and the volatility in them; it also provides a base to identify a pattern in the volatility of the stock market.

This model mainly states that the volume of the stocks traded is directly related to the volatility of the returns in the markets. It also talks about the clear implications of the liberalization reforms of the policy makers.

To understand these phenomena mathematically, let's assume that:

1. The number of traders active in the market are j,
2. In an intraday trade, the market goes through a sequence of phases and reaches equilibrium.
3. The arrival of new information which is publicly available causes the market to move to the ith position from equilibrium.

4. Also for the active trader j, the desired position would be the Pij to reach equilibrium.

$$Pij = s [P*ij – Pi] (j = 1,2…..J)$$

*Where

s > 0 = constant

P*ij = jth trader's resistant price

Pi = current market price

From the above-mentioned equation, it can be said that if the value of Pij is positive, it will indicate and support a long position in the market whereas a short position is preferable for a vice versa situation.

For the active trader to be at equilibrium he must hold the following variables true:

$$k \sim j….ji$$

$$Pij = 0$$

The above mentioned equation states that the average of the resistant price must equate and clear the market by:

$$qi = 1/Jk$$

Where

k = the constant function of the linear equation

Further the price movement or change in price can be stated by following:

$$kP = 1/Jk$$

$$\sim j…..ji$$

$$kp *ij$$

where

Pij = kpij - j*i*<1

(Considered as the increase in the active trader's j resistant price.)

The above equation states that when all other factors remain unchanged and there is an increase in the value of j which is the number of active traders, it tends to decrease the variation in the prices of stocks. Whereas if there is an increase in the free flowing information which is available to the traders, it tends to increase the variability in the stock prices as the investors start to inflate and deflate the stock prices.

It is also believed that the liberalized norms of free capital flow would attract a new set of customers commonly known as FIIs. This increase in the number of active traders in the market would ensure a longer curve and larger volumes of trade thereby decreasing the deviation or the variance in the returns of the stocks.

But this excessive increase in the volume of traders has really set the tone of the market to increase the volatility of stock returns.

Exponential GARCH (EGARCH)

The EGARCH model shows some differences from the standard GARCH model:

Volatility of the EGARCH model, which is measured by the conditional variance sigma, is an explicit multiplicative function of lagged innovations. On the contrary, volatility of the standard GARCH model is an additive function of the lagged error terms varepsilon, which causes a complicated functional dependency on the innovations.

Volatility can react asymmetrically to the good and bad news.

For the general distributions of sigma and varepsilon, the parameter restrictions for strong and covariance-stationarity.

Review of Literature

Kevin Lansiang (2014) studied the effects of availability of information on volatility and components such as risk taking ability of the investor for variability of his return on the normal distribution of his investment. This paper attempts to study the fact that stock market returns and volatility cannot be studied in isolation or based on one or a handful of variables. A scattered plot model has been used for studying the effects of ripples which are created in the stock market because of diversification of the investment. It was found in the study that the volatility of the stock returns becomes complex to analyse when aggregate factors are taken into consideration because of the 'n' numbers of variables which may or may not be provide an explanation for the particular phenomena.

Madhvi S. (2014) studied the impact of global changes on the evolution of the Indian market, the factors which affect the functioning of determining the prices of stocks and the process which is adopted by the Indian stock market. The paper has focussed on finding out whether the difference in the functioning of the Indian stock market and other western markets plays any role in dynamic and non-relatively low dynamic behaviour of the Indian stock markets. It was found in the study that the Indian stock market has a concrete base and strong fundamentals in determining stock prices; it has stuck to fundamental basics in daily operations making it an optimised and efficient platform where there is very low probability of default or prolonged volatile runs and thereby making it a highly stable and safe market to invest in.

Anju B (2013) reviewed the Indian stock market as a whole. The major objective of this research study was to develop an understanding about the Indian stock market, the reason behind its growth story in the recent past and the sustainability of the Indian stock market even during the economic slowdown. It was evident in the study that the reason behind the successful run of the Indian stock market was the conservative approach of the investors which kept them from taking decisions which were not evaluated properly; they undertook a proper appraisal of stock assets. Also the government policies and its perseverance to elongate the growth story of the booming Indian economy acted as a pillar to the sustainable structure on which the Indian stock markets are built upon. The investors' fundamental approach and the government decision making were two factors which were cited as the reason for the evolution, growth and sustainability of the Indian stock markets.

Khaled Hussainey, Chisoke O. Mgbame and Aruoriwo M. C. Mgbame (2010) studied the factors which were responsible for the existence of any link between share profitability and the volatility of stock prices. The regression model of multivariate factors was used to analyse the profitability and variability in the past years. It was found in the study that the there was strong regression evidence to prove a significant relationship between profitability and volatility of the associated stock assets. It was also found that the capital structure of the company is a very significant function of share price changes and other variables such as management, market outlook, competition etc.

Lieven Baele, Geert Bekaert and Koen Inghelbrecht (2007) have used the dynamic factor modelling to study the factors behind the correlation between the stock and the variation due to time period. Autoregressive models for economic factor relation

such as inflation, interest rate, output, dividends, etc. were identified to employ the structural sector variables in the modelling process. It was identified that risk aversion also served as significant a factor of investment return expectations.

Francis Breedon and Angelo Ranaldo (2010) used foreign exchange data to analyze the returns and volatility within a time frame of 10 years. It was identified that timing within intraday transactions also plays an important role in determining the returns on foreign exchange. It was found out that with an increase in the time of trading sessions, the frequency of return booking slows down and the volatility is less in this time period. It was concluded that this served as a strategy to risk management; in order to ensure lower risk and lower volatility, investors should stretch the trading sessions.

K.R. Shanmugam and Biswa Swarup Misra (2008) studied about stock returns and their relation with inflation in connection with an emerging economy focussing mainly on India. Their study's focus was whether the Indian economy provided the opportunity of creating a shield of hedge on stock returns and also a safety towards volatility of returns during the 1990s. It was found that the Indian markets have a better future and offer a potential investment opportunity. Also the negative returns during the period were mainly because of inflation and a persistent volatility was recorded during that period.

David R. (2013) studied the behaviour of stock market, pricing of stock assets and ultimately the resulting returns. The major objective of the study was to identify the influence of cognitive factors on the final call or positions of the investors. It was evident from the study that such empirical studies do help investors

to create and break their general conception.

Anil Sharma and Neha Seth (2011) studied the relevance of the relationship between stock market returns on economic conditions. The major objective of the research paper was to study the aftermath of the global economic recession of 2008 on stock market returns and also its ultimate impact on volatility of stock prices and returns. It was found in the study that the Indian stock market was not one of the worst hit stock markets and the global economic recession did not have a greater impact on the returns of money invested in the Indian stock market. It was concluded that among very few other stock markets, the Indian stock market was the one which showed a growth in consolidated returns on investment and also it was one of the most reliable and safest places to invest.

Research Methodology

This research study is broadly quantitative in nature and a **case study and descriptive research design** has been formulated to get an answer.

Objectives of the study:

1. To analyse the time varying pattern of stock returns volatility in India over the period 2008 - 2013 using monthly stock returns and asymmetric GARCH methodology.
2. To study the changes in the volatility of prices of stocks and the events which are responsible for the reasons behind the shift in the patterns of volatility in stock prices.
3. To examine if in recent times the stock market cycles have exhibited greater volatility due to increased foreign investment.

Data collection tools and techniques:

Secondary data collection:

1. Data has been collected from Government reports and public journals: The published reports of the SEBI regarding assets, number of bulk trades, etc. have been used to collect information about the stocks which are subject of interest.

2. Secondary data has also been collected from the sites of companies used as subject of interest and sites of other financial agencies such as Bloomberg.

3. Research papers, Books and magazines have been referred to collect qualitative data regarding managerial practices.

Rationale behind choosing the tool for the analysis

The major reason behind choosing GARCH as a tool for the purpose of analysis is because of the fact that most of the conditional data evidence used is unabsorbed and it has affected the design of the model used and this has proved to be a constraint to mark up and set up a benchmark for the data set used. So it had been ensured that less efficient forecasting techniques have been neutralised as much possible. Evidently there is no guaranteed and tested way that exists up till now to model conditional heteroskedasticity, so EGARCH has been used to neutralise and normalise the errors of conditional variances.

Data Analysis:

For the purpose of financial data analysis, figures from the reports of the stock exchange and consolidated price movement of shares have been used to calculate various deviations and variances by making use of Autoregressive models i.e. GARCH model of ARCH classes in order to calculate the volatility of the post-2008 crisis. For the purpose of identifying a pattern in the volatility of returns, the class of variances have been distributed over the period of monthly returns during the last 5 years i.e. 2009 - 2014.

The regression of the price has been done in phases to identify the patterns which are persistent over a particular period of time.

Data Analysis and interpretation

Descriptive Statistics

Table 1.1

(Statistics of stock returns in India during 2009 - 2013)

Period	Mean	Max.	Min.	S.D.	Skew.	Kurtosis
2009 -2011	.0116	.2500	- .1894	.0548	.5438	.5696
2011 -2013	.0186	.2400	- .1864	.0534	.5648	.7454
2013 -2014	.0010	.1340	- .1025	.04820	.2105	.2457

(Sources: As calculated by MS Excel)

The mean returns of stocks of the Indian market were relatively higher in the initial stages after the financial crisis of 2008 and gradually slowed down over a period of time. It is very evident that after the crisis, several reforms were adopted to ease the financial crunch and we can see that the mean returns decrease to a level of .0010 in 2014 which indicates a bull run in the Indian markets.

While looking at the standard deviation, it can be said that it has remained almost consistent throughout the period of 5 years which indicates a conditional variance in the returns of stocks. The risk-return trade off between the counter parties stands true to the financial theory of the Sharpe ratio and backs the fall in the return of stocks when the monetary easing was brought out and started showing results.

The above descriptive analysis of returns of the stock market clearly indicates that there was no normal distribution of returns in the initial phases of the returns while the markets were recovering from the jolts of the financial crunch in the economy. This is so because in the initial period, the returns were highly skewed but later, it returns to a normal distribution.

While looking at the figures of kurtosis stats, it evidently indicates that the returns are highly leptokurtic and it has remained consistent during the first 4 years of the study although the kurtosis stats normalize and fall in the year 2014.

Exponential GARCH

The volatility of the stock returns has been estimated by the use of asymmetric GARCH model of the ARCH class. Table 1.1 shows that the stock returns are not normal in distribution and the return patterns of the Indian market do not follow the preconceived notion. The leptokurtic and skewed results are therefore considered to be appropriate for estimating the volatility of the returns of the stock markets. The GARCH model has an additional advantage of providing an opportunity for measuring the leverage of the returns of the stocks.

To determine the effects of foreign investment on volatility of the stock returns, the Pitt model has been applied to determine the leverage and the variance. After the steps taken by the policy makers to revive the sentiments in the Indian markets recently, there has been a surge in FIIs. A post-economic slowdown investment pattern has been analyzed below by doing a comparative analysis of variances in return and price of stocks.

Table 1.2 shows the result from daily and monthly moving averages calculated on the returns of stocks by regressing the daily price movement of stocks.

Table 1.2 (Mean returns and the leverage statistics during 2009 - 2014)

Period	Mean (%)	α	B (leverage)	Γ (gamma)
2009 - 2011	.0396	.3455	-.0369	.8457
2011 - 2012	.0354	.1545	.0257	.7845
2012 - 2013	.0398	.4521	.0215	.5487
2013 - 2014	.0399	.3542	-.0214	.3564

(Sources: As calculated by MS Excel)

From Table 1.2 it is revealed that in the initial period of the recovery from the economic slowdown, the returns have been highly volatile but it does dampens a little as the stock market cycle progresses over the later stage of the recovery period. But it is to be noted that the volatility and leverage have no correlation; so it is not volume which affects volatility but prices which are correlated to the volatility of the returns.

The above results show a fall in the persistence of volatility in the returns of stocks after facing an economic slowdown, but the frequency and the magnitude of the fall in volatility as shown by gamma results is very less and yet, volatility remains in the later stage of the recovery period but at a lower level.

It can be inferred that there has been a minimal increase in the volatility of returns in terms of mean returns with regard to the daily price variation during the later stage of the recovery period of the stock market. This phenomenon has been noted during the increase in the foreign investment when liberal norms of capital investment were adopted.

The leverage on returns has been significant in the recovery period but later, the leverage tends to go down as the effect of the policy decisions are normalized over a period of time. A look at the table above shows that during the year 2013 - 2014 leverage goes into negative which gives a sign of normalization of returns.

The continuity of volatility is very significant when it is calculated for monthly data and it spreads over a period of time thereby making the stock market cycles longer.

Observing from Table 1.2, the gamma constant is significantly higher in the initial phase of economic slowdown with a value of .85 but over time, it comes down to a very low value of .35 which shows the normal distribution of returns. This phenomenon can be visually observed with the help of the graphs below which give a break up of the GARCH statistics based on prices, returns and volatility by calculating the conditional variance with the help of gamma constant. It can also be expressed in the form of the following graphs:
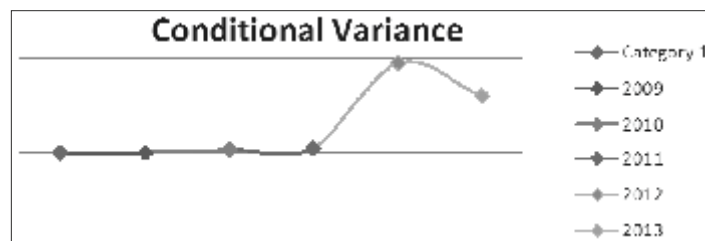
GARCH 1
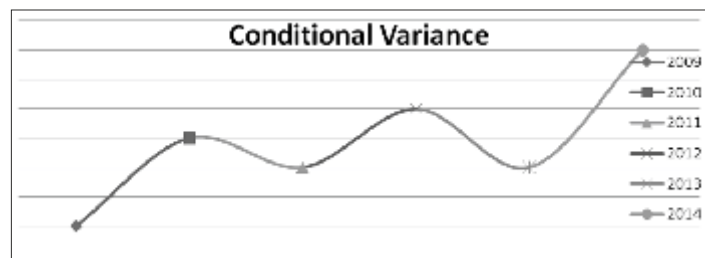
GARCH 2

GARCH 3
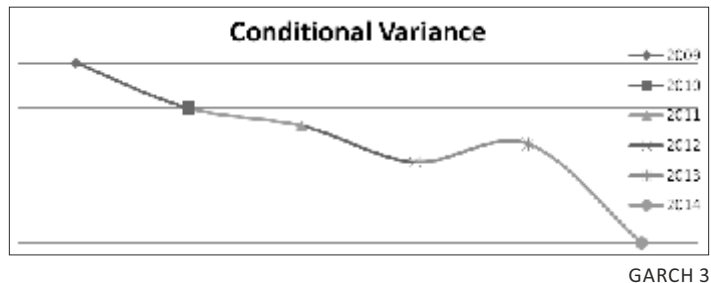
It is very evident from the above graphs that the volatility initially increases in the initial period of the economic crisis and the steps taken by the policy makers is a significant cause of inflating volatility in the market but over time, the market stabilizes and returns to the normal distribution at the later stage of the recovery period which is under consideration of this research study.

Findings

Following are the findings of this paper:

- It is evident that the adoption of liberal norms and allowing foreign investment in the form of FIIs does not impact or add to the volatility of returns of the stock market.

- There is no structural shift due to heavy trading of stocks by foreign investors; it is revealed that it just adds to the volume of the shares traded by the investors which may be a cause of abnormal distribution of returns on stocks traded.

- It is noted that the initial phases of the recovery from the economic slowdown was the most volatile period in terms of returns on stocks which may be the result of reasons other than volume of shares traded.

- The profits reaped during the bear phases are clearly higher than the bull phases of the stock market cycles. It also shows that the stock market cycles have softened during the later phases of the recovery period from the economic slowdown.

Managerial implications

The research paper has observed the trends of volatility of stock returns during the period 2009 - 2014 and its implications for the Indian capital markets. The findings of the research have a number of managerial implications for stock market investors that contribute to its dynamics. The stakeholders can make their investment strategies on the basis of results of the research, as it highlights the significant factors which influence returns and its volatility.

Significantly, a number of managerial implications come from this research; two major areas are investor education and awareness and prudent asset allocation to minimize and mitigate the effects of volatility of returns. Investors should take decisions based on technical analysis of the stock market rather based on the sentiments of the prevailing market.

The other implication points towards the policymakers where it is wiser to allow more foreign investment which helps the markets to normalize the returns by adding to the volume of stocks traded as against the common belief that foreign investment adds to volatility of stock returns.

Limitations of the study

Indicated below are a few limitations of the study:

- The scope of this study is relatively narrow and does not cover essential factors such as derivative

markets, depositories, etc., which play an important role in functioning of the financial system and the economy as a whole.

- The main limitation of this study is that it has been conducted to particularly evaluate the effect of the post-economic slowdown on the capital markets. The sample does not reflect the sentiments of different geographical areas and hence, this study cannot be simultaneously referred for evaluation of all types of markets and their volatilities and returns.

- The scope of this study does not include the cognizable efficiency analysis which plays some part in the capital market analysis.

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Impact of Empowering Leadership and Trust on Attitude towards Technology Adoption

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Abstract

Organizations are adopting the Enterprise Resource Planning system for better resource management and for availability of centralised information for the purpose of taking strategic decisions. For gaining competitive advantage, it is important that the ERP system is accepted and fully utilised by the users displaying positive attitude and showing least resistance. There are numerous factors framing an individual's cognitions towards ERP adoption and use, and these factors vary depending upon the phases of technology adoption. This study empirically explores the relationship between three such factors; empowering leadership, trust, and attitude towards ERP adoption and use in the post-adoption phase. About 285 respondents from a manufacturing firm responded to the survey. The data was analyzed using structural equation modelling by Partial Least Squares (PLS) software. The findings revealed that apart from the direct influences of empowering leadership and trust on the attitude, trust also partially mediated the influence of empowering leadership on the post-adoptive attitude towards ERP use.

Keywords: *Attitude, Empowering leadership, Trust, Technology use.*

Impact of Empowering Leadership and Trust on Attitude towards Technology Adoption

Why is technology implementation and adoption processes considered as a daunting task in many organizations? Why are large teams involved while implementing technological changes within the organization? Why does technology adoption fail in many organizations? How do the post-adoptive behaviours of users impact the usage of technology? What change management strategies should be applied? Many such questions bother the top management, human resource team, and technology implementation team before the onset of technology implementation. The business environment is volatile, uncertain, complex and ambiguous (VUCA) and to meet these challenges, the top management is always struggling to identify and implement the right information technology solutions that fit into the business processes and provide speed (Lal and Bharadwaj, 2014). Enterprise Resource Planning System is a concept that is widely adopted by many organisations worldwide.

Enterprise Resource Planning System (ERP)

ERP system is a software package that integrates various functions within an organization like human resources, finance, projects, production planning, and sales for providing business related information to the top management for taking strategic decisions. Many organizations have started gaining operational advantage through internal data integration between various functions through adoption of an ERP system. Organizations are no longer restricted to a small area of operation; they are spread across various geographical locations, national and international, often adopting systems like ERP to establish the connectivity between their units for integrated data flow and for providing the required business

intelligence to the top management. Though greater numbers of large enterprises have adopted ERP, it is increasingly also being adopted by many small and medium enterprises (SMEs) present even in less developed economies (Koh, Simpson, and Padmore, 2006). Successful ERP implementation is a very challenging task and often various critical success factors drive its successful outcome. Ijaz, Malik, Lodhi, Habiba, and Irfan (2014) identified different critical success factors in different phases of ERP implementation. Some of the critical success factors identified by them in the post-implementation phase are end user satisfaction, employee motivation, organisational productivity, software reliability, professional development services, and support and maintenance.

ERP failures have been commonly seen due to improper management of implementation processes (Koh et al., 2006), improper technology selection or due to negligence of the considerations of the critical success factors. Despite many research studies in this area, a need is felt for identifying some work environmental factors that would facilitate ERP adoption in the post-adoption phase.

Post-adoption Technology Use

The study focuses on the post-adoption usage behaviour of the users. Jasperson, Carter, and Zmud (2005) define post-adoptive behaviours as "the myriad feature adoption decisions, feature use behaviours, and feature extension behaviours made by an individual user after an IT application has been installed, made accessible to the user, and applied by the user in accomplishing his/her work activities" (p.531). This stage is important as the success of any technology can be measured from the usage patterns in the post-adoption phase of technology. It is in this phase the user decides whether the system has all the

required features and is flexible enough to accommodate changes making it worth continuing with.

According to Thatcher et al. (2011) the usage of technology in the post-adoption phase is voluntary and users normally decide to what extent the technology would be utilized i.e., minimum set of features as required to meet the routine task requirement or to fully explore the capacities of the technology. Many studies have focused upon exploring the factors driving the intention to use (Thatcher et al., 2011). Since ERP users in an organisation have no choice but to use the system, we focus on 'attitude' rather than 'intention' of the user which would be more appropriate in case of voluntary technologies. Mandatory systems make it more appropriate to concentrate on the factors affecting the attitude of the users that drives the system usage.

Factors Influencing the Attitude

Based on existing literature, the factors affecting any technological adoption can be broadly classified as organizational factors, job related factors, individual factors, technological factors, social factors, and environmental factors. The most prominent factors that affect the technology use are those affecting human cognitions like attitudes, beliefs, and perceptions (Davis, Bagozzi and Warshaw, 1989). Innovations which are perceived as a means to realise personal values, similar to personal gains, are more likely to be adopted (Mulvey and Gengler, 2014). From an organizational perspective, some factors play an important role in enhancing value for individuals leading to successful technology implementation. Some factors may be detrimental, causing failure of technology implementation.

Numerous interventions are planned to minimise the negative impact of key factors known to cause resistance. Systems have to be optimally utilised for getting proper operational efficiency but its use is driven by the human behaviours displayed in the post-adoption period. Identifying the post-adoptive behaviour of users plays an important role as it is in the post-adoption phase the technology is further explored for better infusion in the organization resulting in prolonged and proper use (Thatcher, McKnight, Baker, Arsal, and Roberts, 2011).

Despite numerous studies investigating various factors affecting the use of technology in pre-adoption and post-adoption phase of technology implementation, we lack proper understanding of the factors in the post-adoption stage that seem important for ensuring development of a positive attitude and intention to use ERP (Thatcher et al., 2011). This study investigates the influence of two such factors; empowering leadership and trust, in the post-adoptive behaviours.

Importance of Empowering Leadership and Trust

Managerial leadership styles are one of the key elements that have influenced technology adoption within organizations (Anantatmula, 2008; Kuo, Lai, and Lee, 2011). Managers have the influential power to change the subordinate's attitude towards the technology adoption and use. This study focuses on empowering leadership that acts as an important driver of attitude. Empowered organizations will always gain a competitive advantage over their competitors as they have an energised and committed workforce (Marane, 2012). Marane (2012) explains the concept of empowerment in organisations in several ways: first as developing the ability to access, control and mobilise resources to influence decisions, second as developing the ability to influence decision making processes for representing one's own interest,

third as developing the ability to identify one's own preferences and act upon it and finally developing the ability to trust in one's own abilities.

Though empowerment is essential for better outcomes, organizations have different levels of power delegation and many still believe in control and monitoring mechanisms. Giving away control and trusting employees to handle tasks will energise the employees to perform better and will bring out their creativity.

Trust can be related to technology, organization, top management, and inter-personal relationships. Trust is significantly related to technology adoption. Technology is successfully adopted when there is existence of trust.

Many studies have separately laid emphasis upon these two factors: empowering leadership (Kuo et al., 2011; Rawat, 2011; Zhang and Bartol, 2010; Zhang and Zhou, 2014) and trust (Culmer, 2012; Goodwin, Whittington, Murray, and Nichols, 2011; Marane, 2012; Mcknight et al., 2011; Thatcher et al., 2011) in organisational perspective. This study is one of the few studies that have together explored these relationships, empirically and at individual levels. The results of this study will help in understanding the importance of empowering leadership and trust within organizations for improving the rate of ERP adoption and use, especially in post-adoption phase.

Attitude towards ERP Use

Attitude is an important factor in predicting the individual's behaviour towards technology, yet it is often neglected (Kim, Chun, and Song, 2009). The attitude towards the technology is driven by positive internal cognitions to use the technology. The technology acceptance model (TAM; Davis, 1989)

derived from the Theory of Reasoned Action (Fishbein and Ajzen, 1975) has explained the importance of attitude and intention in predicting technology use. Many researchers who have based their studies on TAM for predicting technology use have dropped the construct 'attitude' (Davis, 1989) due to its limited role in explaining technology adoption and use (Venkatesh, 2000; Venkatesh, Morris, Davis, and Davis, 2003). This assumption was however challenged by some researchers who have proved the significance of attitude in technology adoption studies (Kim et al., 2009; Sternad, Gradisar, and Bobek, 2011). Also, ERP being a mandatory system, attitude matters more than intention to use the system (Sternad et al., 2011). For this study, we define attitude as an individual's positive or negative feelings about performing the target behaviour (Fishbein and Ajzen, 1975; Sternad et al., 2011; Venkatesh et al., 2003).

The attitude of an individual might vary in different phases of adoption such as pre-adoptive, adoptive and post-adoptive phases. Users perceive the technology to be providing some benefits in return, leading to a positive attitude (Thatcher et al., 2011). It is this belief about positive gains from the technology that changes the attitude of the user to accepting and using the system. ERP being a mandatory use system, there is little choice for refusal in using the system but the degree to which the system is used is significant for measuring the successful outcome of technology adoption and its usage. It is only in the post-adoptive phase when the user explores the features of the technology while the technology is in use thus making this phase important for studying the factors affecting the user's attitude towards technology usage.

A model is conceptualised to help in predicting the influence of empowering leadership and trust upon the attitudes of the individuals. The model will also test

whether trust mediates the relationship between empowering leadership and attitude.

Empowering Leadership and Attitude towards ERP Use

The leadership style of the managers is an important factor in driving technology use as they can influence the users positively or negatively through their position (Neufeld, Dong, and Higgins, 2007). Leadership being an important factor, managers need to understand the appropriate leadership style to be adopted for influencing technology adoption (Anantatmula, 2008). A supportive leadership style positively drives the adoption of technology and also leads to an increase in initiatives at user levels (Costigan, Iiter, and Berman, 1998). Empowering leadership entails leadership behaviour where power sharing with subordinates leads to increased authority and autonomy for decision making related to their tasks (Ahearne, Mathieu, and Rapp, 2005). Empowering leadership has been assumed as a leadership style that can drive technology adoption due to the increased autonomy provided to users to explore and use the new technology (Kuo et al., 2011).

Empowering leadership has been defined in previous research as the extent to which supervisors express confidence in the abilities of their employees, emphasize the significance of their employees' work, involve their employees in decision making, and reduce or remove bureaucratic constraints on their employees for better execution of tasks (Ahearne et al., 2005; Zhang and Bartol, 2010; Zhang and Zhou, 2014). Empowerment is the dispersion of power (Herting, 2002). The term 'empowerment', commonly defined as delegation of power and symbolised by authority, is broadly expressed by Conger and Kanungo (1988) as a "process of enhancing feelings of self-efficacy among organizational members through the

identification of conditions that foster powerlessness and through their removal by both formal organizational practices and informal techniques of providing efficacy information" (p.474). Employees express empowerment when their jobs are perceived to be meaningful; they see opportunities to influence the way the work is done and feel competent enough to execute the work (Fulford and Enz, 1995). Empowered individuals are important for overall organizational effectiveness (Bartram and Casimir, 2007). Empowerment is also delegation of decision making rights (Marane, 2012).

Empowerment has more often been referred to as psychological empowerment. Psychological empowerment is the user's feeling of empowerment that improves commitment levels and ability to perform tasks (Rawat, 2011). Psychological empowerment is explained by Marane (2012) as a psychologically enabled construct that represents perceptions of personal control, a proactive approach to life, and a critical understanding of the socio-political environment that is rooted in a social framework including community change, capacity building, and collectivity. Psychological empowerment is also explained by some researchers (Conger and Kanungo, 1988; Fulford and Enz, 1995; Marane, 2012) as intrinsic motivation driven by four cognitions that are meaning, competence, self-determination, and impact.

For the purpose of this study, we define empowering leadership as a manager's behaviour where the power is shared with subordinates so as to give them increased decision making authority for work execution (Ahearne et al., 2005; Kuo et al., 2011; Zhang and Bartol, 2010).

Empowering leadership has been shown to have a

positive impact upon customer service satisfaction and sales performance due to improved employee effectiveness (Ahearne et al., 2005).

Empowerment causes an increase in creativity due to the encouraged participation of employees that liberates the mind (Culmer, 2012; Zhang and Bartol, 2010; Zhang and Zhou, 2014) as compared to the feeling of being restrained in the presence of order and control or monitoring by the leadership team. Increased creativity will lead to more exploration of the technological features and its applications leading to improved use and increased innovative behaviours (Conger and Kanungo, 1988; Spreitzer, Janasz, and Quinn, 1999). According to Zhang and Bartol (2010) creativity increases the ability of individuals to handle challenges as well as unearth the opportunities around and within the organisations. Empowering leadership will improve innovation resulting in increased ERP adoption in the post-adoption phase of technology.

Empowering leadership also increases employee motivation (Zhang and Bartol, 2010; Rawat, 2011) which, in turn, will increase the incidents of working proactively and exploring the features of the ERP system for better results. Empowerment drives self-efficacy, increases the emotion management in the wake of organizational changes such as technological changes. This is important especially in case of ERP system implementation where changes in management processes are targeted towards controlling an upheaval of emotions due to a major technological change leading to disturbances in work routines. Empowerment is also proven to improve the commitment levels of the users within the organization (Rawat, 2011). This is an important requirement for sustained adoption and use of new technologies. Few studies have established the relationship between empowering leadership and

technology adoption (Kuo et al., 2011; Marane, 2012).

Empowering leadership has shown beneficial results like increased employee creativity, improved innovative organisational climate, increased employee commitment levels, and increased motivation. We propose the following hypotheses.

Hypothesis 1: Empowering leadership has a positive effect on the attitude towards ERP use.

Trust and attitude towards ERP Use

Trust is a belief. Trust is a subjective concept and is classified broadly as trust on technology, people and organizations (McKnight, Carter, Thatcher, and Clay, 2011). Trust in technology is an important area that is related to technologies directly. Thatcher et al. (2011) refer to the trust in technology as the functionality and predictability of the technology being used related to the attributes of the technology. Trust in technology improves the belief and behaviours towards the technology (Mcknight et al., 2011).

This study deals with trust in context of people and organizations. Trust in people is defined as "extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people" (Cook and Wall, 1980, p. 39). This willingness will derive how one behaves with another person. Similarly Moorman, Zaltman, and Deshpande (1992) also define trust as the willingness to rely on an exchange partner in whom one has confidence. An organization runs effectively wherever trust is high (Dirks and Ferrin, 2001). In an organization, trust is a two way process. The management trusts its team to deliver and shoulder higher responsibilities and employees display trust towards the higher authorities by accepting the additional elements of their tasks. Trust is important wherever social interactions take

place, especially in organizations where team based working is seen. For this study, we define trust as the extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people (Cook and Wall, 1980; Dirks and Ferrin, 2001; Kuo et al., 2011; Mayer, Davis, and Schoorman, 1995). Trust leads to free exchange of ideas and problems between supervisors and subordinates (Zhang and Zhou, 2014).

Trust is often a neglected element in research studies especially concerning technological adoptions (Moorman et al., 1992). According to Herting (2002) the organizations having climate of trust tend to adopt innovations faster. If the relationship between the users and manager is found to be untrustworthy then the users will not accept the technology enforced by these managers as they are not sure whether the manager has their interests in mind (Culmer, 2012). Trust often reduces perceived uncertainty amongst individuals and increases the information sharing (Moorman et al., 1992) and risk taking abilities. Trust enables an environment of learning and exploration (Costigan et al., 1998). Wherever the trust is high the users may exchange information and explore new technologies without the fear of failure or negative outcomes. Trust is a synonym for innovation and therefore should be encouraged in technological environments. According to Marane (2012), gaining trust is a fragile concept and time consuming; it doesn't happen simply by asking people to trust. Increased levels of trust will positively change the post-adoptive attitude of the users towards technology use and therefore the following hypothesis is being proposed.

Hypothesis 2: Trust has a positive effect on the attitude towards ERP use

Trust: An Outcome of Empowering Leadership

Despite there being increasing research interest in the areas of trust acting as a mediator for effective leadership outcomes (Bartram and Casimir, 2007; Jung and Avolio, 2000), there are very few empirical studies in this area. Such studies are not found in the area of ERP implementation too. Trust flows from empowering leadership behaviours. Many studies have shown trust as an outcome of leadership (Goodwin et al., 2011; Podsakoff, MacKenzie and Bommer, 1996; Whittington, Murray, and Nichols, 2011). Trust is important between leaders and employees for effective relationship (Bartram and Casimir, 2007). Trust spurs motivation and high levels of satisfaction leading to increased performance (Costigan et al., 1998; Bartram and Casimir, 2007).

Empowering leadership removes bureaucratic barriers thereby showing confidence and trust on subordinates to resolve problems and fulfil their performance targets (Zhang and Zhou, 2014). Empowering leadership creates a trusting atmosphere in the organisation. Empowered employees who are more engaged and involved with their task seek continuous improvements of organizational processes and feel safe to take risks due to presence of a trusting atmosphere in the organization (Culmer, 2012). Thus empowering behaviour leads to improved levels of trust.

Hypothesis 3: Empowering leadership leads to trust.

Trust Mediating Relationship between Empowering Leadership and Attitude

While dealing with other forms of leadership, Goodwin et al. (2011) have pointed out that trust if considered as a mediating factor rather than a

moderator, not only indicates that it is a direct outcome of leadership but it will also indicate how or why the leadership is related to a particular outcome. This study tries to investigate this mediating effect of trust for attitude as an outcome. Empowering leadership in presence of trust will change the attitude of the users making them more open to ideas and more creative (Zhang and Zhou, 2014) which may lead to increased inclination towards the usage and exploration of new technologies in case of technological changes within an organisation. Trust in leaders can drive a positive attitude (Dirks and Ferrin, 2001) towards innovation thus acting as a favourable factor during innovation implementation and adoption. Trust improves the risk taking abilities of technology users which in presence of empowering leadership can be channelled towards technology implementation projects. In presence of trust, the users perceive the supervisor's empowering leadership to be genuine and thus respond positively (Zhang and Zhou, 2014). In such situations, the trusted leadership driving the message of the benefits of technology and that of the interests of the individuals will not be abused (Mayer et al., 1995); it will be accepted by the individuals who in turn will show a positive attitude towards the technology to adopt and use it.

In the absence of trust, users may exhibit many negative feelings and beliefs such as the leader sharing insufficient information about the technology, the leader not rewarding their efforts in adopting the new technology, insufficient support from seniors in case of any technical or operational problem arising out of the new technology. This will lead to development of a negative attitude towards post-adoption behaviour. Many previous studies have explored the relationship between empowering and trust for positive influence on the outcome like increased employee creativity

(Zhang and Zhou, 2014) or employee satisfaction and performance (Bartram and Casimir, 2007; Culmer, 2012). According to Zhang and Zhou (2014), in the presence of trust and empowering leadership, the levels of ambiguity and uncertainty associated with creative activities reduces in the subordinates leading to a positive attitude change. Their study also found that increasing empowering leadership did not increase creativity until the employees trusted their supervisors. Thus the attitude of the employee towards an objective tends to change when the empowering leadership is exercised in the presence of trusting behaviours. While many studies have successfully established trust to have a positive mediating affect as an outcome of transformational leadership (Goodwin et al., 2011) this study hypothesises that trust mediates the effect of empowering leadership with attitude as an outcome.

Hypothesis 4: Trust mediates the effect of empowering leadership on attitude towards technology use.

Method
We collected data from a steel organisation from central India that implemented SAP ERP with a big bang approach by shutting down all the previous technological systems at midnight and migrating to SAP ERP in the year 2007. There was no parallel system maintained post implementation of ERP, indicating that the top management had shown full commitment to adopt ERP. The data was collected from ERP users through an online survey by hosting the questionnaire on the company's intranet.

The Data and Data Collection
We approached the organisation's corporate HR Head for the support required for data collection. The data was gathered using an online survey; a central communication was released from the HR department

to all ERP users to participate in the survey. The questionnaire was administered online in the form of an interactive PDF document and the respondents submitted their responses through email. The questionnaire was pre-tested with ERP experts for checking its validity and to verify whether the contents and wordings were free from errors.

The respondents were ERP users of a steel company in eastern India. We administered online questionnaires to 300 employees of the company who used the SAP software regularly. All the respondents had hands-on experience of using the ERP system. About 289 respondents out of 300 answered the questionnaire of which only 285 responses were usable. The respondents belonged to various departments like finance, human resources, plant maintenance, stores, management, mines, information technology, and project management (Refer Table 2). Almost all the participants in the study (98 per cent) were male. The age of the respondents varied from 20 years to 65 years (median = 37 years), they had work experience between 1 year to 20 years (median = 5 years), and they had worked on ERP for between 1 year and 3 years (median = 3 years). There was a balanced distribution of employees from all the departments, viz. finance (17 per cent), human resources (6 per cent), information technology (4 per cent), maintenance (14 per cent), production (12 per cent), purchase (20 per cent), sales (12 per cent), stores (11 per cent), and others (6 per cent).

The HR department was very supportive in administering the questionnaire and doing follow-ups with the respondents. The respondents were briefed about the questionnaire with detailed instructions to fill through a separate email. The data gathered was later extracted on an excel sheet for analysis.

Measures

The instruments for measuring responses were taken from previous research (Table1). The measurement instrument for empowering leadership was adopted from Kuo et al. (2011) which has four items. A representative item from this scale is; "My Manager is willing to provide opportunities for me to use my own judgment at work".

The measurement of trust was done using Cook and Wall's (1980) scale having 12 items, for example - "I feel quite confident that the firm will always try to treat me fairly."

Attitude was measured using Sternad and Bobek's (2013) scale having two items; "Using the ERP system is a good idea." and "I like the idea of using the ERP system to perform my job."

The participants' responses were captured on a seven point Likert scale ranging from "strongly agree" to "strongly disagree" (Annexure A). Before data collection, we conducted the pilot survey and tested the questionnaire with some of the intended respondents. The wordings of a few items were changed based on the feedback from the pilot survey and experts.

Results

We used the "Statistical Package for Social Sciences (SPSS)" for analyzing the descriptive statistical results and the research model was tested using Smart PLS 2.0 software. Partial least square (PLS) was conducted to test the mediating effect of trust between empowering leadership and attitude towards ERP use.

PLS is a powerful method due to the minimal demands on measurement scales, sample size, and residual distributions (Chin, 1997). Chin (1997) explains that

PLS tool can also be used for theory confirmation, suggesting relationships amongst variables and to suggest propositions for later testing. This study used a sample size that was modestly appropriate for using PLS. PLS is suitable for studies of application or prediction (Chin, 1997) thus making it suitable for this study where the relationship between empowering leadership, trust, and attitude is being predicted. In PLS, the path coefficients are standardized regression coefficients and the loadings of items are factor loadings (Neufeld et al., 2007).

Measurement Model

The quality of the measurement model was tested along with item reliability. Convergent and discriminant validity of the model was tested. The psychometric properties of the instruments used are shown in Table 3. The mean and standard deviation values for each item are also indicated. The low standard deviation value shown explains lower dispersion and more consistency of responses across the respondents.

The convergent validity is the "degree to which a measure is correlated with other measures to which it is theoretically predicted to correlate" (p.5; Lee, Park, and Lee, 2013). The internal consistency of the items was measured by average variance (AVE), the composite reliability, and Cronbach's α. The items were factor analyzed by using principal components analysis with varimax rotation. It shows that each individual item reliability value is more than 0.7 indicating a good reliability measure of Cronbach Alpha. The composite reliability was also found to be more than 0.5. AVE represents the construct through the average squared loadings of the items (Bartram and Casimir, 2007). The AVE shows the convergent validity and the discriminant validity of the measured constructs. The AVE is greater than 0.5, as per the acceptable value, for attitude and trust, except for empowering leadership (AVE = 0.46) but is still closer to 0.5. Three of the item scales from the construct of trust were dropped due to lower factor loadings. All the constructs are reliable and seem to have acceptable inter-correlations. Correlations amongst all the three variables of interest are reported in Table 4. Figure 1 shows that all three hypotheses are supported.

Structural Model

The hypothesis proposed was tested. Bootstrapping procedure in PLS tests the statistical significance of the regression coefficients or structured paths (Bartram and Casimir, 2007; Neufeld et al., 2007). The structural model represents a set of dependent relationships between potential variables or correlations between variables; it calculates the measurement coefficients, standard error, and t-value for each coefficient (Lee et al., 2013). The two-tailed test at 5 per cent significance level was done and the t-values were greater than 1.96 for all variables.

The hypothesis testing showed that empowering leadership has a positive influence upon attitude towards ERP use (β = 0.29, t_{285} = 2.228) supporting hypothesis H1. The hypothesis H2 is supported as trust directly influences the attitude of an individual (β = 0.37, t_{285} = 3.397). Empowering leadership also influences trust that acts as antecedent of attitude towards ERP use (β = 0.60, t_{285} = 8.713) thus supporting hypothesis H3. The model explains 36 per cent of variance in trust and about 35 per cent of variance in attitude towards ERP use.

The mediating affect of trust on empowering leadership was tested using Sobel's test; the results are shown in Table 5. The direct effect of empowering leadership upon trust was measured as β = 0.519 (t= 5.223) and the indirect value mediated through trust

reduced to β = 0.293 (t= 2.240) that is still significant. The results of Sobel's test was found to be 3.038 with one-tailed probability value of 0.0012 and two-tailed probability value of 0.0024 by t-test method. The t-value of path between empowering leadership and trust was found to be 9.434, path between trust, and attitude indicated a value of 3.461 and the path between empowering leadership and trust indicated a value of 2.164.

The statistical results indicate that trust partially mediates the influence of empowering leadership on the attitude of individuals and supports all hypotheses. Partial mediation is when the relationship between independent and dependent variables is significant but the absolute value is low (Marane, 2012).

Discussion

We investigated the influence of empowering leadership and trust on attitude and the mediating role of trust between the empowering leadership and attitude of an individual towards ERP use. The results obtained from testing the hypothesis support our proposition and findings of similar previous studies (Marane, 2012; Jung and Avolio, 2000; Zhang and Zhou, 2014) that empowering leadership enhances trust. This in turn improves the positive attitude of individuals leading to improved usage of technology. Few researchers have already established the relationship between all four psychological components and positive outcome like increased innovative behaviours (Marane, 2012) or change oriented leadership (Spreitzer et al., 1999). The presence of empowering leadership will improve the technological adoption and use as empowered individuals will actively shape and influence their work environment rather than waiting for the work environment to provide direction (Spreitzer et al., 1999).

Trust partially mediates the influence of empowering leadership on the attitude of individuals towards ERP adoption. An empowering environment requires leaders to trust their subordinates. The attitude of the users towards the ERP usage is influenced as they feel empowered to explore, experiment, and to take decisions regarding the technology as per requirement of the tasks to be accomplished. Though ERP systems have predetermined user level restrictions for use, there are many ERP system related features that are accessible but not utilized due to lack of awareness or lack of initiative taken by the users. Earlier research has established that empowerment improves creativity (Zhang and Bartol, 2010; Culmer, 2012; Zhang and Zhou, 2014) and self-efficacy levels (Ahearne et al., 2005) which will lead to users making more efforts to understand the features of the system and displaying positive attitude towards the system thus improving the usage levels. Our findings support the previous research discussions that empowering leadership is an important factor within organizations that drives positive attitudes. Positive attitudes can lead to innovation adoption and use. Our findings are consistent with the contention of Marane (2012) that empowering leadership plays an important role upon innovative behaviours mediated by trust and of Kou et al. (2011) who have established that empowering leadership has a positive impact upon post-adoptive attitudes.

Trust in supervisors and management has been independently known to have a positive influence upon technology acceptance levels (Herting, 2002). Trust improves the risk taking abilities and reduces the fear of failure leading to improved and appropriate use of technology. When the organizational climate has high levels of trust, the employees are willing to provide their support to the management initiatives as they believe that the top management has their

wellbeing in mind. Trust accelerates the process of technological adoption and use by its mediating effect on empowering leadership. The management needs to analyse the organizational climate for these parameters along with other such factors that have an impact on the technological dispersion parameters of organizations.

This work is one of the few individual level investigations that specifically focus upon two organisation work environmental factors: empowering leadership style and trust, and contributes to the understanding of these factors in depth. As this study deals with leadership style of managers and trust on managers, the outcome of this study can be of great significance for understanding the role of the manager in enhancing technology adoption and use.

Research and Managerial Implications

The propositions have implications for research and managerial practices. The study has theoretical implications for future research. The study enriches the knowledge of research in the area of adoption of innovations. The research theoretically and empirically establishes the important role of empowering leadership, trust and attitude in successful technological adoption. This study is among the first to study the importance of empowering leadership and trust in relation to ERP systems. This study provides a direction to the ERP implementers, change agents and top management to plan proper interventions; it is a much debated fact that ERP system implementation poses many challenges with respect to adoption and use as it is critical from the business perspective. This study indicates that managers should be aware of their behaviour in terms of the trust levels they create with their subordinates and the type of leadership style they exhibit. In the

wake of increasing demand for ERP solutions and the efforts being made to identify critical success factors for its implementation, the results of this study will be a significant contribution for this technology.

Developing empowering leadership. Organizations should design and execute empowering programs to improve the benefits of empowering individuals and increasing the usage of technology. The employees are a motivated workforce and their work efficiency levels improve as they feel more able to perform tasks. The overall efficiency of the organization is seen to improve with an empowered team. The employee empowerment program should adopt a multifaceted approach with a variety of management practices that would encourage and improve sharing of power, information, resources, rewards and decision making (Marane, 2012).

Managers need to reflect on their styles of leadership in order to check whether they are able to display an empowering style of leadership (Zhang and Zhou, 2014) while handling their subordinates. Empowered individuals should be groomed to be innovative, influential and inspirational (Spreitzer et al., 1999). The organizational leadership team needs to review its control and command mechanisms to ensure that too much of it is not reducing the feeling of empowerment resulting in poor outcomes. The empowered managers should become change oriented leaders rather than engaging themselves in maintaining the status quo in organizations (Spreitzer et al., 1999). The other aspect to be controlled while developing an empowerment program is the consideration that the degree of effect that empowering leadership can have on individuals may vary depending upon the individual specific factors (Zhang and Zhou, 2014) and thus many times, the manager should decide whom to empower (Zhang and Bartol, 2010). Ahearne et al. (2005) argues

that empowering leadership may have a marginal effect on experienced and more knowledgeable employees whose routines are set than less experienced employees who are looking for inspiration from their managers. This fact throws a lot of challenges as the managers need to identify their subordinates' need for power and accordingly empower those who can make better use of it. The empowerment process needs proper evaluation of the workforce's characteristics before its delegation for better results. An organization needs to devise strategies that will strengthen the self determination (Conger and Kanungo, 1988) like training or role plays.

Developing trust. It is important to create high trust leaders and a trustful environment within the organization. Need for trust arises when there is a risky situation to be faced (Mayer et al., 1995). New technologies always bring in ambiguities at work and risks of failure for individuals. Creating trust shall help individuals in overcoming their inhibitions towards new technologies and shedding their fear of negative outcomes of technologies. This will in turn lead to improved technological transfers and adoption within the organization. The management should establish innovative behaviours that have typical characteristics like empowerment, encouragement or motivation in the form of rewards. Trust can also be improved by improving the inter-personal relationships through various interventions like training (Costigan et.al., 1998). It is a slow evolving process and takes time. A trustful environment within the organization can be consciously shaped by allowing the individuals to come forth and voice their opinions, to share their ideas, to allow healthy criticism being raised by individuals and to make small mistakes while learning and experimenting with newer projects, technologies or initiatives. Self driven or self motivated initiatives on the part of the empowered employees will lead to

successful technology acceptance and long sustainability of the technologies with lesser change management interventions.

Leader's role as a technology implementation champion. The significant role of a champion in the technology implementation process and adoption as a leader has been identified in many earlier research studies (Esteves, 2004). The leaders that have gained trust of the employees can be roped into this role for driving far better adoption and use results. The leaders can give regular training to users The impact of empowerment on service employees to overcome the resistance to technology use as lack of adequate training of ERP has led to many users not being comfortable handling computers leading to data errors, poor use of the systems and increased resistance to ERP use (Koh et al., 2006). It will be easy to train and convince the users when leaders adopt the role of champions.

Recent research by Sun (2013) discusses about the herd behaviour that exerts a strong influence for improving technology adoption by users. The herding effect should be created for increasing adoption of technology. Employee advice networks created in the organisation to solve the problems related to use of the ERP system often helps the users in adapting and using the system (Sykes, Venkatesh, and Johnson, 2014). Apart from the initiatives discussed, organizations need to evolve cultures that create processes, communication systems, strategies, structures and competencies conducive to technological embracement.

Limitations and Direction for Future Research

One of the limitations of this study lies in the self-reported evaluation of the empowering leadership scale by the individual. Employees with less organizational experience may not be in a position to understand whether the style executed by their leader is an empowering style. Normally it is recommended that the researcher observes how the manager handles a subordinate to understand the actual leadership style rather than asking the individual to rate through a survey.

The second limitation is the timing of the study. The study is being conducted in the post-adoption phase for the purpose of understanding the attitude towards using the technologies to the fullest extent. The results of the study cannot be generalised across all the stages of adoption as different factors may become more significant. The same study can also be done with longitudinal approach or with field experiments where the effect is studied during and after adoption of technologies to unleash many underlying processes between the attributes and outcome.

The third limitation is that only two factors have been investigated in this study. As more and more organizations go for ERP implementation, future studies can be taken up to investigate other factors that mediate the influence upon technology adoption. The influence of the control variables like experience, gender, ERP experience and age need to be verified. The degree of effect of empowering leadership may vary with the presence of various other influencing factors like organizational factors (e.g. communication styles, reporting structures, culture etc.), social factors (e.g. networking methods, norms etc.), individual factors (e.g. education, age, self efficacy, etc.) or technological factors (complexity, perceived ease of use, perceived usefulness etc.).Identifying mediating factors could provide organizations many options of strategising for successful technology implementations.

The fourth limitation is that only a single leadership style is being discussed; the literature review discusses many leadership styles that are seen in organisations; some are transformational leadership, ethical leadership (Dinh et. al., 2014), spiritual leadership (Dinh et al., 2014), entrepreneurial leadership (Dinh et. al., 2014) etc. The managers in the organisations maybe practising multiple leadership styles and the outcome of this study cannot be attributed solely to empowering leadership style though there may be presence of empowerment.

Finally, this study was conducted on a steel organization in India using ERP technology. The results cannot be generalised for similar studies in other types of organizations and other countries as the organizational dynamics, country's culture and policies may vary significantly. ERP is a mandatory system and therefore the creativity that can be displayed while using the system may be restricted within a limit; however, other technologies that are not bound by too many restrictions may improve the exploration opportunities and therefore such technologies may score higher on acceptability due to a positive attitude.

The findings have significant implications and great value to managers as the work environment factors play a prominent role in technology implementation. Future research directions may focus on multiple factors that may influence the adoption of complex systems like ERP. Another direction of research could be integrating the rich perspective of empowering leadership, trust and attitude brought out by this study

with various technology adoption models for predicting technology use.

Conclusion

Today organizations are undertaking many technological transformations with small and big technologies replacing manual jobs and speeding the deliverables. This study brings out the importance of empowering leadership and trust in changing the post-adoptive attitudes. Empowerment and trust together will improve technology adoption and utilisation as technology users have been given the right to unleash their potential to explore and optimally use the technology. The study improves the understanding of the mediation effect of trust on empowering leadership. Thus trust provides the conduit to the impact of empowering leadership on attitudes. Future research can be based on the theoretical premises provided by this study to investigate other linking factors affecting technological use. It will provide guidance to business practitioners for planning effective strategies in technological implementations. Empowering leadership and trust are established as key antecedents for ERP as well as any other technology adoption and use. In today's VUCA scenario, for any technology implementation to be successful, process compliance alone is not sufficient; commitment to change and adopting best practices is more important.

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Figure1: Results for the PLS Analysis

$R^2 = 0.36$

0.60 (*t* =8.713)   Trust   0.37(t =3.397)

$R^2 = 0.35$

Empowering Leadership — 0.29 (t =2.228) → Attitude towards ERP Use
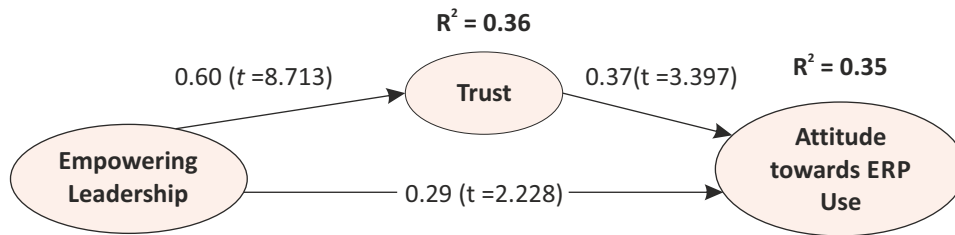
Table 1: Definition of the constructs

Constructs	Definition	References
Empowering Leadership	One of the leader's behaviour where the power is shared with subordinates so as to give them increased decision making authority for work execution.	Ahearne et al.(2005), Zhang and Bartol (2010), Kuo et al. (2011)
Trust	The extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people.	Cook and Wall (1980). Kuo et al. (2011), Di rks and Ferrin (2001), Mayer et al. (1995)
Attitude	Individual's positive or negative feelings about performing the target behaviour.	Fishbein and Ajzen (1975), Venkates h et al. (2003), Sternad et al. (2011)

Table 2: Demographic characteristics of the sample

Demographic variable	n	per cent	Demographic variable	n	per cent
Age			*Gender*		
20-30 years	56	20	Male	279	98
31-40 years	126	44	Female	6	2
41-50 years	65	23			
51-60 years	34	12	*Departments*		
>61 years	4	1	Finance	49	17
			HR	16	6
Education			IT	10	4
Below 12th Std	15		Maintenance	39	14
Diploma	36	13	Production	33	12
Graduates	144	50	Purchase	57	20
Post Graduates	90	32	Sales	35	12
			Stores	30	11
Work Experience			others	16	6
1year or less	10	4			
>1 year-5 years	133	47	*ERP Experience*		
>5 years-10 years	92	32	1 year and less	21	7
>10 years-15 years	31	11	1- 2 years	78	27
>15 years	19	6	2-3 years	107	38
Note : n = 285					

Impact of Empowering Leadership and Trust on Attitude towards Technology Adoption

Table 3: Psychometric properties of the instruments used

Constructs	Items	Item mean	Item SD	Loadings	Cronbach's Alpha	CR	AVE
Empowering Leadership	EMLD1	5.726	1.191	0.879	0.923	0.887	0.468
	EMLD2	5.582	1.209	0.928			
	EMLD3	5.730	1.082	0.923			
	EMLD4	5.965	0.891	0.877			
Trust	TR1	5.607	1.104	0.722	0.857	0.945	0.813
	TR3	5.666	1.125	0.667			
	TR4	5.772	1.042	0.747			
	TR5	5.681	1.071	0.72			
	TR6	5.744	0.935	0.742			
	TR7	5.582	1.241	0.621			
	TR8	5.295	1.249	0.663			
	TR9	5.726	0.939	0.676			
	TR10	5.446	1.172	0.566			
Attitude	ATT1	6.112	0.869	0.892	0.758	0.892	0.805
	ATT2	6.053	0.805	0.902			

Table 4: Correlation Matrix

Constructs	1	2	3
1. Attitude	1.000		
2. Empowering Leadership	0.517	1.000	
3. Trust	0.464	0.534	1.000

Note: All correlations are significant at 0.01 levels.

Table 5: Mediation using Sobel's Test

Constructs	β Value	SE
Empowering Leadership -> Attitude	0.292	0.135
Empowering Leadership -> Trust	0.604	0.067
Trust -> Attitude	0.374	0.116

Annexure I
Survey Instrument

Variable		Measurement Items
Trust (Cook and Wall, 1980)	TR1	· Management at my firm is sincere in its attempts to meet the workers' point of view.
	TR2	· Our firm has a poor future unless it can attract better managers.
	TR3	· If I got into difficulties at work I know my workmates would try and help me out.
	TR4	· Management can be trusted to make sensible decisions for the firm's future.
	TR5	· I can trust the people I work with to lend me a hand if I needed it.
	TR6	· Management at work seems to do an efficient job.
	TR7	· I feel quite confident that the firm will always try to treat me fairly.
	TR8	· Most of my workmates can be relied upon to do as they say they will do.
	TR9	· I have full confidence in the skills of my workmates.
	TR10	· Most of my fellow workers would get on with their work even if supervisors were not around.
	TR11	· I can rely on other workers not to make my job more difficult by careless work.
	TR12	· Our management would be quite prepared to gain advantage by deceiving the workers.
Attitude (Sternad and Bobek, 2013)	ATT1	· Using the ERP system is a good idea.
	ATT2	· I like the idea of using the ERP system to perform my job.
Empowering Leadership (Kuo et al., 2011)	EMLD1	· My manager respects my opinion
	EMDL2	· My manager is willing to provide opportunities for me to use my own judgment at work,
	EMDL3	· My manager is willing to empower me to do my work.
	EMDL4	· My manager tends to sufficiently trust me with my work.

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Exploring Divided Attention: Watching Sports with a Second Screen in India

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Abstract

TV viewing these days is one task in a multi-tasking activity. Viewers now respond through social media such as Twitter, Facebook, Instagram and Pinterest. This paper studies the use of social media while watching sports with a view to understanding its impact on TV advertising. Using structured observations, in-depth interviews and netnography, the study found that sports viewers connect and interact on social media; they use Twitter for interactions, Facebook for private interactions, Instagram for personal pictures and Pinterest for stylish and fashionable pictures. They interact with caution as they are aware their actions develop their 'digital image' (portrayal of person via online platforms). They are less interested in watching the match on TV as in the second screen. They are least interested in commercials but advertising can be effective when the content is in sync with the mood of the viewer and connected with the social media platforms.

Keywords: *Consumers' Activities, Consumers' Mood, Sports, Television Advertising, India*

1. Introduction

Sports are often considered as a part of the entertainment industry (Bühler & Nufer, 2006). The coverage is primarily by television (TV). Additionally, viewers use gadgets as a second screen while watching sports on TV (Myriam, 2013). TV is widely used but there is a rise in online media, particularly called as 'Second Screen' primarily while watching sports. Second screen experience refers to smart phone or tablet, while watching TV.

Historically, discussions with friends about the preceding evening's TV programs used to take place at the physical locations but now, they take place in real-time on digital networks. Interestingly, 15-17% of the internet viewers are engaged around TV content (Gruenwedel, 2013). Moreover, 84% of tablet or smart phone owners use their gadgets while watching TV (Yarow, 2014). Twitter has also provided the facility to tune into shows by clicking on 'See It'. This approach has also influenced media consumption habits.

Additionally, this behaviour is observed in an emerging country such as India where the internet users' base is expected to reach between 330 and 370 million in 2015 (Pandit, 2014). India has 36 million smart phone users and 60 million personal computers users (Bhinde, 2013). They use multiple media platforms while watching sports.

Interestingly, with increasing internet usage and second screens in India, 76% of advertising professionals suspect that the future would be about real time advertising (Warc, 2014). Advertisers want to know what consumers do while watching sports on TV and what they discuss in order to target 'fans' online, real time depending on their mood. To summarize, there are studies in the western countries on sports (Cho, 2013; Shank, 1999), second screen behaviour (Myriam, 2013), multiple media usage (Bhinde, 2013), and real time advertising (Morgan, 2013). However, according to our knowledge, there are no studies embodying all elements and capturing the domain comprehensively in an emerging nation such as India.

2. Literature Review

2.1 Evolution of Sports, Media and the Consumer

Sports and media enjoy a symbiotic relationship (McChesney, 1989). It is interesting to note that all the three industries: sports, mass media and advertising focus on spectators. Until the early 1990s, watching television was a passive activity. However, now spectators have evolved and demand for better visuals and new technologies. Viewers are no longer passive; they crave for more platforms and media to experience sports (Werkers, Lefever, & Valcke, 2008).

Earlier, there were definite boundaries between print, radio and television that do not exist in the present situation of convergence; user generated content and interactivity have emerged as new trends. The phenomenon of all networks being able to deliver any kind of service to any kind of platform is 'convergence' (Reding, 2006). Another important aspect is information flow between media and viewer that leads to 'interactivity'. The consumption pattern has moved from the relaxed 'lean-back' to 'lean-forward' (Boyle & Haynes, 2003). To summarize, media consumption pattern of consumers have changed and second screen behaviour has emerged.

2.2 Second Screen, television and social media

Any digital device enabling a user to interact with the content on first screen is called a 'Second Screen'. Multi-screening is the term used when an extra screen is used along with the TV (Google Inc., 2012).

Consumers perform many activities such as searching about sports, checking e-mails and visiting social media platforms on second screens while watching TV (Google Inc., 2012). Use of the second screen increases when the TV programs are not interesting or engaging or when there are commercial breaks (Belsky, 2012).

The primary benefit of the second screen is interaction among individuals leading to real time user-data. Many important insights such as age, gender and geographical location can be known easily. This data can be used for well targeted advertising (Karppinen, 2013). It can be summarized that TV no longer gets undivided attention as portable screens such as smart phones, tablets or laptops are extensively used by the viewers. (Google Inc., 2012).

2.3 Online social interaction

Social interactions are the most important features of reproduction of contexts. It is all about contextualizing the communication. It explains group composition in terms of the similarity of members' characteristics and states the extent to which pairs of individuals are similar in terms of certain attributes such as age, gender, education, or lifestyle (Brown & Reingen, 1987).

Significant growth of the internet has facilitated emergence of online interactions of dispersed groups of individuals with similar interests (Wilson & Peterson, 2002). Online communities are becoming essential for the individual's life. They facilitate people to interact with each other with instant messaging tools (Bishop, 2003).

Moreover, human-computer system users are goal driven rather than needs-driven. They ignore distractions such as advertisements and focus on their goals (Nielsen & Norman, 2003). According to this model of social context, it can be inferred that needs based theories do not explain why lurkers remain aloof in online communities when their 'deficit needs' are met, but the goal-based framework does mention the reasons and explains it comprehensively (Mantovani, 1996).

Interestingly, there are a few methodologies suggesting ways to convert lurkers into elders such as operant conditioning (Skinner, 1938). Bishop (2009), in the ecological cognition framework, identifies dimensions that enhance participation: arousal, control, challenge, focused attention, involvement, exploratory behaviour, interactivity, playfulness, skill, positive effect, optimum level stimulation, time distortion and telepresence (Novak & Hoffman, 1998). To summarize, online communities and the social interaction process influence the consumer media consumption habits primarily towards traditional medium such as TV. Consumers' mood also affects their mindset while they consume media that includes advertising.

2.4 Theoretical Frameworks: Mood of the consumer and its effect on advertising

'Mood State Knowledge' states that if an advertiser or a marketer knows the mood of the consumer before, then the communication can be relevant and could be drafted accordingly (Owolabi, 2009). It is easier to persuade a consumer in a positive mood to purchase the product than in a 'normal condition'. Individuals in a good mood make faster, impulsive decisions, have less systematic thinking and rely more on heuristic cues (Schwarx, Bless, & Bohner, 1991). Individuals in a negative mood are less swayed by weak arguments (Schwarz, 1990). Interestingly, individuals tend to like advertisements more when they are in a positive

mood. According to Hedonistic Contingency Theory (Wegener & Petty, 1994), individuals have learned to seek positive activities in a happy mood. They are easily influenced (Gierl & Bambauer, 2006) as they have high self-confidence (Baumgardner & Arkin, 1988), greater brand recall (Lee & Sternthal, 1999), better stimulus recall (Gardner, 1985), are willing to help (Rusting, 1998), evaluate arguments more favourably (Batra & Stayman, 1990), and are willing to pay more for the products endorsed (Pucinelli, 2006) as they process advertising effectively (Park & Banaji, 2000). To summarize, consumers in a good mood react positively to advertisements and various other forms of communication that convey positive feelings. They are even willing to pay more for the product endorsed.

Another important factor in advertising effectiveness is context. There are two major contextual divisions; receiver context and medium context (Moorman, 2003). The receiver context includes the physical and social environment in which an individual is exposed to an advertisement, the mental state of the person, and the time frame. The physical environment includes home, work and the social environment captures the individual, companion, time frame and mental state of mind (Burke & Edell, 1989).

3. Research gap
We identified in the literature review that there are several studies regarding the effect of the consumers' mood on advertising (Owolabi, 2009; Bronner, 2007), the evolution of sports and the consumer (Ballouli & Bennett, 2014; Pokrywczynski, Carvalho & Preston Jr., 2010), consumers' extensive usage of digital platforms (McKinsey.com, 2014), users' participation in online mediums (Mitchelstein & Boczkowski, 2009; Ludford, Cosley, Frankowski & Terveen, 2004) associated motives, desires, skills and goals for the users to carry

out participatory action in an online community (Larsen, Visser-Rotgans & Hole, 2011). However, there is a dearth in literature about the second screen activities while consumers watch sports on TV. We could not find any study that has dealt with this area in a comprehensive manner. The present study goes deeper and understands the mood of the consumer while watching sports on TV and how advertising affects the viewers.

4. Objectives of the Research
The objectives of the research are:
1. To identify second screen activities that a consumer indulges in while watching cricket on TV.
2. To understand the factors that determine the mood of the consumer while watching cricket on TV.
3. To study the role mood of the consumer in comprehending the advertisements while watching cricket on TV.
4. To explore the scope of real time advertising and its feasibility for television.

5. Research Methodology and Design
5.1 Research Design
The research was conducted by the second author in three phases and was further divided into two 'studies'. Study one was conducted on consumers to substantially evaluate media usage patterns, understand the various activities the consumer indulges in while watching cricket and to identify factors determining the mood of the consumer. Study two was conducted on industry professionals to explore the scope for real-time advertising based on the mood of consumer while watching cricket.

5.2 Consumer Study
Study one was conducted using three methods:

Structured observation, in depth interviews and Netnography.

5.2.1 Structured Observational Research

This method was chosen because the study is exploratory in nature and the actual pattern of behaviours were to be understood (Malhotra, 2012).

5.2.1.1 Sample Characteristics

The participants were in the age group of 18-25 from Hyderabad as the aim was to study second screen (mobile) where half the mobile users in India are younger than 25 years and 48% mobile users in India belong to this group. Hyderabad was selected as it covers 27 million smart phone users from urban India (Bhinde, 2013). A total of 16 observations were made with eight male and eight female respondents.

5.2.1.2 Protocol

The observers mainly noticed what kind of second screen devices the participants are using, their responses during the match and group dynamics. The observers also noted how they reacted to commercials during the breaks at different stages of the match. Respondents also filled a questionnaire related to the media consumed while watching the match, offline and online activities performed, reactions to commercials and recall and real time advertising.

The study was carried out during the Twenty20 cricket match between New Zealand and India. There were three moderators who were trained to conduct structured observations. The participants were allowed to carry and use smart phones, tablets and laptops while watching the cricket match on TV. The participants were provided refreshments to conduct the observation in natural settings. The activities of the participants were observed keenly and recorded for further analysis.

5.2.2 In-Depth Interview

An in depth interview is a personal interview where a single respondent is probed by a skilled interviewer to uncover underlying attitudes, beliefs, and feelings (Stokes & Bergin, 2006).

'Climbing the Ladder' was used in this research along with (Malhotra, 2012) other projective techniques such as completion and word-association techniques.

5.2.2.1 Sample Characteristics

A total of 17 participants were interviewed in the age group of 18-25 from Hyderabad with equal number of males and females. Grounded Theory was employed with inductive approach. It means that after every interview, the guidelines need to be modified according to the results and interviews should be stopped when data gets redundant (Malhotra, 2012).

5.2.2.2 Protocol and Process

The in depth interview focused mainly on different media used to follow cricket, activities while watching cricket, attitude towards commercials during breaks, mood variations, responses and discussions about the commercials and views on real time advertising. The respondents were interviewed at a convenient place and time. Each interview lasted around 50 to 60 minutes with audio recording; field notes were recorded for further analysis.

5.3.3 Netnography

Netnography is ethnography on social media platforms (Kozinets, 2002). This study captures the consumer behaviour on digital media that examines their activities and interactions via online platforms.

5.3.3.1 Sample Characteristics

Netnography was conducted on participants of observational research to understand their digital behaviour. The participants were observed online using netnography research technique for 30 days.

5.3.3.2 Protocol and Process

We added the participants on Facebook and had many discussions with them on digital platform and noted all the activities for 30 days. The participative acts included offering comments, following communally shared links, reading messages regularly and preferably in real-time and participating in conversations.

5.4 Data Verification

We conducted in-depth interviews with industry experts from sports, broadcasting media, social media and the advertising industry to understand the latest trends and shift from television to second screen and real time advertising. Each participant was interviewed for 30 minutes. Experts from four different industries validated our earlier findings from the consumers' study.

6. Data Analysis and Result

6.1 Consumer Study

Transcripts were analyzed. To understand the qualitative data, themes were developed after carefully analysing all the data collected from observational research, in depth interviews and netnography.

6.1.1 Consumption of Various Media

6.1.1.1 Extensive Usage of Television and Internet

"Television is still the most important medium to follow cricket", respondent (Female, 24).

Viewers enjoy following cricket on television because of the content. "It's not just about the match; it's about the experience of the match day. I love watching Extra Innings on SET Max, apart from the match itself." said a respondent.

Observational research found respondents focus on pre and post-match shows on TV; they get involved with second screen i.e. mobile phone. A respondent mentioned (Male, 22), "Unless something controversial happens during the pre or the post-match show, I do not use my smart phone while they are on. I use my smart phone only when there are breaks in the pre or post-match shows." To summarize, TV has managed its relevance primarily for youngsters who are cricket lovers.

Moreover, individuals always want to stay connected with their friends via mobiles and internet while they watch TV. "I constantly check for Whatsapp, Facebook and Twitter notifications or updates on my smart phone. I also update my Facebook status and Twitter feed about the on-going match. I am on Whatsapp twenty four hours a day to know about the friends." (Female, 23).

Proposition 1: Television is the primary medium for watching cricket while getting connected to the internet via second screen.

6.1.2 Multiple Activities on the digital space

6.1.2.1 Different Meanings and Usage of Various social media platforms and Importance of Digital Image

Respondents have various meanings for different social media platforms. A post which is close to the

user will go on Facebook. A respondent (Female, 25) stated, "The activity on Twitter is very random. I can make a hundred updates on Twitter in one hour, but Facebook is more private. On Twitter, I do not have the guilt of filling the timeline with something I am passionate about and my friends do not necessarily care about" (Male, 19). Instagram is used for general pictures; it is not used to post personal pictures. Pinterest is used for pictures related to fashion.

If users feel that the updates, links, pictures, videos shared by them are not appreciated by their friends, then they stop it immediately. "I will post on Facebook only if I think people will enjoy my post, like it and probably share it. I want to post something that is relevant to most if not all my friends on Facebook. If people are not ready to listen to me, I do not want to talk in that forum or platform." (Male Respondent, 21)

If they think their voice will not be heard, then users do not post any updates and do not indulge in any activities on that social media platform.

They also recognize that arguments can affect their online image and they can lose their identity. They adjust the intensity of the discussion or debate according to their digital image. "It is easy to converse with people online because I need not necessarily know the other person in case I am having a discussion or debate in an online community but I care for my digital image." (Male Respondent, 24).

Proposition 2: Digital image is very important to consumers; therefore, various social media are used in the customized format and consumers conduct online activity very consciously.

6.1.2.2 Focus on Networking rather than Viewing

Users enjoy the match experience that the broadcasters provide by creating content around the cricket match. However, it was observed that the primary action of watching and following the match has become secondary as networking during the match and discussions have become crucial for the viewers. It was found through observation and netnography that viewers indulge in networking, discussions and debates about different issues related to the match on online media platforms. A male respondent stated, "I really love the chat box mechanism in Cric Info. I go through it even when I am watching the match on television. It is because I get opinions from people like me apart from the opinions and analysis of experts." Respondents like to know and understand the opinions of experts and friends while they watch the match. Respondents also stated that they enjoy following cricket more on social media, cricket live updates and commentary sites that provide chat boxes as a mechanism for individuals to communicate with each other than just watching the match on TV.

Proposition 3: Consumers prefer networking online and following the match on digital platforms more than watching the match on television.

6.1.3 Commercials during cricket matches

6.1.3.1 Less Interest in commercials
Viewers do not enjoy breaks as they get impatient and immediately switch to second screens. A respondent stated, "Cricket is a game with a lot of pauses. I have minutes to pass between every over and I do not like watching commercials. I log on to Twitter, check what people are saying on that platform." (Male Respondent, 25)

However, respondents go through the product information on their second screen in case the commercial is able to grab their attention. "If it is a new product or service, then I do search for more information about both the product and the campaign on my second screen if the television commercial manages to grab my attention." (Respondent)

Interestingly, when the team supported by the viewers does not perform up to expectations, they prefer breaks because they do not look forward to the next over. However, they do not switch off the television or change the channel because they still hope that their favourite players would perform in the subsequent overs. A female respondent mentioned, "I concentrate on ads when my team is losing and I do not want the commercials to end because the match is a bad reality. If my team is losing, I do not look forward to the next over. However, I do not change the channel because of the hope that some miracle will save my team."

Proposition 4: Viewers do not watch commercials that are aired during the cricket match unless it grabs their attention. If it does grab their attention, they gather the product information via second screen or if the team they support is underperforming.

6.1.3.2 Syncing the content of the commercial with consumers' mood is the key dimension

Research through observation found that respondents were able to recollect the few products and the brand names that were advertised during the commercial breaks during the match such as 'zoo zoo' campaign by Vodafone, Pepsi 'Oh! Yes! Abhi!' They mentioned that they were able to recollect these campaigns as content was connected with them. "Elements of ads should be in continuation with the match you are watching." (Female Respondent, 25)

It was further noticed that if the commercials were in sync with the mood of the viewer, then it had some positive effects. For example, when their favourite team plays well, respondents were in a happy mood and they accepted commercials that reflected their joyfulness but did not like ads with a sad connotation. "If India is losing and if an Indian cricketer turns up in a commercial between the overs and starts talking about how to become a champion, it is annoying." (Female Respondent, 18)

To summarize, if the commercial is in sync with the mood of the viewers on real time basis while they watch the match, they will appreciate it.

Proposition 5: Content of the commercial and it being in sync with consumers' mood is important when viewers watch cricket on TV.

Table 1: Themes and Evidence

Category	Themes	Evidence
Consumption of Various Media	*Extensive* Usage of Television and *Internet*	"Television is still the most important medium to follow cricket" "I constantly check for Whatsapp, Facebook and Twitter notifications or updates on my smart phone. I also update my Facebook status and Twitter feed about the on -going match. I am on Whatsapp twenty four hours a day."
Multiple Activities of Digital Space	*Different Meanings and Usage for Various Social Media Platforms and Importance of Digital Image*	"A post with an important update wi ll go on Facebook. I use Twitter to update about what I am thinking about the match real time." "It is easy to converse with people online because I need not necessarily know the other person in case I am having a discussion or debate in an online communi ty but I care for my digital image"
	Focus on Networking rather than viewing	"I really love the chat box mechanism in Cric Info. I go through it even when I am watching the match on television. It is because I get opinions from people like me apart from the opinions and analysis of experts." "My Whatsapp groups have sports and news feeds faster than twitter."
Commercials during Cricket Matches	*Less interested in commercials*	"Cricket is a game with a lot of pauses. I have minutes to pass between every ove r and I do not like watching commercials. I log on to Twitter, check what people are saying on that platform." "I concentrate on ads when my team is losing and I do not want the commercials to end because the match is a bad reality. If my team is losing, I do not look forward to the next over."
	Sync of content of the commercial with consumers' mood is the key Dimension	"If India is losing and if an Indian Cricketer turns up in a commercial between the overs and starts talking about how to become a champion, it is annoying." "I want to watch commercials which have emotional content when my team is losing because I am already in an emotional mood."

6.2 Perspectives of industry professionals

6.2.1 Integration of television with second screens
Respondents mentioned that they try to integrate the experience of watching TV with various activities on the second screens. A respondent from the television broadcasting industry stated, "We have been observing the rise of the second screens and it is impacting the advertising revenue of the broadcasters because the brands are now trying to invest much more in digital space." The experts also claim that broadcasters are trying to develop second screen apps through which the audience can access the content generated around various matches and enrich the quality of discussions. Respondents stated that they would like to encourage the consumers further to indulge in discussions about television programs, primarily cricket matches, on social media platforms as it would deliver content to the marketers.

6.2.2 Prefer buying media programmatically but technology not available
Media buyers claimed that there is a spill over in terms of audience with regards to television commercials and they would prefer to buy television media programmatically. The experts claim that the technology for the convergence of television with internet is not available yet and may not be available until 2020 in India. When the convergence of television with internet protocol happens, all the television programs will be delivered by internet protocol networks across the world and it would completely integrate second screens with television. Therefore, real time advertising on television could work in an effective manner.

7. Discussion
Earlier studies found that TV viewers, while experiencing sports, are not passive and use multiple media (Wekers, Lefever & Valcke, 2008). The present study added various dimensions by identifying that viewers use various media platforms on their mobile in a personalized manner such as Twitter for interaction; this is in sync with earlier research (Giglietto & Selva, 2014). However, we identified that Facebook is used for private connectivity and Instagram for personal pictures. The literature also identified that the media consumption in this scenario has moved from 'lean back' to 'lean forward' (Boyle & Haynes, 2003). This study extends it further to identify a 'lean active' approach as consumers are always connected and active on social media while watching cricket on TV.

Earlier studies mentioned that TV and mobile are used primarily for viewing, entertainment and gaming (Ahanonu et al., 2013) but the present study found that consumers focused on every activity that they carry out on digital media as it has a direct impact on their 'digital image'. They also develop strong networks while watching cricket on TV via social media platforms. Moreover, previous literature stated that consumers' mood played a very important role in the effectiveness of an advertisement (Owolabi, 2009). The findings of this study adds one more dimension, that is, consumers will not accept an advertisement which contradicts their mood. For example, if consumers are feeling happy then they will connect less with an advertisement which has a sad connotation.

This research has extended the literature of advertising effectiveness as earlier studies mentioned only two dimensions namely, receiver and medium context (Moorman, 2003). The present research adds more elements such as in context of the receiver or consumer, performance of players and positive mood.

The medium is further divided into two categories namely, TV and social media. TV is the passive medium and used only as background while social media is used widely as the first screen by the consumers primarily for discussing, sharing and evaluation. This study provides a framework for advertising while the viewers are watching cricket on TV (Refer to Figure 1).

Figure 1: Framework that Determines use of Second Screen for Advertising Effectiveness for Sports
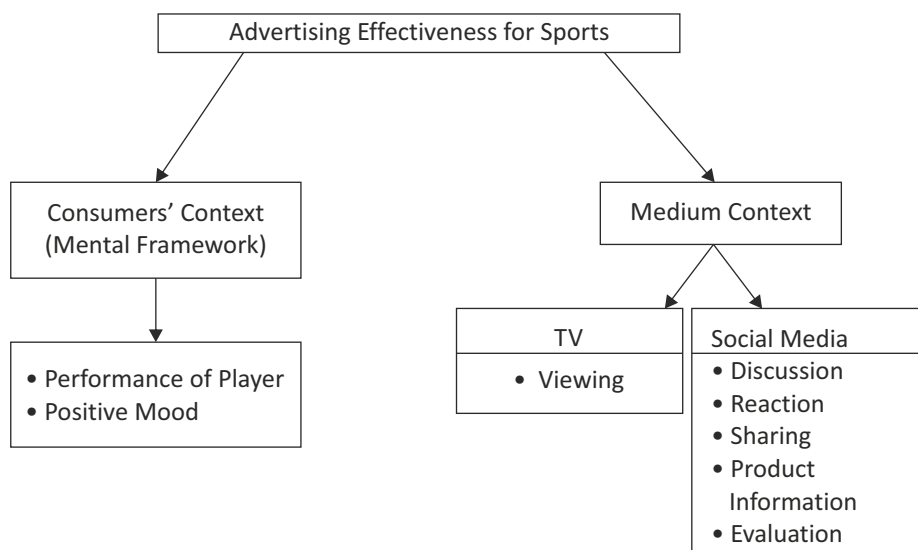
8. Managerial Implications

Marketers can develop their media strategies and allocate their campaign budgets after considering TV as a passive medium primarily for cricket. The managers of the brands such as sporting events, especially cricket events such as the IPL and ICC World Cup, can target the consumers while understanding their mood and opinions that they share on digital platforms.

Marketers have to work with the consumers as partners and can adopt 'Marketing with consumers' as the consumer prefers online discussions. Brands can even identify the opinion leaders in the digital network and can seek their advice to influence the overall digital group or community. Additionally, it was found that consumers are more interested in following the

match through posts, real time analysis on social media and other dedicated cricket websites. The brand can become a friend of the consumer on the digital medium and can enrich the content for better match experience while gaining acceptability from the consumer.

We also found specific purposes each social medium is used for. Marketers can use the media according to the preferences and usage by the consumers. We identified that consumers attribute significant importance to their online image and they believe that online activities facilitate them to develop it further. Marketers can understand consumers' activities and the online image of individuals to provide customized products and services. Moreover we found that viewers pay less attention to commercials while they

watch cricket; instead they focus on their mobiles and actively participate in digital activities. Marketers can develop strategies for digital platforms to connect with the consumers. Additionally, campaigns need to be in sync with consumers' mood and they watch campaigns only when their preferred players are underperforming. Marketers could develop real time strategies around these findings to grab the attention of the consumers.

9. Limitation and Scope for Future studies

This study is qualitative in nature; future studies can be undertaken to quantify variables and measures, and the usage pattern of social media can be studied while individuals watch TV. Another limitation is that this study does not emphasize on online image; however, this variable emerges upfront in this research and future work can be undertaken to understand this unique element along with media consumption and TV viewing. Future studies can be undertaken to develop real time advertising frameworks.

This study focuses on a particular age group located in an urban region. Similar studies can be conducted on a different age group and in rural, semi-metro cities. Moreover, future studies can be developed in other emerging countries and intercultural issues can be studied.

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Attitude of college students towards advertisements in the indian context: An empirical analysis

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Abstract

College students represent an important segment of consumers. They have the capability of influencing purchasing decisions of near ones and establishing brand loyalties. The study aims to determine the attitude of students from diverse fields of education towards advertisements. Keeping the study 'A Factor Analysis of College Student Attitudes toward Advertising' by Larkin in 1977 as the main article, the research focuses on the empirical findings related to students' attitude in the Indian context in present times. A sample of 100 undergraduate and post graduate students, drawn across the country, enhanced the generalizability of overall survey findings. This allowed comparison between different demographic segments. The findings of the study would be beneficial for the advertising industry in India.

Advertisements are an essential component of marketing to make people aware of the products and services offered by various businesses. It not only acts as a source of communication but also stimulates economic activities and shapes lifestyles and values. With the advent of technology and widespread use of media in all forms, consumers are getting exposed to a plethora of advertisements. This has strengthened the interest of researchers and marketers to further probe into the study of advertising in contemporary times.

The advertising industry is often criticized for being responsible for over-consumption. Thus, it is quite imperative to study the impact of advertisements on the economy, business and culture, by seeking public opinion. Advertising is a pervasive medium in modern life. Consumers are showered with a variety of advertisements. In this kind of environment, it is vital to assess the attitudes of the general public towards advertising. The opinions regarding the political and regulatory activities associated with advertising can impact the advertising industry in many ways. However, in recent years, not much has been published about opinions regarding advertisements in general as against advertisements in a particular media.

As per a research conducted by Lutz in 1985, attitude towards advertising has been defined as "a learned predisposition to respond in the consistently favourable or unfavourable manner to advertising in general". While companies have been allocating a huge amount of their budget towards advertisements, it seems reasonable to find whether these expenses lead to a favourable attitude and thus whether the brand is generating revenue or not. There are concerns that negative attitudes could hinder advertisements' effectiveness and efficiency as a marketing communication tool.

A lot of research has concentrated towards the general public's attitude towards advertisements. However, a large segment of consumers are represented by students. Exploring the attitude of current college students and comparing them to those reported in earlier studies is important for several reasons. College students represent a large and growing population with considerable disposable income. They are not only the trend setters but also the early adopters who influence the purchasing decisions of friends and family.

Also, the attitude of today's students is quite different from those of earlier times. They are quite cynical towards various institutions. Today's students are highly tech savvy and have continuous access to social media platforms. They do not face any hindrance in sharing their ideas and opinions with the outside world. Thus, with the strong network they possess, their opinions have a dramatic impact on businesses. It is important to note that today's students get into college during a period when many business practices are continuously criticized based on their legality or ethnicity. Advertisements being the most visible component of any business enterprise, any shortcomings contributes substantially to negative attitudes towards advertising.

Members of this generation respond in a very unique manner. The factors contributing to their response include the increased volume of advertisements, different modes of advertisements and also the various marketing schemes targeting this segment. These schemes have made students more sceptical about advertisers and advertising in general. The recent trend shows that due to an extremely heavy

exposure to various promotions, students are comparatively less loyal towards brands.

While certain parts of the world do not perceive advertisements in a positive way, in India, consumers, including students, are generally well disposed to advertising. Moving beyond the general approval trend, there are some signals of complexity. Studies have been carried out discussing the variations in terms of media and product category. These studies suggest that attitudes towards advertising are multidimensional and are based on a range of beliefs. The attitudes towards advertising are based on perceptions of personal use (product information, social role and hedonic factors), societal effects (economic factors) and the extent to which it degrades values or appears false and lacking sense.

While earlier studies of students' attitudes towards advertising and its supposed unethical and harmful consequences suggested that they were quite negative, the aim of this research is to study how different is the attitude of today's college students towards advertising's ethical, economical and social consequences depending on the educational course that they are currently pursuing. The study would help in exploring the salient beliefs that account for differences and/or similarities among the attitudes towards the college students in various educational courses and further provide a platform to advertisers and advertising agencies to effectively reach out to its potential customers.

It has been found that a very limited amount of research has been done pertaining to the attitude of students towards advertisements in India. Hence, this research could prove to be vital to various marketers and advertisement agencies operating in India and

effectively using advertisements as a communication tool to convert potential buyers to loyal customers.

With India being an emerging economy, developed nations foresee a lot of prospects in terms of investments in India. The conducive environment in India is attracting the interest of developed nations for business opportunities. This is giving a platform to multinational companies for advertising their products and services in the Indian market. In this regard, companies intend to seek the attitude of Indian consumers of which students form a major segment. In this context, this study will be useful in analysing the perceptions regarding advertisements, both global and local.

Literature Review

Advertisers and business leaders have been interested in studying the opinions of the general public towards advertising in the context of its ethical and economic repercussions since a long time.Mittal,1994; O'Donohoe,1995; Pollay and Mittal,1993 have extensively studied this objective empirically.

Mittal (1994) expressed the need for data from national samples. He observed that attitudes towards advertising are not consistent across different demographics and hence, a need is felt for exploring this aspect. Morton (2002), in his study, confirmed the negative picture of consumer attitude towards TV advertising with about half of them expressing a dislike for advertising. Another point of concern which has been studied relates to the negative attitude towards advertising and the implication it can have on its effectiveness. The study conducted by Abhilasha Mehta (2000) shows that advertising persuasion is higher among those with a favourable attitude than those who did not conform with advertising claims.

Lowrey S. P Shavitt and J.Haefner (1998) studied the general public's attitude and the confidence they have towards advertising by taking a sample of over hundred adult consumers. They found that males, younger consumers, people with lower income and education were more favourable towards advertising as compared to others.

Likewise many studies have been done till date, to depict the various factors ascertaining the attitude towards advertising in general and specific to certain countries. The study by Dan Petrovici and Marin Marinov (2007) is one among them. This study established the 'relationships between determinants and primary antecedents of advertising and attitudes towards advertising'. The findings showed information acquisition through advertising to be more significant in Bulgaria whereas the entertainment value of advertising was found to be more significant in Romania.

In a similar fashion, to understand the factors which can influence a person's attitude towards advertising, a study was conducted by Muhammad Usman, Saqib Ilyas, Muhammad Farooq Hussain and Tahir Masood Qureshi (2010). The study was done to find out the impact of cultural factors on advertising. It was analysed that culture played a moderating role towards the impact of hedonism and social integration on attitude towards advertising and a weaker role towards the impact of product information on advertising.

Another interesting study was done by C. H. Sandage and John D. Leckenby (1980). The measures of the study concentrated in two dimensions of attitude towards advertising, i.e. the attitude towards institution and attitude towards the instrument. The

findings revealed that students have a favourable attitude towards the institutions instead of the instruments of advertising.

However, very little has been researched on the attitudes of college students towards advertising. College students represent a segment of the general public who need to be given special attention. Businesses also like to focus on this group because they are considered to be the trend setters. They often influence the purchasing behaviour of the parents and the peers. In addition to this, there is perhaps a long term loyalty since they are in college and are in the younger age group. There have been various studies carried out by researchers in the western world to understand whether college students and consumers in general, perceive advertisements differently. A similar study was conducted with the sample being people of India by Durvasula Srinivas, et.al (1997). They concluded that there was no significant difference in the beliefs and attitude of both the segments towards advertising. Few studies were done emphasizing on the opinions and attitude of college students toward advertising. Ernest F. Larkin (1977) conducted a study with the aim to assess the primary factors which account for similarities and differences in the attitudes of college students pursuing their degrees across different specializations. The results showed that most of the students had a negative opinion towards advertising and believed that they were not up to the mark; however, the degree of this negative attitude varied amongst the sample chosen. A similar study to understand the consistency of students' attitude towards advertising with the passage of time was carried out by Fred K. Beard (2003). This study had the same measure basis as the one used by Larkin. He concluded that the importance of some of the attitudes and their consequences

towards advertising continued to function in the same fashion for the sample of students chosen in the years 1977 and 2003. Within the student fraternity, there was again a bifurcation made into marketing as well as non- marketing students. And with them as the subjects, a study to understand differences in their attitude towards advertising was conducted by Run Ernest Cyril, et.al (2013). The findings of the research show a significant difference in the attitudes, which can be attributed to the fact that one segment was being imparted formal marketing education.

The attitude of today's college students in the context of its ethical and economic consequences perhaps could be quite different from those studied previously.

Also, since most of the studies have been done in the western context, a need is felt for studying the same in the Indian context. However, neither academicians nor industry has actively involved itself in gauging the attitude of students towards advertising. Therefore, the purpose of the study is to analyze the attitude of this group towards advertising.

Methodology

In order to proceed with the study, a simple random sample was chosen. This was done since every student has an equal chance of being selected as a subject. It minimizes any kind of bias and further helps in getting a better understanding of the general attitude of this segment.
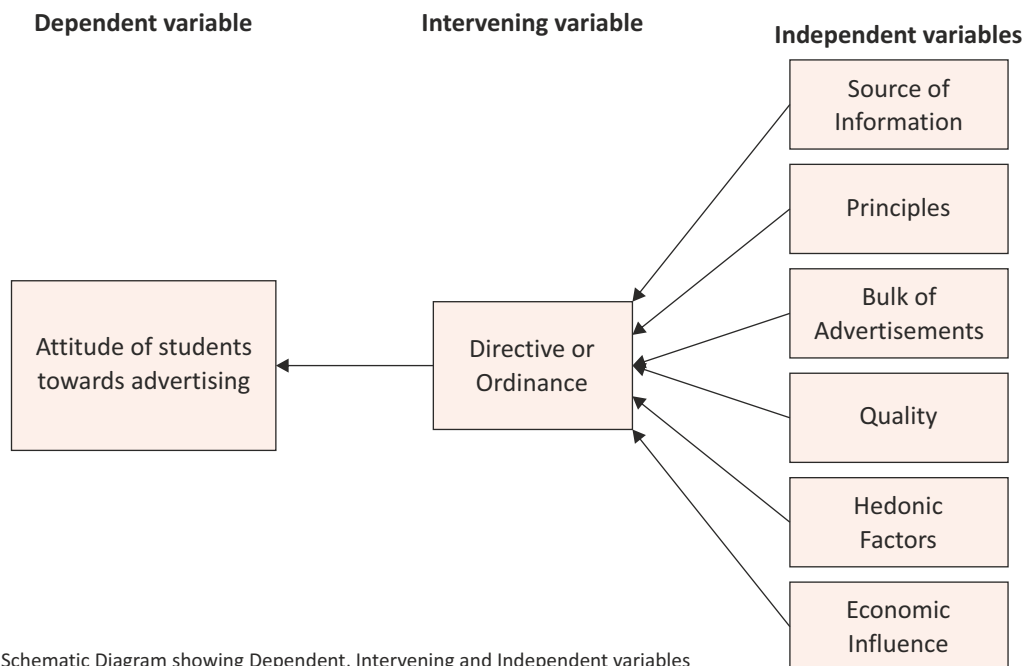
Theoretical Framework

Figure 1: Schematic Diagram showing Dependent, Intervening and Independent variables

The dependent variable, attitudes of students towards advertising, is influenced by the independent variables: Source of Information, Principles, Bulk of Advertisements, Quality, Hedonic factors and Economic influence. Directive or Ordinance acts as an intervening variable as it controls the entire structure of an advertisement.

The Sample

The questionnaire consisted of 25 statements. It was administered to 100 students enrolled in various courses of different subjects. A conscious attempt has been made to choose students from diverse backgrounds. The sample of 100 students contains a larger percentage of males (61%) than did Larkin's (1977) sample of 80 students (57.5%). Most of the respondents are MBAs (45%), Btech (23%), MBBS (17%) and Mtech (14%) and CA (1%). Most students are in the age bracket of 20 to 25 (78%).

Measurement

Most of Larkin's (1977) items were adopted for studying the attitude of students towards advertising. The items are primarily designed to assess the ethical, economic, social consequences and also the regulatory norms associated with advertising.

Analysis

Factor analysis is a multivariate technique which emphasises on data reduction and data summarization. This technique has been used in order to compare the results with those of Larkin's (1977). Factor analysis produces a solution that identifies the different ways in which individuals can cluster on certain attitudinal dimensions. The respondents associated with each prominent factor are assumed to share a common perspective with each factor representing a different perspective.

The Kaiser-Meyer-Olkin (KMO) Index which measures the sampling adequacy has been found to be greater than 0.6. Bartlett's test of Sphericity which tests the overall significance of all the correlations has been found to be highly significant at 5% level of significance.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.637
Bartlett's Test of Sphericity	Approx. Chi-Square	625.015
	Df	231
	Sig.	.000

Source: Table as depicted in the SPSS Output.

Based on responses from 100 respondents to the 22 advertisement related questions, a total of seven factors were extracted accounting for 63.86% of the total variance.

Results

For this study, the number of factors extracted was 7, accounting for 65% of the variance (Factor 1 = 12.69%, Factor 2 = 10.93%, Factor 3 = 9.01%, Factor 4 = 8.73%, Factor 5 = 8.71%, Factor 6 = 8.12%, Factor 7 = 6.87%).

Factor One

Referring to Table 1, it can be seen that the variables 21 and 22 have loadings of 0.710 and 0.743 on factor one. This suggests that factor one is a combination of 'Ban on advertising harmful or dangerous products' and 'Need for more government regulation'. This factor can be named as ' Regulation'.

Factor Two

The variables 3 and 4 have loadings 0.689 and 0.772 respectively on factor two. This suggests that factor two is a combination of 'Advertisements tell me which brand offers the features I am looking for in a product' and 'Advertisements keep me up to date with trends in

the market'. This factor can be named as 'Source of Information'.

Factor Three

The variable 19, i.e. 'Are cautionary statements displayed in the advertisements enough to prevent children from getting influenced?' has a loading of 0.828 on factor three. This factor can be named as 'Ethics'.

Factor Four

The variable 9 i.e. 'Advertisements tend to confuse people by presenting them with a wide variety of products of similar type' has a loading of 0.811 on factor four. This factor can be interpreted as 'Increased Volume of Advertisements '.

Factor Five

The variable 7 i.e. 'There is a need for better advertisements for most of the products' has a loading of 0.829. This can be interpreted as 'Quality'.

Factor Six

The variables 13 and 14 have loadings 0.691 and 0.666 respectively on factor six. This suggests that factor six is a combination of 'Advertisements remind me of my past experiences' and 'Advertisements are a source of entertainment rather than a source of information'. This factor can be named as 'Hedonic factors'.

Factor Seven

The variables 11 and 12 have loadings 0.625 and 0.610 respectively. This suggests that factor seven is a combination of variables 'Advertisements lead to increase in price of the product/service offered' and 'Advertisements enhance competition in the market'. This factor can be named as 'Economic influence'.

The comparison of the factor scores helps in revealing the salient features, the relative weightage and importance of the various items that correspond to attitudes. Based on the results presented in Table 2, it is observed that 66% of the respondents firmly believe that advertisements lead to increase in the price of products while 84% believe that they enhance competition. 29% agree that cautionary statements displayed in the advertisements are enough to prevent children from getting influenced. 65% are of the belief that there should be a ban on advertising harmful or dangerous products.

Table 2: Summary of Responses

Item	Agree	Neutral	Disagree
Source of Information			
Advertisements tell me which brand offers the features I am looking for in a product.	64	17	19
Advertisements keep me up to date with trends in the market.	86	6	8
Quality			
There is a need for better advertisements for most of the products.	77	12	11
Volume of Advertisements			
Advertisements tend to confuse people by presenting them with a wide variety of products of similar type.	63	19	18
Economic			
Advertisements lead to increase in price of the product /service offered.	66	20	14
Advertisements enhance competition in the market.	84	11	5
Hedonic			
Advertisements remind me of my past experiences.	42	24	34
Advertisements are a source of entertainment rather than a source of information.	55	23	22
Ethics			
Are cautionary statements displayed in the advertisements enough to prevent children from getting influenced?	29	11	60
Regulation			
There should be a ban on advertising harmful or dangerous products.	65	14	21
More government regulation is needed on advertisements.	62	17	21

Source: Constructed and response summarized by the authors of this article.

Factor one deals with the regulations pertaining to advertising. For this, most respondents agreed that 'there should be a ban on advertising harmful or dangerous products' with 65 out of 100, agreeing with this. Also, 62% were of the notion that 'there should be more government regulation on advertisements'. This displays that the students have a negative attitude towards certain advertisements. So, it could be comprehended that the advertisers should be careful about these aspects while creating advertisements so as to avoid the negativity of students. Also, the government should be more vigilant about these aspects.

Factor two describes how well the students regard advertising as a source of information. This factor

suggests that advertising is one way through which they gain information about the various products in the market. The research shows that 64 out of 100 students agree that 'advertisements tell them which brand offers the features they are looking for in a product'. Also, a majority of surveyed students (86%) believe that 'Advertisements keep them up to date with trends in the market'. From such results, it can be concluded that advertising can be used as one of the most important ways to update the students. Another conclusion that can be made is that advertisers should make the advertisements more informative as this is liked by the students.

Factor three discusses about ethical consequences of advertising on students. Under this, 60% of students disagree that 'cautionary statements displayed in the advertisements are enough to prevent children from getting influenced'. This response can be inferred as advertisers should be more responsible and ethical in conveying the cautions for children and others. Also, from the students' perspective, it can be inferred that while watching an advertisement, they perceive them from the ethical context too apart from the external features associated with the advertisement.

Factor four relates to the impact of increased volume of advertisements. The study concludes that there is an advertisement overload in current days. Out of 100, 63 students are of the opinion that they 'tend to get confused by being presented with a wide variety of products of similar type'. This again leads to a negative impact of advertising on the attitudes of students. The marketers should keep this in mind while designing the marketing strategy for their products.

Factor five pertains to the quality of advertising. About 77% of the total students surveyed for the study feel that current advertisements are not up to mark and agree that 'there is a need for better advertisements for most of the products'. This shows that the taste of students do not match with what the advertisers are portraying through their advertisements. This concludes that the advertising should be such as it is liked by the students and thus captures their attention and persuades them positively.

Factor six comprises the hedonic factors of advertising. Under this factor, the pleasure the students derive out of watching advertisements is described. 42% students feel that 'Advertisements remind them of their past experiences'. This depicts that they connect the advertisements with their personal lives. Also, 55 out of 100 students consider 'Advertisements are a source of entertainment'. This can be inferred as - more entertaining the advertisement, more appealing it is for the students. Considering this factor while designing advertisements can be useful for the marketing and advertising fraternity.

Factor seven includes the economic influence of advertisements, as perceived by students. 'Advertisements lead to increase in price of the product/service offered' is agreed by 66% of the total respondents. This shows that most of the students feel that the hefty cost of advertising the product and service is directly passed on to the customers, which thereby increases the price which they have to pay for it. Also, a widely held belief, by 84% of students, is that 'Advertisements enhance competition in the market'. Advertising being the most common method of promoting a brand or product is used by most of marketers. Thus, to fulfil a particular need, a student has options of many similar products.

Managerial Implication

Students comprise the most important target segment for most of the advertisers. Integrating it with the fact that in the current scenario they have high purchasing power and ample information and options at their disposal, it is extremely important for advertisers to understand the real factors which impact students. This study can enable brand managers to design marketing strategies that positively influence the attitudes of students. Certain aspects of the study can help advertising agencies to capture the attention of its target audience.

With the results drawn out from the analysis, it can be observed that there are various factors which impact the attitude of students and their general beliefs. To cite a few, most of the students from the sample strongly agree with the fact that government regulations should be more stringent. However, advertisements are considered as the best source of information. Efforts could be aligned with making advertisements more effective in conveying the message. Focusing on the attitude of Indian students in general, it is observed that they try to connect the plot of the advertisements with the values inculcated within them since childhood. Hence, the concept and storyline could be given a personal touch, positioning it high on the emotional quotient of the audience.

Today's students are exposed to various case studies that discuss business practices followed by companies in the context of ethical consequences associated with them. Thus, it can be seen that the ethical dimension of advertising plays a very significant role in the minds of students since they have reached young adulthood during a period when many high profile businesses have faltered on ethical grounds. It is imperative in this context to conclude that effective corporate governance can lead to better advertising strategies which are economically, socially and ethically grounded.

Limitation

The study was limited to assessing a small sample of students. It can also be further extended for a comprehensive understanding of a few more factors which might have been out of the scope of this study. By broadening the sample size, it might help to identify various other factors that successfully convert a potential consumer who is impressed by an advertisement to a consumer who purchases the product.

ANNEXURES

Questionnaire used to determine the attitude of students towards advertising:

Survey for Research

Following are a few questions that would help us in our academic project. Please take a few minutes to fill the same! :)

From Question No. 6 onwards, kindly click the button corresponding to the number that suits your response wherein:

1 : Strongly Agree

2 : Agree

3 : Somewhat Agree

4 : Neutral

5 : Somewhat Disagree

6 : Disagree

7 : Strongly Disagree

* Required

--- Top of Form ---

1. **Age: ***
2. **Gender: ***

   [   ]
3. **Course you are currently pursuing (Please mention your specialization, if any) : ***

   [   ]
4. **Current City: ***

   [   ]
5. **While watching any advertisement, which of the following grabs your attention the most? ***

   O   Brand

   O   Product/ Features

   O   Celebrities Endorsed

   O   Creativity

   O   Story Line

   O   Other: **[   ]**

7. **Advertisements tell me about the quality of products. ***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

6. **Advertisement is a valuable source of information about new products in the market.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

8. **Advertisements tell me which brand offers the features I am looking for in a product.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

9. **Advertisements keep me up to date with trends in the market.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

10. **Advertisements often persuade people to buy things that they really don't need or intend to buy.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

11. **I like to talk about advertisements with my friends.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

12. **There is a need for better advertisements for most of the products.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

13. **I am comfortable with watching all ads with my family.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

14. Advertisements tend to confuse people by presenting them with a wide variety of products of similar type.*

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

15. **Advertisements help raise our standard of living.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

16. Advertisements lead to increase in price of the product/service offered.*

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

17. **Advertisements enhance competition in the market.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

18. **Advertisements remind me of my past experiences.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

19. **Advertisements are a source of entertainment rather than a source of information.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

20. **There is too much of exaggeration in advertisements today.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

21. **Advertisements present a true picture of the product advertised.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

22. **There should be less stress on sex in advertisements.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

23. **Advertisements should be more realistic in nature than being too superficial.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

24. **Are cautionary statements displayed in the advertisements enough to prevent children from getting influenced?***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

25. **There should be less advertising.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

26. **There should be a ban on advertising harmful or dangerous products.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

27. **More government regulation is needed on advertisements.***

	1	2	3	4	5	6	7	
Strongly Agree	O	O	O	O	O	O	O	Strongly Disagree

-- Bottom of Form --

From 100 samples, division of responses based on various demographic factors are:

Gender

Female 39%

Male 61%

Age Group

25+ 11%

Below 20 11%

20-25 78%

Educational Course Pursued

- 23% B.Tech/B.E./Architecture
- 14%
- 45%
- 17%
- 1%

Legend:
- B.Tech/B.E./Architecture
- M.Tech/M.e./M.Sc./MS
- MBA
- MBBS
- CA

Aspects of Advertisements that grab students' attention:

Values: 1, 12, 7, 17, 47, 16

Legend:
- Brand
- Celebrities Endorsed
- Product / Features
- Creativity
- Storyline
- Ingredient
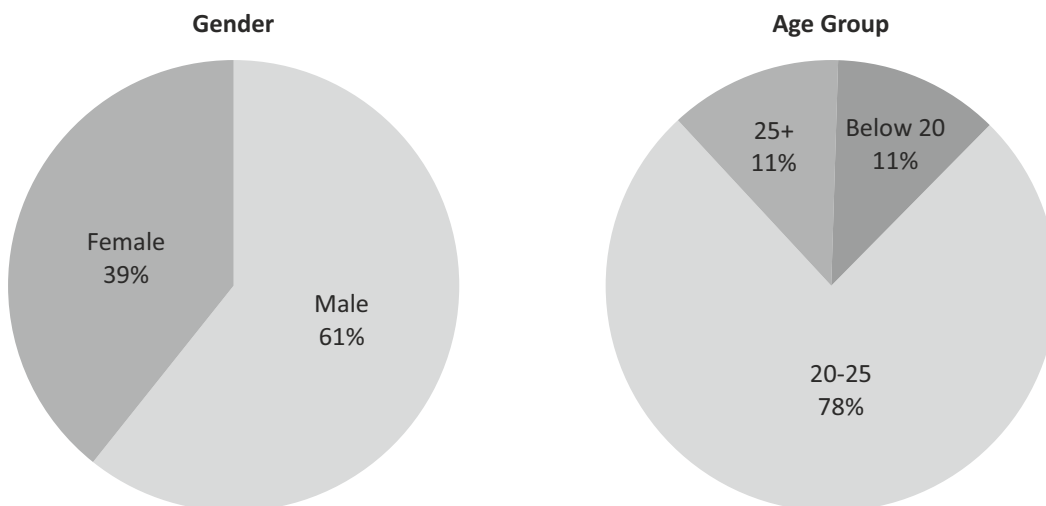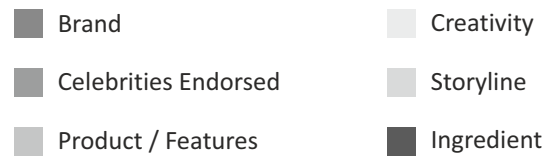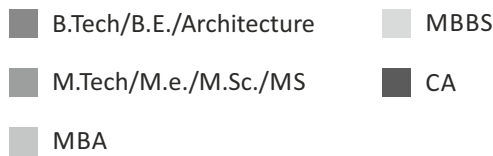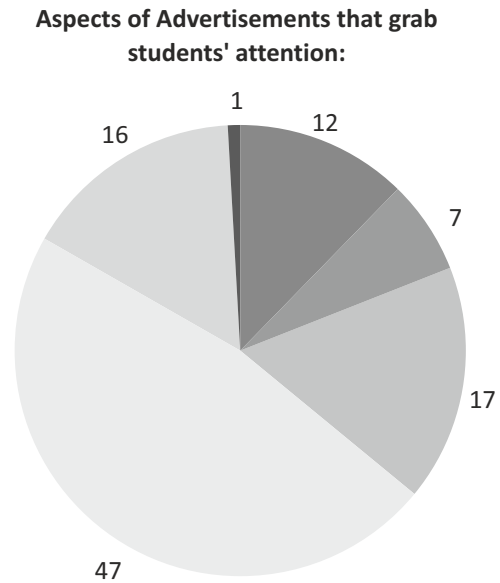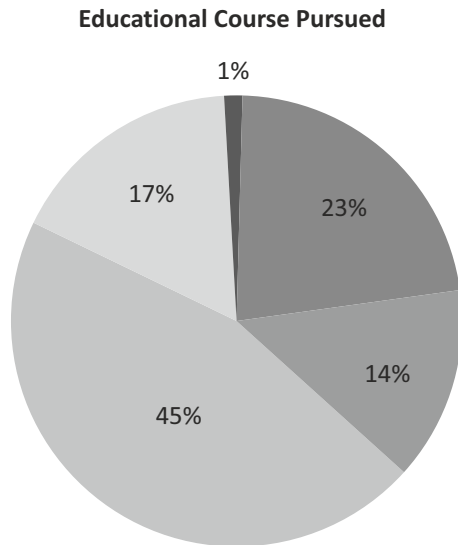
Table to determine factors with the help of Factor Analysis:

Rotated Component Matrix							
	Component						
	1	2	3	4	5	6	7
Ad Valuable	0.180	0.469	0.111	-0.028	0.109	-0.537	0.251
Adv quality of products	0.056	0.450	0.409	-0.016	-0.481	0.217	0.038
Adv brand features	0.104	0.689	0.086	0.314	-0.177	-0.008	-0.058
Update with market	0.066	0.777	0.007	0.021	0.169	-0.078	-0.030
Adv persuading people	0.247	0.163	-0.038	0.553	-0.143	0.312	0.301
Talk adv with friends	-0.316	0.517	0.057	-0.037	0.189	0.394	0.131
Need for better ads	0.095	0.117	-0.018	0.079	0.829	0.126	0.091
Watching with family comfort	-0.156	-0.323	0.13	0.192	-0.157	0.155	0.564
For confusion because of variety	-0.003	-0.003	0.006	0.811	0.31	-0.077	0.119
Standard of living	0.307	0.265	0.599	-0.17	-0.154	0.147	0.139

Increase in price of product	0.362	0.001	-0.001	-0.027	0.205	-0.131	0.625
Enhance competition	0.001	0.403	-0.039	0.171	0.298	0.097	0.610
Past experiences	-0.117	0.262	0.239	0.106	0.198	0.691	-0.159
Source of entertainment	0.119	-0.175	-0.07	-0.018	-0.041	0.666	0.271
Exaggeration in ads	0.637	-0.031	-0.176	0.264	0.146	0.093	0.245
Present true picture	-0.362	0.081	0.695	0.185	-0.173	0.046	0.034
Less stress on sex	0.429	0.150	0.233	0.633	0.041	0.028	-0.059
Realistic ad needed	0.429	0.058	0.033	0.192	0.591	-0.027	0.140
Cautionary statement	0.024	-0.083	0.828	0.068	0.157	-0.083	-0.050
No. of ads should be less	0.479	-0.427	-0.054	0.306	0.064	0.183	0.065
Ban on hazardous products ad	0.743	-0.023	-0.013	-0.086	0.172	-0.141	0.042
Govt regulation	0.710	0.286	0.121	0.268	-0.074	-0.031	-0.078

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

a. Rotation converged in 14 iterations

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Brand Architecture Strategy of Knitwears:
An Exploratory Study of the Ludhiana Cluster

Dr. Sanjeev Sharma

Abstract

The Ludhiana knitwear industry is one of the biggest clusters of knitwear units in Asia. But it is lacking in consistent high quality image building for both domestic and international markets. An individual company's brand was just an incidental choice without any loyalty attached to it. The conventional insight is that the traditional branding is wounded and dying at the feet of innovative modern branding concepts because of competitive advantages and consistently changing customer needs. The basic branding strategy has revolved around researching consumer attitudes, requests and identifying un-met needs. They are able to come up with modifications to existing products that appeal to different segments or market niches. Finally, they have come through the progression of a new product development, packaging, logo , design, positioning and promoting their product with the help of brand architecture strategy. The present study is an attempt to visualize the various brand architecture strategies followed by knitwear manufacturers of the Ludhiana cluster.

Keywords: Brand Strategy, Cluster, Brand Orientation and Brand Architecture

Introduction

The knitwear industry all over the world is at the threshold of far-reaching institutional changes. Over the past three to four decades, trade dynamics, especially price and quantitative restrictions have come to play a major role in the patterns of the sector's development. The removal of quantitative restrictions has brought major challenges. It has thrown open both the opportunities and threats, especially for the low-income economies seeking to industrialize through promotion of the garment sector. Approximately 95 per cent of the woollen needs of the country are met by the Ludhiana cluster. The sector contributes about 14 per cent to industrial production, 4 per cent to the gross domestic product (GDP), and 11 per cent to the country's total export earnings of which 45 per cent comes through the share of knitted garments.

There is a common feeling in the cluster that a shared vision is missing within the cluster. The existing infrastructure available in the cluster is being mainly used for non-industrial purposes to earn revenue and sustain it. A large number of units produce quality knitwear but they have not yet branded their products. Many of these companies undertake fabrication for other brands. A year-on-year growth rate of the branded knitwear market projected a growth rate of 25 per cent in the next five years.

Robert Pringle established Pringle of Scotland in 1815 in the Scottish border. It is the first known brand in the history of knitwear. Competition is very fierce with import causing knitwear prices to fall and forcing the knitwear manufacturer to look at new ways to differentiate their products. Thus the focus is shifted to promote brands, pioneer designs and new manufacturing techniques. The essence of garment branding is to develop a plan of action that will make a product the only solution to its targeted customers. The brand should amplify the image of Ludhiana as suppliers of quality, eco-green and a reasonable deal of knitwear products. This strategy will enable the knitwear units to come out of the shackles of contractual producers and provide them with an opportunity to promote their own business. It will help to project this industry in a positive sense.

Review of Literature

Branding has been extensively studied and a plethora of literature is available, analyzing it from various perspectives. Fisher (2005) has illustrated five key factors such as creating, managing, differentiating, creating added perception for the service market and maintaining a client base while attracting new clients. Narang (2006) has suggested that majority of the buyers get to know about the brand through print, broadcast or outdoor media. Sadeed and Vinayek (2008) have studied rebrand as an emerging marketing strategy. Baltas and Saridakis (2009) have made insights into the effects of brand name, segment differences and product characteristics and its implications on determining the price structure of the product. Ramesh (2011) examined consumer loyalty programmes and marketing strategies. Merabet and Benhabib (2012) have analyzed that the understanding of branding, advertisement, processing and buying decision making is necessary for the definition of consumer oriented branding strategy. Mohan and Sequeira (2013) examined the relationship between brand equity and business performance in fast moving consumer goods industry. Forbes (2014)advocates that social media, content marketing, second screening, thought leadership and the demographic shift are just some of the many things that are challenging brands to think differently and brand strategy must be focused in this area. Srinivasan

& Susan (2015) studied the impact of brand strategy on stock risk as all stakeholders' interest is to maximize returns. For this purpose, the role of the brand becomes more significant as it contributes to the market discipline by framing brand decision in risk management terms.

Objective of the Study

The knitwear industry in Ludhiana is characterized by diversities in terms of size, nature of products, technology and the type of management. The object of the study is to study the brand architecture strategies being followed by the knitwear manufacturers of Ludhiana.

Research Methodology

Keeping in view the objectives of the study, exploratory research designs have been used for the study. In order to collect primary data for the study, a comprehensive questionnaire on various aspects of brand management, branding practices and strategies and other objects of study were developed by identifying variables from the literature reviewed.

Statements in the questionnaire were finalized after conducting a pilot survey on the 11 knitwear units in Ludhiana. The universe of the study is the knitwear manufacturers located in the Ludhiana knitwear cluster. Knitwear Club is the oldest recognized industry association of the knitwear units located in the Ludhiana knitwear cluster. There are 700 direct members of Knitwear Club, varying in size, technology, products and the nature of management. The members could be categorized on the basis of their manufacturing and sale of their own brands, or working for some other buyer. Further, these brands were domestic as well as international. They are classified into the following categories; Firms working on own brands (domestic and international market) named as Category-1.Firms working on own brands and for other domestic brands (domestic market) named as Category-2. Firms working on own brands and for other international brands (domestic and international market) named as Category-3. Firms exclusively working for international brands (international market) named as Category-4. The category-wise response rate is shown in Table1.

Table: 1

Sample Size and Response Rate of the Respondents

Category	Category 1	Category 2	Category 3	Category 4	Grand Total
Total No. of Firms	280	70	210	140	700
Sample Chosen	43	17	32	23	115
Responses	40	10	30	20	100
Response Rate	93.0 %	58.9%	93.8%	86.9 %	86.95%

(Source: Primary Data)

Limitation of the Study

The scope of the study was confined to the knitwear industry located in Ludhiana (Punjab) only. Therefore, general inferences cannot be drawn for the whole of India**.** As the industry under study is very old and highly unorganized, the secondary data specifically pertaining to information regarding accounting was not available.

Approaches to Branding Strategies

Analysis of company strategies revealed six models in the management of brand-product relationship.

1. **The Product Brand Strategy**

    It involves the assignment of a particular name to one, and only one, product as well as one exclusive positioning. The result of the model is that each product receives its own brand name that belongs only to it as shown in Exhibit 1.

The Product- Brand Strategy
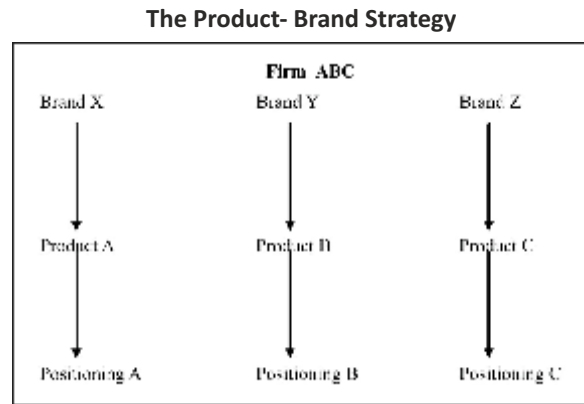
Exhibit 1

Table: 2

Name of the Firm	Brand Name
Jain Udhay International Pvt. Ltd	"Blue Mount, "Jus Juniors"
Polka Knitwears	Additions, Skyways
Tudor Knitting Pvt. Ltd.	Tom & Jerry, T 2 1Sports, Winterline
Amir Apparels & Fashions.	Pandoga, Khatoon
Venus Cotsyn (India) Ltd.	Venus, Versovia
Universal Sports Apparels	USA , Le Carlo
R.N. Oswal Hosiery Factory	Marrinder, CYN, Canvon
Jay Kay Wears Pvt. Ltd	JayKay, Casanova

(Source: Primary Data)

2. The Line Brand Strategy

This strategy involves the exploitation of a successful concept by extending it by staying very close to the initial product. This strategy reinforces the selling power of the brand and creates a strong brand image; examples are listed in Table 3.

Table 3

Name of the Firm	Brand Name	Specialization
Anuradha Woollen Mills	Jay Jay Classic	Men Women & Kids
Barclays Hosiery	Barclay	Men & Women
Laveena Hosiery (P) Ltd.	Kings Cross	Men & Women
Pahawa Hosiery (P) Ltd.	Dalsun	Men Women & Kids
Ziama Fashion (P) Ltd.	Ziama	Men Women & Kids

(Source: Primary Data)

3. Range-Brand Strategy:

This branding strategy covers a range of different products under a single brand name and promotes through a single promise of a range of products belonging to the same area of competence. In the range-brand architecture, products guard their common name. The brand can easily distribute new products that are consistent with its mission and fall within the same category. The cost of a new launch is very low. This is shown in Exhibit: 2.

Range Brand Formation
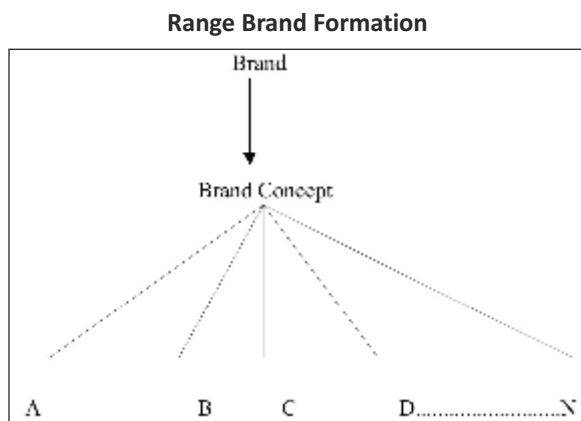
Exhibit: 2

The Duke Fashion (India) Ltd brand is run on the basis of range-brand strategy with its focus target audience being today's youth aspiring to be trendy and stylish. With the same brand name, the company sells men's, women's and kids' collections.

4. Umbrella Brand Strategy

Under this strategy, the same brand supports several products in different markets. Each product retains its own generic name. Even an occasional setback can add to public awareness of the brand. This is shown in Exhibit: 3.

Umbrella Brand Strategy

Exhibit 3

An umbrella brand strategy allows the core brand to be nurtured by association with products with which it was not previously associated. Brand "Neva" owned by Neva Garments Ltd. is managed on the umbrella brand strategy basis. This brand name supports the company's knitwear products for men, women and kids. The knitwear products include blankets, quilts, track suits, night suits and inners for all age groups.

5. Source Brand Strategy

This branding strategy is identical to the umbrella brand strategy except for one key point i.e. products are now directly named. The limit of the source brand lies in the necessity to respect the core, the spirit and identity of the parent brand as shown in Exhibit: 4.

Source Brand Strategy
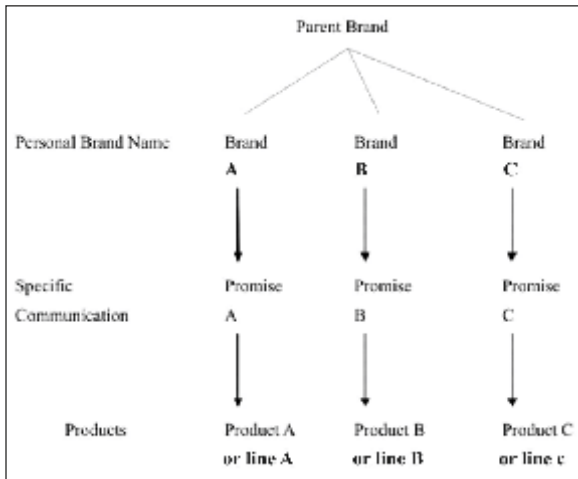
Exhibit 4

In the Ludhiana knitwear cluster, the Nahar Group of Companies followed the source-brand strategy. For the domestic market, the company launched the "Monte Carlo" brand, the first truly international range of designer knitwear followed by another prestigious brand "Canterbury". Both these brands have exclusive positioning but are strongly supported by the parent brand "Oswal".

6. Endorsing brand Strategy

The endorsing brand gives its approval to a diverse range of products grouped under product brand, line brand or range brands. Under this strategy, the endorsing brand is placed lower down because it acts as a base guarantor as shown in Exhibits: 5.

Endorsing Brand Strategy
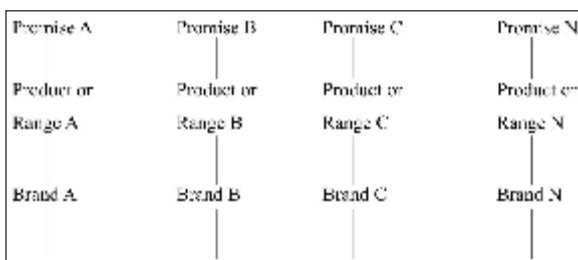
Exhibit 5

Blueman Hosiery Pvt. Ltd. is a Ludhiana based company, producing woollen jackets. It has promoted two brands namely "X Age" and "Blueman Jr". These brands have virtually taken over its new market share and have developed market respect by promising and delivering products as per customers' aspirations. "Blueman" the main brand, has taken a backseat but acts as a guarantor of these promoted brands.

Implications of Brand Architecture Strategy

Branding consists of transformation of the product category. It is a direct consequence of strategy of market segmentation and product differentiation. It precisely defines what attributes are adopted and what competitive advantages are created. This cluster is the largest contributor to meet nation's demand of knitted garments. So it is critical to re-look at the consumer and refresh understanding to fine tune the marketing strategies. Therefore, this industry is now switching over to a professional approach in building and managing branding strategy.

Conclusion

The choice of brand policy is not a stylistic exercise, but more a strategic decision aimed at promoting individual products and ranges, as well as capitalizing the brand in the long term. Knitwear is an emerging and a fast growing segment of Indian garment export as compared to other segments. Conscious strategy to work with brands both intrinsically and extrinsically is needed due to fast growing pace of globalization. The superiority of a product is no longer a competitive advantage to capture market share; instead, an increasing interest in branding and e-branding has taken its place to some extent. Thus branding strategy should be based on product performance, delivery performance, support service performance and customers' satisfaction in terms of meeting their trust

and commitment. It will help them to form a brand strategy based on product performance, customer behaviour and the firm's competitive position.

Scope for further Research

The present study is restricted to knitwear manufacturers based in Ludhiana only. A further study can also be conducted for other knitwear centres in the country, the area which has been left out of the scope of the present study. An extended geographical coverage, particularly outside the country, shall help in identifying the inadequacies and sources of gaining competitive advantage for the knitwear manufacturers in Ludhiana. There is ample scope for extending the study to other stakeholders as well.

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The Mediating Role of Employee Engagement in the Relationship between High Performance Work Practices and Job Performance

Dr. Naval Garg
Dr. Brij Sharma

Abstract

Modern organizations bank upon High Performance Work Systems to optimize the potential of their human resources. Drawing upon Job Characteristics Theory (Hackman and Oldham, 1975) and Social Exchange Theory (Blau, 1964), the present study explores the direct effect of HPWPs (High Performance Work Practices) on job performance and the indirect effect through mediation of employee engagement. This paper studies HPWPs through three variables i.e. employees' awareness level, availability of HPWPs and employees' perception regarding effectiveness of HPWPs. Path model has been developed and analyzed using Amos. Full mediation effect of employee engagement is observed. HPWPs and job performance are also found to be highly correlated. Practical significance, limitations and scope for future research have also been discussed.

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The Mediating Role of Employee Engagement in the Relationship between
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Introduction

The concept of human resource innovation and reengineering got a strong up-thrust with the emergence of High Performance Work Systems. The first decade of the twenty-first century has witnessed an extraordinary growth in the amount of human resource literature investigating the nature of High Performance Work Practices (HPWPs) and their impact on employee and organizational outcomes. The positive outcomes identified include productivity gains, profitability, low staff turnover, better teamwork, enhanced training and skills, greater staff commitment and higher earnings for employees. HPWS leads to a 'win-win' scenario (Rousseau, 1995). US studies found that while employers gained improved product quality, productivity and profitability, employees benefited from higher levels of wages and job satisfaction (Ichniowski et al., 1997; Appelbaum et al., 2000).

Punia and Garg (2014) introduced three important variables that must be considered for successful implementation of any high performance system. The variables are employees' awareness of HPWPs, availability of HPWPs and employees' perception regarding effectiveness of these practices. However, a direct impact of these three variables with performance remains to be investigated.

Further, the social exchange and job characteristics theories explain the route through which HR practices result in a high level of performance by the employees. Both theories directly or indirectly state employee engagement as a mediating variable. While the social exchange theory directly considers employee engagement as a mediator, the job characteristics theory indirectly assumes so. The present paper also explores these assumptions i.e. mediating effect of employee engagement in the relationship between HPWPs and Job Performance. A brief description of the theoretical background, previous studies and hypotheses development is given herewith.

THEORETICAL BACKGROUND AND HYPOTHESES

HPWPs and Job Performance

There is ample empirical evidence about the impact of HPWS on productivity and profitability of employees (Kuhlmann, 2004). High Performance Work Practices have been found associated with increased organizational agility and innovativeness (O' Regan, 2011), which are key ingredients of performance excellence. A systematic implementation of high performance work system through restructuring of the whole work system and not individual HR practices is a key element to achieve positive effects linked with greater work place efficiency (Appelbaum et al., 2000). Darr et al. (2014) stated that proper implementation of HRM practices makes employees motivated which result in improved organizational performance. Karapteet al. (2014) concluded that HPWPs may lead to creativity, performance and loyalty among employees. Another set of researchers have argued that one way to increase employee work outcome is through enrichment of the job. HPWS includes three fundamental concepts- enriching the job, empowering the employees and streamlining the work process. The theoretical basis for enrichment efforts of jobs is the Hackman and Oldham's (1975) job characteristics theory. The theory states that higher work performance and work motivation could be achieved through designing the job in a way that it maximizes (1) skill variety; (2) task identity; (3) task significance; (4) autonomy and (5) feedback. Wood (1999) concludes that these practices concentrate on empowering and enriching employees through increased information flows and devolution of decision making. Thus they are

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associated with increased productivity and loyalty of the employees. Other scholars like Ichniowski et al. (1999), Arthur (1994), Huselid (1995), MacDuffie (1995) have also hinted at a positive relation between HPWS and employees' productivity and performance. Thus, it is likely that high performance work practices have a greater positive impact on performance of the employees. The present paper explores three dimensions of HPWPs - employees' awareness level, availability level of HPWPs and employees' perception regarding effectiveness of HPWPs. The presence of HPWPs has been studied in previous studies but this paper investigates the relationship between awareness and the level of effectiveness with job performance as suggested by the following hypotheses.

Hypothesis 1: *Higher awareness of employees has a positive impact on their performance.*

Hypothesis 2: *Greater availability of HPWPs leads to higher level of work performance.*

Hypothesis 3: *Employees' perception has a positive impact on job performance of the workers*.

HPWPs and Employee Engagement

Previous researchers have highlighted the positive alliance of implementation of various human resource practices with engagement level of the employees. Masroor and Fakir (2009) conducted a research on nurses of Malaysia. The study revealed that with effective use of HRM practices, the level of intention to leave the job is considerably reduced. HRM practices are viewed by employees as a 'personalized' commitment of the organization towards them. This systematic organizational effort for the betterment of employees is reciprocated to the organization by employees through positive attitudes and behavior (Hannah and Iverson, 2004). The Social Exchange

Theory (Blau, 1964) provides a strong basis for this relationship. HR practices increase employee participation, team building and total quality management that results in lower turnover intention and increased satisfaction and engagement of the employees (Huselid, 1995, Pfeffer, 1994, Cho et al., 2006). Further, contemporary research work on HPWS reveals that organizations offer resources and opportunities that improve the motivation, skills, attitudes and behaviors of their employees (Kuvaas, 2008), hence involvement and commitment of employees increases (Takeuchi et al., 2007). Owing to a strong relationship between performance practices and employee engagement, these practices are also known as 'high commitment' or 'high involvement' practices. Guthrie et al. (2009) concluded that HPWS results in high labor productivity and lower labor costs. Wright et al., (1994) regarded human resource practices as an instrument through which employees' perceptions, attitudes, and behaviors could be guided. Hence, they affirmed that the role of human resource practices in enhancing employee engagement cannot be overlooked. Another line of thought found inconclusive evidence between the two variables. Sgobbi and Cainarce (2015) found that the relation between HPWPs and employee involvement are inconclusive unless the structures of the HPWPs and the mechanisms supporting employee involvement are taken into account. The authors argued that HPWPs are associated with higher wages for core employees only when practices align with an ideal type. Also HPWPs could result in higher wage equality only when they emphasize training, competence enhancement, and power delegation. Although the relationship between HRM and employee engagement is studied in great depth, the study of correlation between HPWS and engagement level is still at a nascent stage. The following three hypotheses

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tend to explore this hidden area of investigation.

Hypothesis 4: *Higher awareness of employees has a positive impact on their level of engagement.*

Hypothesis 5: *Greater availability of HPWPs leads to higher level of employee engagement.*

Hypothesis 6: *Employees' perception has a positive impact on their level of engagement.*

Employee Engagement and Job Performance

Employee engagement comprises of cognitive, emotional, and behavioral components that are associated with individual role performance (Saks, 2006). Enhancing engagement creates a compelling competitive advantage for the organization and offers better opportunities to employees to perform (Shuck *et al.*, 2011). A higher level of engagement gives an impetus to employee effectiveness, innovation and competitiveness (Welch, 2011). According to the Job Demands – Resources Model, work engagement has a positive impact on job performance and employees. Employees who are engaged and perform well are able to create their own resources, which then foster engagement again over time and create a positive gain spiral (Bakker and Demerouti, 2008). Job engagement is significantly positively related to job satisfaction, organizational commitment and organizational citizenship behavior (Saks, 2006). Shuck et al. (2011) conducted a study among workers in the service, manufacturing, professional and non-profit industries. They conclude that engaged employees perform better than their less engaged counterparts because they are more immersed in their work and they cerebrate more about their work, which helps them to produce innovative solutions. Employee engagement is a major driver to innovative work behavior (Slattenand and Mehmetoglu, 2011). Research shows that high levels of engagement are negatively related to burnout and positively associated with well-being of employees (Bakker et al 2008; Schaufeli and Bakker 2004). Ahmad et al. (2014) found a strong association between high involvement management and employees' performance. Thus it is likely that employee engagement has a positive impact on performance level of the employee as suggested by the following hypothesis.

Hypothesis 7: *Employees' engagement has been positively related with their performance.*

Mediating Effect of Employee Engagement

The mediating effect of employee engagement within the practices-performance causal linkage is based on two broad theoretical arguments. The first is the 'high involvement' (HI) perspective. The high involvement perspective states that HPWPs affects workers' performance through empowerment, ownership of decisions, job autonomy/discretion and participation. Researchers have indicated that although HI practices vary greatly in their emphasis and implementation, the bundle of practices tend to leverage productivity of workers by engaging workers in a more responsible as well as more responsive manner. The overall impact is engaged and smarter workers (Becker and Gerhart, 1996; Whitfieldand Poole, 1997). Thus high involvement perspective states with institutionalizing HPWS leads to engaged and involved employees and hence, their job performance increases.

The second theoretical argument is the 'High Commitment' (HC) approach. This approach explains the practice-performance linkage through a 'cultural/motivational' perspective. The approach states that workers' performance is augmented from loyalty and sharing of organizational goals and also from synchronization of personal and organizational pursuits. A greater level of performance is derived

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from highly committed and motivated employees. The consequence is reduced labor turnover and absenteeism, greater workforce flexibility, higher levels of retention, utilization and development of skills among the workforce. A sub-group of research on organizational social climate examines the connection between practice that enhances employee commitment and motivation with employee performance (Bowen and Ostroff, 2004; Collins and Clark, 2003; Tsui et al., 1997). This group of research observes that 'high commitment practices' have a series of impacts that run from HPWPs to social climate at work (e.g. higher trust, cooperation, shared behavioral code, values and culture); then from social climate to personal attitudes and performance (e.g. greater teamwork, participation, exchange and synergy of knowledge and skills) to organizational performance (e.g. sales and quality of service). Collins and Smith (2006) found that commitment-based human resource practices, when implemented within the above approach, could lead to higher financial performance. High involvement and high commitment are two basic constructs of employee engagement. Thus employee engagement is likely to mediate the relationship between HPWPs and job performance, as suggested by the following hypotheses.

Hypothesis 8: Employee engagement mediates the relationship between awareness level of HPWPs and job performance.

Hypothesis 9: Relationship between availability level of HPWPs and job performance is mediated by employee engagement level.

Hypothesis 10: Employee engagement mediates the relationship between employees' perception for HPWPs and job performance.

Research Framework

The main aim of the present research is to explore the mediating effect of employee engagement in relationship with HPWPs and job performance. The research setting for this empirical analysis is manufacturing and service companies located in National Capital Region (NCR), India. The framework is considered an apt one to analyse the association between employees' awareness and perception for High Performance Work Practices and its effects on job performance. NCR is the hub of MNCs that places ample emphasis on high performance practices and the ripple impact could be observed in other firms of the area too.

Data Collection and Sample:

Random sampling has been used to collect data from various organisations. The industries mainly include banking, insurance, textile, BPO, sugar, shoe, consultancy, cold drink, rice, etc. situated in NCR. The sample size is 210 respondents. Employees were taken from top and middle levels as they are more likely to encounter HPWPs. For analysis purposes, it has been strictly ensured that an array of manufacturing, service, private, public, Indian and foreign companies are approached. Further, it has been ensured that data has been obtained from all categories like men, women, highly experienced to less experienced ones, aged personnel to fresh recruits, etc. Respondents were approached by three methods of primary data collection. Employees of various organisations were contacted either by the authors or through any known person or via email. Respondents' anonymity and confidentiality were guaranteed by assuring them that the authors would keep the data confidential and not release it in the public domain to avoid detection of any specific employee or organisation. A response rate of 55 per cent completed questionnaires was received

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via email. Reminder emails were used as a method to improve the response rate. Healey (1991) proposes that a response rate of 50 per cent is acceptable (Saunders et al., 2000). The sample of 210 comprises of 82 respondents from Public Sector Units (PSUs) and the remaining from private companies. Further, the sample size consists of 126 respondents from the services sector and the remaining 84 from the manufacturing sector. Female respondents comprised of 49.5%, which means 104 of the total respondents, and male employees contributed 51.5% that is 106 of the total respondents. The study revealed that out of the total sample surveyed, 11.91% of them were below the age of 25 years; 44.7% of respondents were within the age category of 26-35 years; 19.5% were within the age range of 36-45 years; 14.20% were within the age group of 46-55 years and the remaining 9.52% were above the age of 55 years. Majority of the survey's participants (38.09%) have been employed for more than 5 years. 33.33% of employees had 5-10 years of work experience while 28.52% had more than 10 years of work experience. 57.10% of respondents were graduates. Out of 200 respondents, 70 were under-graduates and only 20 were post-graduates.

The study is based upon an exploratory-cum-descriptive research design. Primary data is collected through a structured questionnaire consisting of 35 HPWPs. Part A of the questionnaire captures the respondents' demography such as age, gender, work experience and educational qualifications, and has been analysed using descriptive statistics. Part B and Part C consist of 35 HPWPs questions. Part B measures employees' awareness for HPWPs and Part C assesses workers' perception regarding effectiveness of HPWPs. Five-point rating scales ranging from highly available to unavailable and from highly effective to ineffective have been used. Part D explores the

availability of HPWPs through a five-point rating scale ranging from 'unavailable' to 'highly available'. Part E investigates the employee engagement level with the help of 72 statements. The main constructs of employee engagement were work environment (14 statements), leadership and direction (11 statements), relationship with immediate seniors and co-workers (14 statements), compensation programme (4 statements), job security and career development (7 statements), policies and work procedures of the company (6 statements), work-life balance (6 statements), and workplace well-being (10 statements). Part F explores the job performance of the employees with the help of 20 statements.

Design and Procedure

Mediation is studied through two methods i.e. through Structure Equation Modelling using AMOS and through procedure adopted by Baron and Kenny (1986). Baron and Kenny (1986) suggested five steps to study the effect of mediation of any variable.

1) The first step establishes the direct effect that may be mediated by the mediator. The effect of independent variable (X) on dependent variable (Y) is depicted through the following regression equation.

$Y = \alpha_1 + a X + e_1 (Direct\ effect)$

2) The effect of independent variable on mediating variable (M) is observed through the following regression equation.

$M = \alpha_2 + b X + e_2$

3) The effect of mediating variable (M) on dependent variable (Y) is observed through the following regression equation.

$Y = \alpha_3 + c M + e_3$

4) The independent variable is controlled to establish the relationship of the dependent variable with the mediating variable that is not on account of

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the independent variable.

$$Y = \alpha_4 + d\,X + e\,M + e_4$$

5) The equation in step 4 is used. The relationship of the dependent and independent variables is observed after controlling the moderating variable. The mediating effect is present if d is significantly less than a. And if d=0 then the complete mediation is present.

6) The significance of the mediating effect is tested using the Sobel test. The mediating effect is equal to a–d or b*c. If z-value exceeds the critical value (±1.96) at 95% level of significance, then one can reject null hypothesis (Implied in the Sobel test) i.e. there is no mediating effect.

The Sobel test assumes normal distribution of the data. Preacher and Hayes (2004) recommended the bootstrapping method to overcome this debatable assumption. A confidence interval is derived using the bootstrapping sampling distribution method.

Another method to test the effect of the mediating variable is structural equation modelling (SEM) using AMOS. Bryne (2001) stated that SEM is increasingly becoming popular for modelling the relationship between observed and latent variables. The methodology developed by Rai and Singh (2013) has been used herewith. The fit of the model is seen from two aspects: overall and relative fit. Two measures of overall fit are chi-square and Standardized Root Mean Residual (SRMR). Chi-square tests that factor loading, factor variance/covariance and error variance specifications are valid for the model. SRMR is the average difference between predicted and observed variance and covariance in the model. Its value ranges from 0 to 1 and a well fit model has a very low value (less than 0.05). Two other measures are used to access relative fit - Tucker Lewis Index (TLI) and Root

Mean Square Error of Approximation (RMSEA). A value less than 0.05 of RMSEA confirms good fit and value in the range of 0.05 to 0.08 indicates reasonable fit. Values between 0.08 and 0.1 show mediocre fit and value greater than 0.1 signifies poor fit. TLI ranges from 0 to 1 and a higher value (close or above 0.95) indicate good fit.

In SEM, the relationship of dependent and independent variable is adjudged through critical ratio. Critical ratio is calculated by dividing unstandardized estimate of regression coefficient with its standard error. The direct effect is statistically significant if probability value of critical ratio is less than 0.05. Mediating effect is present if presence of mediating factor decreases the direct effect of the independent variable on the dependent variable. Significance of mediating effect is studied by comparing two models - model one, when regression weight of independent variable on dependent variable is freely estimated, and in model two, regression weight is taken as zero. The difference of chi-square in these two models is observed. A low value indicates partial mediation while zero difference highlights complete mediation.

The same methodology has been adopted by various researchers to explore the mediation effect of a variable. A few noted scholars of the field are Darr et al (2014), Jiony et al (2015), Karapte (2014), Sgobbi and Cainarca (2014) and Ahmad (2014). The researchers have claimed that regression analysis is one of the good methods for mediation analysis. Any deviation on impact of independent variable on dependent variable due to addition of mediating variable is a clear sign of mediating effect. The method is easy to understand and the results are also simple to comprehend. Further structure equation modelling is

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increasingly becoming popular for data analysis. Rai and Singh (2013) are among the pioneers who elaborated a sequence of steps to explore mediation effect. The basic theme of both methods (regression and SEM) is somewhat similar. SEM uses two models i.e. when regression weight is freely estimated and secondly when regression weight is taken as zero. The first model is equivalent to the situation when regression analysis is done without introducing the mediator and the second model indicates the scenario of the regression equation after the introduction of the mediator variable. Thus both methods are appropriately selected in the present study.

RESULTS

Table-1: Direct Effect of Employees' Awareness of HPWPs on Job Performance

Model – 1				
Awareness Level →0.782→ Job Performance				
AMOS RESULT (N=208) Regression Weight	Unstandardized Estimate	S.E.	C.R.	Standardized Estimate
Job Performance Awareness Level	0.857	0.140	6.121[*]	0.782
Selected Fit Measures	Chi-Square Diff.	SRMR	TLI	RMSEA
	16.257	0.0374	0.984	0.048

*Significant at p<.05

Table-1 shows support for hypothesis 1 that awareness level of employees has a positive impact on performance of the employees. The result of the structured equation model (Table-1) states that the critical ratio is significant at p< .05 which means job performance is statistically positively correlated with employees' awareness level. The model of fit is also good as value of Chi- square at 7 degrees of freedom is 16.257 which is again significant at 95% degree of significance. Value of SRMR and RMSEA is less than 0.05 and that of TLI is above 0.95, which confirms model fit.

Table-2: Direct Effect of Availability Level of HPWPs on Job Performance

Model – 2				
Availability Level →0.624→ Job Performance				
AMOS RESULT Regression Weight	Unstandardized Estimate	S.E	C.R	Standardized Estimate
Job Performance ← Availability Level	0.712	0.121	5.88[*]	0.624
Selected Fit Measures	Chi-Square Diff.	SRMR	TLI	RMSEA
	12.311	0.0478	0.99	0.039

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Table-2 represents the result of SEM of availability of High Performance Work Practices and job performance. Significant value of critical ratio at 95% degree of significance states that job performance may be induced significantly by the level of availability of high performance practices. Value of chi-square (12.311 with degree of freedom as 6) is statistically significant which means model is fit. Values of SRMR, TLI and RMSEA also confirm the same.

Table-3: Direct Effect of Employees' Perception regarding Effectiveness on Job Performance

Model – 3				
Effectiveness Level —— 0.702 ——▶ Job Performance				
AMOS RESULT Regression Weight	Unstandardized Estimate	S.E	C.R	Standardized Estimate
Job Performance Effectiveness Level	0.841	0.115	7.313[*]	0.702
Selected Fit Measures	Chi-Square Diff.	SRMR	TLI	RMSEA
	12.301	0.0249	0.95	0.047

Table-3 highlights the result for the third model. Third hypothesis is accepted here which means employees' perception for HPWPs is positively associated with performance of the employees. Critical ratio is found to be significant at 99% degree of significance. Value of Chi square and other parameters like TLI indicates model fit. The first three hypotheses are accepted and the direct effect of awareness, availability and effectiveness levels with performance is proved herewith. Further, the indirect effect is analyzed through two methods: via SEM and via correlation.

Table-4: Mediating Effect of Employee Engagement (Awareness Level and Job Performance)

Model – 4				
Awareness Level —0.841→ Employee Engagement —0.736→ Job Performance (0.002).782				
AMOS RESULTS Regression Weight	Unstandardized Estimate	S.E	C.R	Standardized Estimate
Engagement ← Awareness Level	0.854	0.119	7.177	0.841
Job Performance ← Engagement	0.803	0.154	5.214	0.736
Job Performance ← Awareness	0.0024	0.0016	1.502	0.002
Selected Fit Measures	Chi-Square Diff.	SRMR	TLI	RMSEA
	15.311	0.0420	0.91	0.039

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SPSS RESULTS		Coefficient	S.E	T-value	
Equation 1		0.869	0.128	8.35	
Equation 2		0.910	0.214	9.63	
Equation 4 (X constant)		0.887	0.110	10.33	
Equation 4 (M constant)		0.114	0.123	1.24	
Indirect Effect and significance					
Sobel		Value	S.E	Z Value	
		0.725	0.217	4.32	
Bootstrap Result (Number of bootstrap samples= 2000)					
	Mean	S.E.	LL 95% CL	UL 95% CL	LL 99% CL	UL 99% CL
Effect	0.896	0.352	0.524	1.024	0.426	0.982

Table-4 represents the result of the structured equation modeling and of mechanism adopted by Baron and Kenny (1986) to study the mediation effect. Awareness level for high performance practices is found to have a positive impact on employee engagement (Critical value= 7.177 which is significant at 95% level of significance). Hence, hypothesis no 4 is accepted. Similarly the seventh hypothesis is also validated which means employee engagement is significantly associated with job performance. Furthermore, employee engagement is found to have complete mediating effect on relationship of awareness level and job performance. Also the association between awareness level and job performance is found to be statistically insignificant in the presence of engagement level. Chi square value of 15.311 with 8 degrees of freedom is significant for $p<.01$; thus the model is fit. SPSS results also confirm that engagement has complete mediating effect as T-value is insignificant when engagement level is taken as constant. Further, the Sobel test is applied to check significance of mediation effect. Z-value is significant for $p<.05$ which means mediation effect is significant. Mean value comes within confidence interval derived through boot strapping for both $p>.05$ and for $p<.01$. Thus the debatable assumption of normal distribution is also discarded here.

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Table-5: Mediating Effect of Employee Engagement (Availability Level and Job Performance)

Model – 5

Availability Level → 0.898 → Employee Engagement → 0.736 → Job Performance
Availability Level → (0.001).624 → Job Performance

AMOS RESULTS Regression Weight	Unstandardized Estimate	S.E	C.R	Standardized Estimate
Engagement ← Availability Level	0.802	0.135	5.940	0.898
Job Performance ← Engagement	0.803	0.154	5.214	0.736
Job Performance ← Availability	0.000	0.214	000	0.001
Selected Fit Measures	Chi-Square Diff.	SRMR	TLI	RMSEA
	20.384	.003	.90	.054

SPSS RESULTS	Coefficient	S.E	T-value	
Equation 1	0.902	0.102	14.320	
Equation 2	0.752	0.357	11.685	
Equation 4 (X constant)	0.850	0.210	5.321	
Equation 4 (M constant)	0.211	0.178	1.002	
Indirect Effect and significance				
	Value	S.E	Z Value	
Sobel	0.862	0.475	5.236	

Bootstrap Result (Number of bootstrap samples= 2000)						
	Mean	S.E.	LL 95% CL	UL 95% CL	LL 99% CL	UL 99% CL
Effect	0.632	0.189	0.221	0.685	0.352	1.322

Availability level is reported to have a positive engagement with employee engagement (Critical ratio =5.940 which is significant at p<.05); thus it validates hypothesis no. 5. Further employee engagement is again found to have complete mediating effect on relationship of availability of HPWPs and job performance. Bracketed value (0.001) is the standardized estimate of correlation between availability and performance in the presence of employee engagement. Critical value of corresponding estimate is not significant. Value of Chi-square, TLI and SRMR confirms model fit. Results of SPSS also validates complete mediation as T- value (1.002) is insignificant at p<.05. The Sobel test with Z-value= 5.236 (which is significant at p<.05) also states that mediation effect is significant. Bootstrap result negotiates the debatable assumption of normal distribution.

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Table-6: Mediating Effect of Employee Engagement (Effectiveness Level and Job Performance)

Model – 6

AMOS RESULTS Regression Weight	Unstandardized Estimate	S.E	C.R	Standardized Estimate
Engagement ← Effectiveness Level	0.821	0.201	4.08	0.875
Job Performance ← Engagement	0.803	0.154	5.214	0.736
Job Performance ← Effectiveness	0.368	0.174	3.110	0.401
Selected Fit Measures	Chi-Square Diff.	SRMR	TLI	RMSEA
	18.212	0.047	0.99	0.39
SPSS RESULTS	**Coefficient**	**S.E**	**T-value**	
Equation 1	0.888	0.147	12.25	
Equation 2	0.752	0.214	17.35	
Equation 4 (X constant)	0.827	0.231	22.35	
Equation 4 (M constant)	0.584	0.089	15.01	
Significance of Moderating Effect				
	Value	S.E	Z Value	
Sobel	0.962	0.172	6.698	
Bootstrap Result (Number of bootstrap samples= 2000)				
	Mean	S.E.	LL 95% CL	UL 95% CL	LL 99% CL	UL 99% CL
Effect	0.924	0.187	0.521	1.025	0.624	1.358

Employees' perception regarding effectiveness of HPWPs is concluded to have statistical significant correlation with employee engagement, which legalizes hypothesis no. 6. Here, the engagement level is revealed to mediate partially the relationship between effectiveness level and job performance. The relationship between performance and effectiveness level is reported significant (critical ratio= 3.11 which is significant at 95% degree of significance) even in the presence of employee engagement. This significant relationship states that employee engagement has a partial mediating effect on relationship between effectiveness and job performance. SPSS result also confirms the same partial mediation. The Sobel test and bootstrap results also favor significant partial mediation.

Discussion and Conclusion

The paper empirically proves the direct and indirect relationship of modern HR practices and job performance. Researchers like Purcell et al (2003), Guthrie (2001), Sesil et al (2001), Kruse (2002), Evans and Davis (2005), Hartog, Boselie and Paauwe (2004) etc. reported a positive relationship between HR practices and performance of the employees. Although various researchers found a positive relationship between HPWPs and performance, the present paper explores three relatively newly devised variables (awareness, availability and perception for effectiveness) of HPWPs for any possible relationship with performance. The relationship between these variables and job performance has not been examined previously. Organizations which have an aspiration to increase the performance of their employees through institutionalization of HPWPs are suggested to also keep an eye on these three variables. As per observations of the present study, a higher level of awareness for HR practices will lead to more benefit from these practices in terms of employee job performance. Similarly, an organization must induce positive perception for availability and effectiveness of high performance practices to accrue maximum benefits from the HR system. It means that if an employee perceives performance practices effective, then it will promote higher performance than the performance of the employee who regards HPWPs ineffective or partially effective. Thus the present paper reaffirms the suggestions of Punia and Garg (2012).

The present study also provides empirical evidence of social exchange theory and job characteristics theory. Employee engagement is observed to have a complete/partial mediation effect on relationship of High Performance Work Practices and Job Performance. In simple words, implementation of High Performance Work Practices leads to employee engagement and consequently highly engaged employees perform better. It validates tenets of social exchange theory i.e. HR practices are considered as personal commitment of the organization towards employees and the employee reciprocates with a higher level of commitment and engagement. Thus the impact of employee-friendly practices is seen in the form of increased job performance of the employees. Further, High Performance Work System characterizes practice that leads to task identity, autonomy, skill variety i.e. empowerment and engagement of employees. It indicates improved job performance and hence validates job characteristics theory.

Employee engagement has been explored previously for any possible mediation effect. It is also found to mediate the association of HR practices and performance. The present study is a pioneer in exploring mediation effect of association between HPWS and employee engagement in Indian settings. Although individual practice has been linked to job performance through employee engagement, a bundle of practices i.e. HPWS is also found to be linked with performance through employee engagement. It means that as employees' knowledge and awareness for performance practices surges, employees' engagement level also rises. A highly engaged work force is an indicator of improved performance. Findings also suggest that when an employee perceives HR practices as favorable and effective, he is more inclined towards the organization. This sense of belonging results in improved job performance.

High Performance Work System has revolutionized the field of performance management and performance

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maximization. Various variables that result in better utilization of work systems have been studied previously. Among them, performance management is one of the crucial variables that organizations need to take care of in today's scenario. It is important for organizations to achieve economies of scale. Human resources are the resources which are responsible for the movement of other resources in the organization. Thus, this can be done only with the help of performance of human resources of the organization. Modern HR practitioners have started to explore every aspect related to personnel from two perspectives i.e. management perspective and employees perspective. It is obvious, when management decisions concern employees the most, their perception and knowledge should get utmost importance. It could facilitate resistance free adoption and also assure maximum accruing of benefits. The present study has successfully institutionalized three more variables i.e. awareness, availability and effectiveness levels as factors of maximizing performance through implementation of any performance system. Both high performance practitioners and academicians are suggested to include these variables in their pursuit of performance maximization. Employee engagement has been reported as a mediating factor that links HPWPs to job performance. The social exchange and job characteristics theories are also empirically validated in the present paper.

This study has sought to investigate the mediating effect of employee engagement in the relationship between HPWPs and job satisfaction in Indian settings. The finding offers strong support that employee engagement is the way through which job satisfaction of the employees could be increased with the aid of HPWPs. This strengthens the argument that employee engagement at work should be pursued as

both a dependent variable (result) and also as an independent variable (cause). In simple words, employee engagement itself is the end result of HPWPs; it also leads to job satisfaction. If employees perceive that modern HR practices are equally beneficial for them, then it is likely that this can affect workers' engagement and satisfaction, which in turn, produces positive performance outcomes. Wayne et al. (1997) assert that employee engagement depends on employees' perceptions of how devoted the paying organization is to them. This can be demonstrated through institutionalization of High Performance Work System by the organization that benefits the employee, leading to the supposition that the company cares for the welfare of its employees. Therefore, the principal concern for any organization, especially of the HR manager, should be to promote the opportunity for employee involvement, training and career development, as well as to ensure that employees are dealt with fairly, and given support for performance optimization.

There are many practical implications that could be drawn from these findings. Managers who are responsible for the execution of HR practices will be fascinated to know that by promoting employees' awareness and perception for HPWPs, they can influence the degree to which employees are positively or negatively satisfied with their job. And by ensuring employee engagement at the work place, managers can contribute in building a workforce, which is more satisfied with their job. This leads to enhanced performance, reduced absenteeism and turnover. The management could explore various awareness and perception building initiatives like seminars, lectures, workshops, cross-industry training, etc. to strengthen employees' awareness and perception. This facilitates change management

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through unfreezing the old values and norms and by internalizing new norms and values.

Given the preliminary nature of this study, further research needs to be conducted on awareness and perception for HPWPs, their successful implementation, employee engagement and performance relationship. The importance of exploring further understanding of supplementary constructs that might be included in the promotion of job satisfaction at work is vital to these relationships. Future researchers could take this initiative to higher levels. Individual related factors like attitude, belief system, values, etc. could also be explored for their possible mediating effect. Now employee engagement, job satisfaction and HPWPs could be explored further by utilizing results of the present research work. This study could be conducted in different organizational settings, sizes and culture. The present study also has theoretical significance. It could highlight the scarcity of studies on employees' perception and awareness for HR practices. The present work will help to establish perceptual effectiveness and awareness as two important paradigms of optimization of HPWS. The linkage between HPWPs and job satisfaction has been recognized previously too but more importantly, nine constructs/factors of High Performance Work System have been associated with job satisfaction through employee engagement. The study concludes that organizations are required to focus on awareness and perception of employees to derive utmost benefits from linkage of HPWPs and job satisfaction.

The study has a few limitations too. Firstly, a larger sample size would have made the study more worthwhile. Secondly owing to lack of previous observations, results of the study could not be compared for continuity or deviation. Further, the sample is taken only from the NCR region, thus representativeness of sample is also a matter of concern. In conclusion, adequate investment in employees propels the laws of reciprocity as establishments who have embraced and embedded this concept in their culture will reap that which they have sown.

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A Study on Household Waste Management Practices in Gandhinagar City

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Abstract

Management of solid waste has always been a serious problem for developed and developing countries. The quantity of waste is increasing at an alarming rate in India due to rapid urbanization and high population growth. The study analyses the waste collection and disposal practices in and around Gandhinagar city. On the demand side, the research examines the behaviour and perception of residents of the city towards the existing waste management practices by GUDA, GMC and private agencies. On the supply side, the study highlights in detail the activities and operations of GMC's waste collection and disposal system in Gandhinagar city. The findings revealed that the system of waste management at GMC is much better as compared to GUDA and private agencies. The empirical analysis also pointed out that the residents of Gandhinagar were highly satisfied with the services of GMC. Some of the waste management techniques followed by GMC could be replicated by GUDA in treating waste.

Keywords: Biodegradable, Gandhinagar Municipal Corporation, Waste Management, Waste Segregation, Recycling

JEL Classification: *Q50, Q53*

Introduction

Solid waste could be defined as non-liquid and non-gaseous products of human activities, regarded as being useless (BabaYemi and Dauda, 2009). According to the Municipal Solid Waste (MSW) Rules 2000, MSW includes commercial and residential waste generated in a municipal or notified area, in either solid or semi-solid form, excluding industrial hazardous wastes, but including treated bio-medical wastes (Toolkit for Solid Waste Management, 2012). Management of such solid waste is one of the major environmental issues as urban population growth and economic development lead to increasing generation of MSW (Waste Composition Study, 2009).

The per capita waste generation rate in India has increased from 0.44 kg/day in 2001 to 0.5 kg/day in 2011, fuelled by changing lifestyles and increased purchasing power of urban Indians. There are 53 cities in India with a million plus population, which together generate 86,000 TPD (31.5 million tons per year) of MSW at a per capita waste generation rate of 500 grams/day (Annepu, 2012).

Solid Waste Management involves activities associated with generation, storage and collection, transfer and transport, treatment and disposal of solid waste. Poor collection and inadequate transportation causes the accumulation of MSW at every nook and corner. The management of MSW is going through a critical phase, due to the unavailability of suitable facilities to treat and dispose of the larger amounts of MSW generated daily in metropolitan cities (Kaushal et al., 2012). In view of the sensitivity of the topic, the study makes a systematic inquiry into the existing waste management practices in the city of Gandhinagar covering both the demand as well as the supply perspective.

Gandhinagar, the capital city of Gujarat, is divided into 30 sectors constituting residential areas and commercial complexes. Waste collection and management in all the 30 sectors is the sole responsibility of GMC. There are many small villages in and around Gandhinagar. The outskirts of Gandhinagar fall under the Town Planning (TP) scheme, in which GUDA is actively engaged in waste collection and disposal. The local body of every city or village adopts a distinctive waste management practice. GMC and GUDA provide respective illustration of waste management practices adopted in Gandhinagar and the outskirts of Gandhinagar. In the outskirts of Gandhinagar, there are various areas which have not tied up with GUDA for waste management. Such places have their captive (private) arrangement and are referred to as Non-GUDA areas in this research. The paper makes a detailed inquiry into the waste disposal system at GMC in the form of a case-let discussed in the later part of the research.

Literature Review

Waste management has received worldwide attention of academicians as improperly stored waste can cause health, safety and economic problems. While reviewing the available literature in the area of waste management and disposal, it was observed that most studies focus on municipal solid waste management. The primary sources of municipal solid waste include waste generated in domestic, institutional, commercial activities, garden and municipal services (Chavan and Zambare, 2013). As the present study analyses the domestic waste management practices in Gandhinagar, which is a part of municipal solid waste, Table 1 presents an overview of studies in relation to municipal solid waste.

Table 1: Overview of Literature for MSW

Beliën (n.d.)	Classified all the publications in the area of municipal solid waste management into different areas such as type of waste, scope, solution method, deterministic or stochastic model, optimality of the solution, disposal facilities, type of constraints, post optimization analysis, use of a geographi c information system , etc.
Hogg (n.d.)	Studied the cost of collection and treatment of household waste for fifteen European (EU) state members. The report found that the involvement of public and private sectors in waste management varied across the EU Me mber States. The costs for the collection of specific waste fractions are often not borne directly by the municipality (or only partially so) as a result of producer responsibility initiatives.
Choe and Fraser (1998)	Reviewed the economics of household wa ste management in Australia and suggested a comprehensive modelling framework for efficient management of such waste.
United States' Environmental Protection Agency (2002)	Suggested an Integrated Solid Waste Management (ISWM) approach that considers how to prevent, recycle and manage solid waste. The report focuses upon waste prevention, recycling and composting, and disposal (Land filling and Combustion).
Gendebien et al (2002)	Identified obsolete paint and left over paints, banned and left over pesticid es, fluorescent tubes and other mercury containing devices, and treated waste wood as household products hav e a hazardous potential for solid waste stream. The report also covered case studies suggesting initiatives for disposal of household products such as a reuse scheme for left over paints, the advantages of using low energy light bulbs combined with a separate collection, alternatives to cleaning household products, the separate collection for car oil filter, the separate collection of pesticides and separate collection of arsenic treated wood.
Hai and Ali (2005)	Studied the solid waste management system of Dhaka City Corporation (DCC) and found that DCC was not able to offer the desired level of services with the existing capacity and trend of waste management.
Sharholy et al (2008)	Presented a comprehensive review of the characteristics, generation, collection and transportation, disposal and treatment technologies of municipal solid waste practiced in India. The study is concluded with a few suggest ions for the efficient management of such waste such as involvement of public and private sector s through NGOs, increasing the public awareness, proper timing and scheduling for collection of waste from house to house, proper design and placing of collecti on bins, proper maintenance of transport vehicles for such waste, etc.
Goel (2008)	Critically reviewed MSW practices in India and found that the major problem was underestimation of generation rates and therefore , underestimation of resource requirement, lack of technical and managerial inputs, lack of reliable and updated information and an ad hoc approach to waste management resulting in inefficient utilization of resources.

Chandra and Devi (2009)	Studied problems and prospects of municipal solid waste in Mysore city. As per the findings, the present system of municipal solid waste management in Mysore city is not adequate as per Municipal Solid Waste (Management and Handling) Rules, 2000.
Maity et al (2012), Gogoi (2013), Gidde et al (2008) and Srivastava (2014)	Studied municipal solid waste management in Chandan Nagar city in West Bengal, Guwahati city, Pune city and Varanasi city respectively.
A report by Asian Development Bank on Solid Waste Management in Nepal: Current Status and Policy Recommendations (2013)	Notified that household waste contributed about 50 per cent –75 per cent of the total municipal solid waste i.e. 317 g/capita/day in 58 municipalities of Nepal. Out of this, organic waste accounted for the highest fraction. These municipalities in Nepal were unable to manage municipal solid waste effectively because of the lack of technical and human resources, statistical records, proper planning, insufficient budget and lack of political leadership.

(Source: Authors' Compilation)

Research Gap

The review of the above mentioned studies in relation to municipal solid waste in general and household waste in particular suggested that there are many conceptual and empirical studies and reports highlighting the present situation of waste management in a particular country or the region. However, the comprehensive empirical studies covering the supply as well as the demand perspective for waste management are rare. Through this research, an attempt has been made to fill this gap by studying the actual behaviour of the residents of Gandhinagar city and surrounding areas for waste disposal on the demand side and the waste management practices of GMC on the supply side.

Research Objectives

The objectives for the study are as under:

• To study the waste disposal behaviour of the residents of Gandhinagar and the surrounding areas.

• To check the awareness of the families in and around Gandhinagar for proper waste management practices.

• To compare the satisfaction of residents towards waste management methods, pre and post implementation of GUDA and GMC services.

• To develop a case-let in order to appreciate the role of GMC in waste collection and waste management.

Research Methodology

GMC and GUDA are responsible for waste collection and management in Gandhinagar and outskirts of Gandhinagar respectively. The surrounding areas of Gandhinagar such as NIFT and Vavol are not covered by GMC as they are under town planning scheme; they are covered by GUDA for waste collection and disposal. However, not all the residential facilities are covered by GUDA in these areas. GUDA covers only those residential colonies which have entered into a tie up with the authority for waste collection and disposal. There are many societies which have not entered into such agreement with GUDA and are therefore, are not covered. Such residential colonies have their captive arrangement for waste collection.

The study adopts descriptive research design for

demand and supply side of waste collection and management in and around Gandhinagar. Empirical study mainly caters to the waste management behaviour of households in all the three categories. i.e. the areas covered by GUDA, the areas not covered by GUDA (captive arrangement), and the areas covered by GMC for waste collection and disposal. For this purpose, a survey was conducted.

A non-probability based convenience sampling was adopted to select a sample size of 470 residents. The sample size of 470 residents was determined with the help of this formula: $n = Z^2 * p * q / e^2$, i.e. $(1.96)^2 * (0.5)(0.5) /(0.05)^2$. The total sample is bifurcated as 150 residents of NIFT area and Vavol where GUDA is working, 120 residents having captive arrangement for waste management (non-GUDA) and 50 residents of Gandhinagar where GMC is operational. Thus, the sampling units consisted of resident households and the sampling elements consisted of owners of the households. The residents of the households in the above-mentioned areas were contacted personally for collecting the primary data for survey. The questionnaire was prepared in English as well as the vernacular language. The survey was conducted from June 2014 to August 2014.

Considering the research objectives, the questionnaires include information on variables such as type of waste, frequency of generation of various kinds of waste, methods of disposal used by them at present, opinions of residents towards services of waste lifters in their area, awareness towards various waste treatment methods, etc. Information so obtained from the respondents was analyzed and interpreted with the help of SPSS 19 and Microsoft Excel programmes. For data analysis, frequency distribution, descriptive statistics such as mean (X), median, mode, standard deviation (SD), minimum, maximum and rank analysis, were used. Various parametric and non-parametric inferential statistics like One-Way Analysis of Variance (ANOVA), Post-hoc Tukey's Honestly Significant Difference (HSD) Test for Multiple Comparison of Means, Paired t-test, and Wilcoxon Signed Rank Test were used for analysis that is more meaningful. The effect size was also computed using Eta (η^2), Cohen's *d*, Cohen's *r*.

On the supply side, the service providers of waste management i.e. GUDA and GMC were contacted personally by the researchers for the information. Unfortunately, the researchers could not meet with the officials of GUDA, and hence, it was not included in the scope of developing a case-let. The interviews were conducted with the officials of GMC to understand the scope and nature of their services. This was supplemented by secondary information available on the website and newspaper clippings on GMC, to develop the case-let on the same.

Table 2: Construct of Hypothesis for the Study

Sr. No.	Attributes Used for Hypothesis	Premise	Scale	Null Hypothesis Statement	Test Administered	Nature and Justification of Test
1	Services of waste lifters	Daily collection of waste reflects regularity of service of waste lifters.	Excellent (5) to Poor (1)	The services of waste lifters did not differ significantly among GUDA, non-GUDA and GMC.	One way ANOVA	Parametric: As there are more than two groups, significant variance in groups is tested.
		Households have different opinion of waste lifters when their services are disruptive.		M1=M2 or M1=M3 or M2=M3	Tukey's post hoc test	Parametric: To test which waste lifter's service was the best among the three groups.
2	Waste management methods before and after intervention of GUDA and GMC	Change in waste management status quo reflects the work accomplishments by GUDA and GMC.	Very Good (5) to Very Poor (1)	There is no significant difference in the waste management method before and after intervention of GUDA.	Paired T-Test	Parametric: To evaluate the waste management system after intervention of GUDA.
				There is no significant difference in the waste management method before and after intervention of GMC.	Wilcoxon Signed Ranks Test	Non-Parametric (Small Sample): To evaluate the waste management system after intervention of GMC.

(Source: Authors' Compilation)

Data Analysis and Findings

The data analysis and findings are broadly divided into two sections. Section I highlights the empirical analysis. Section II presents the case-let on GMC.

Section I Empirical Analysis

The details pertaining to the demographic profile of the respondents, waste collection, waste disposal practices, etc. are discussed in this section.

Family Composition and Educating Children to Use Dustbins

The mean, median, mode values with reference to number of adults in a family were 4. Maximum number of adults in a family was observed to be 8. The more the number of members in a family, the higher is the amount of waste. 99 per cent families inculcated the habit of using dustbins in their children. It was observed that parents tried their best to impart healthy habits so that their children turn out to be

disciplined citizens.

Type of Waste Generated by Households

In a house, some of the waste was common and repetitive in nature such as paper (9 per cent), plastic bags (9 per cent), personal grooming (8 per cent), vegetable and fruits (9 per cent), sanitary pads (7 per cent), unconsumed food (8 per cent), FMCG packaging (6 per cent), cardboard boxes packaging/packing (3 per cent), personal regenerative (9 per cent) and waste generated on dusting of house (9 per cent). Waste from diapers, wipes, nappies (4 per cent), etc. applied specifically to certain kinds of families in which there was a presence of a small child. Fragile items were handled with great care and therefore such waste was generated infrequently; examples are broken glassware (2 per cent) useless CD-DVDs and handsets (2 per cent). Exhausted item waste consisted of rubber waste - slippers (1 per cent), leather waste - shoes (2 per cent), tin containers (4 per cent), plastic containers (6 per cent) and rags (2 per cent). Thus, frequency of common, specific, fragile and exhausted waste drastically differed.

Further, a rank analysis was performed to know the frequency of different types of waste. The details of rank analysis are mentioned in Table 3.

Table 3 Rank Analysis on Frequency of Different Types of Waste

Waste	Frequency	Rank
Food Waste (Vegetable, fruits etc.)	473	1
Paper, Plastic, Container Waste	1365	2
Landfill Waste (Diapers, Pads, Nappies etc.)	1483	3
Use and Throw Waste (Blades, Razors, Rags etc)	1699	4
E-Waste (CDs, DVDs etc.)	1845	5
Fragile Waste (Broken g lass wares, bulbs, tube lights etc).	1862	6

(Source: Excel Output)

From Table 3, it may be inferred that food waste was the most frequently generated waste by every household whereas fragile waste was generated at the lowest frequency. Regular, large scale and best management practices are required for food waste management. Infrequent and environmentally harmful waste also needs attention.

Maintaining and Using Dustbins

All the families surveyed kept a dustbin in their house suggesting that respondents believed in maintaining cleanliness. 100 per cent respondents had admitted that they threw the waste in the dustbin but during the survey, it was observed that very often the surroundings were not clean highlighting that people often littered outside the house.

Number of Dustbins and Separation of Waste

The mean, median, mode with reference to number of dustbins was two. The standard deviation was less than one which indicated that there was a strong consensus in the responses. It was learnt that some

families kept as many as five dustbins based on the number of rooms in the house. It was also known that in GUDA operated areas, two dustbins were given to each household but in the discussion, it was revealed that only one dustbin was used.

72 per cent separated the food and non-food waste. Separation of waste is very crucial in waste management system. Respondents explained that they segregated cooked food or stale food from non-food waste. They refrained from throwing leftover cooked food in the bin, but in reality they did not separate vegetable waste from paper and plastic (non-food waste). This highlights that a lot of awareness is required to be spread regarding separation of waste.

Method of Waste Disposal

A multiple choice question was presented to the respondents to study their waste disposal practices. The details of the same are discussed in Table 4.

Table 4: Type of Waste and Disposal Method

Waste	Disposal Method	Interpretation	Percent (%)
Paper, tin, plastic etc	Sell to junk seller	Conventional and organized method in which family sells the scrap which fetches money. Generally this practice is adopted by each family.	15
All food and vegetable waste	Accumulate in the plastic bag and throw it improperly on road side.	It refers to practice of littering outside the house which is not a good sign of civilization.	6
	Give to street dogs, cows, etc. to eat	In cities it is difficult to spot animals to feed the waste, so people put it in the dustbin which they consider is a convenient method of disposal as it is repetitive in nature.	9
	Throw it in the dustbin		12
Diapers, sanitary pads, etc.	Throw it in the bin after proper wrapping	This waste requires being disposed in proper manner as it leads to environmental pollution. Wrapping and throwing is the ideal method, which is adopted by some of the households only.	12
Dust on sweeping	Litter outside the house	It is regular waste which needs to be thrown in the bin. It is necessary that it is not littered outside.	5
Regenerative waste	Throw it in the bin		9
Unconsumed food waste	Throw in drainage or a dustbin	This method is an utter disrespect to food.	9
Broken glassware, leather waste, etc.	Throw it in the bin	It is not proper to throw these away in the bin. They should be wrapped and separated before putting in the bin.	11
Plastic wrapper, personal grooming, etc.	Throw it in the dustbin	It was learnt that this waste was not bifurcated, was mixed with food waste which creates a disaster in decomposition.	12
Total			**100**

(Source: Primary Output)

Overall, it may be observed that an organized waste collection and disposal system existed only for paper waste. No proper technique was found for management of other types of waste. Thus, the ideal principles of reduce, reuse and recycle aspect needs to be implemented in order to manage waste properly.

Waste Lifters and Opinion on Services of Waste Lifting
GUDA, private agencies and GMC carried out a doorstep waste collection drive through a GUDA-appointed agency, local sweepers (appointed by society) and a GMC-appointed agency respectively. A five-point Likert scale question was used to know the opinion of the residents about the services of waste lifters. The results are discussed in Table 5.

Table 5 Opinion on Services of Waste Lifting

Statements	Mean	Standard Deviation
Regular waste collection.	3.72	1.28
Collection on alternate days.	2.16	0.89
Separate bins for food waste collection.	2.42	1.09
Common bin for all waste.	4.00	1.01
No emphasis for garbage segregation.	3.82	1.04
No instruments for cleaning stuck items in bin.	3.84	1.07
Reluctance to carry heavy weight waste.	3.59	0.93
Barcode punching as evidence of duty performed.	1.91	0.16

(Source: SPSS Output)

From Table 5, it may be seen that a mean score above 3 highlighted agreement status quo and a score of below 3 showed disagreement with the statement. Cleaning of bin is important to avoid foul smell. Bins smell foul if all types of waste are put in a single bin. Waste lifters should be provided a long rod-like gadget to remove stuck waste from bins. These types of additional services by waste lifters will make households more conscious about keeping bins clean, free from bad odour and also give a message of compulsory waste separation.

Ratings of Waste Lifters' Services and Waste Management Practices
On a five-point Likert scale starting from Excellent (5)

to Very Poor (1), the services of waste lifters were evaluated. Households' mean rating was 3.02 with a SD of 0.93. The services of waste lifters were found to be average. Mean ratings for waste management before and after, GUDA's or GMC's involvement through door-to-door collection were, 1.90 with a SD of 1.36 and 3.00 with a SD of 1.68 respectively. Thus, before the involvement of these authorities, the waste management service was rated as poor and after intervention of GUDA and GMC, the same was perceived to be average.

To check the differences in services of waste lifters in all the three areas, one-way ANOVA test was applied. $H_0 1$: *The services of waste lifters did not differ*

significantly among GUDA, Non-GUDA and GMC. As per the findings, there was a significant difference in waste lifting services in the operational area, [F (2,467) = 28.81, p =0.00]. The effect size Eta (η^2) between groups and within groups was 0.11 and 0.89, indicating a weak and strong effect respectively. In order to check the differences in waste lifting services among the pairs, Tukey's post hoc test was applied. $H_0$2: $m_1=m_2$ or $m_1=m_3$ or $m_2=m_3$.

Table 6 Test Statistics for Post Hoc Tukey's HSD Test

(I) Operation	(J) Operation	Mean Difference (I-J)	Std. Error	Sig.	95 per cent Confidence Interval	
					Lower Bound	Upper Bound
GUDA	Non-GUDA	-0.10	0.10	0.58	-0.34	0.14
	GMC	-1.08*	0.14	0.00	-1.41	-0.74
Non-GUDA	GUDA	0.10	0.10	0.58	-0.14	0.34
	GMC	-0.98*	0.16	0.00	-1.35	-0.61
GMC	GUDA	1.08*	0.14	0.00	0.74	1.41
	Non-GUDA	0.98*	0.16	0.00	0.61	1.35
* The mean difference is significant at the 0.05 level.						

(Source: SPSS Output)

From Table 6, it may be observed that waste lifters' services significantly differed between GUDA and GMC, as well as between Non-GUDA and GMC, whereas the services of waste lifters were not significantly different between GUDA and Non-GUDA areas of operations.

In order to test the effectiveness of GUDA's work, a hypothesis was framed to carry out parametric paired t-test. *$H_0$3: There is no significant difference in the waste management method before and after intervention of GUDA.* As per the results, there was a significant difference in the scores of before (*M*=2.56, *SD*= 0.91) and after (*M*= 2.78, *SD* = 1.16) intervention of GUDA; *t* (299) =-2.82, *p*=0.01, Cohen's *d*= -0.16. The Cohen's *d* indicates small effect. It was noticed that before intervention of GUDA waste management was rated as nearly poor and after its intervention, the same was rated as average.

In order to test the effectiveness of GMC's work, a similar hypothesis was framed to carry out non-parametric Wilcoxon Signed Ranks Test. *$H_0$4: There is no significant difference in the waste management method before and after intervention of GMC.* A statistically significant change in waste management was noticed with intervention of GMC (*Z*= -5.77, *p*= 0.00, *r* =-0.82). Here, *r* value represents large practical significance size effect. The median waste management rating was 2.50 and 4.22 pre and post intervention of GMC. Households indicated that waste management before GMC was poor and after GMC's intervention, the same was rated as good.

Awareness on Methods of Waste Treatments

A Likert scale question from the continuum of never heard of (5) to know very well (1) was framed to check the awareness of households on various methods that could be deployed for treatment of collected waste. From the descriptive statistics for recycling (X =2.89, SD = 1.43), reducing (X =3.31, SD = 1.23) and reusing (X =3.47, SD = 1.34), it was observed that respondents either knew a fair amount or knew a little bit about these techniques.

Awareness on Proper Waste Management Technique

The respondents were asked multiple choice questions to check their awareness towards proper waste management technique.

Table 7 Awareness of Waste Management Techniques

Particulars	Percentage (per cent)
Separated waste facilitates quick sorting and processing	18
High processing cost	3
Organic manure preparation through quick food waste decomposition	21
Setting up bio gas plant	11
Avoidance of landfills and different types of pollution	13
Avoidance of non-biodegradable plastic carry bags.	18
Avoiding usage of 'use and throw items' to curtail landfills.	16
Total	**100**

(Source: SPSS Output)

From Table 7, a contradiction was noticed where respondents were quite aware that decomposition of food waste generated organic manure but were not inclined to separate the same from non-food waste. It was shocking that respondents were not aware of the huge cost associated with waste management. Therefore, such a misconception was required to be removed through proper education and awareness. Separated waste always acts like a raw gold mine. If treated properly, it generates economic gains and provides employment.

Pledge to Separate Waste and Keep Environment Clean

90 per cent respondents pledged to store the food and non-food items in two separate bins, to ease the waste management effort. If respondents positively agreed to perform their duty, then waste lifters and the managing agency (GMC and GUDA) are required to perform their duty of separate collection and proper management. 98 per cent respondents thought that it was their responsibility as citizens to keep the environment clean, green and pure. Such objective could be fulfilled only when waste creators (households) and waste managers (GMC and GUDA) work unanimously right from separation of waste to

disposal and treatment of waste.

Section II Case-Let on GMC

Foreground

The Gandhinagar Municipal Corporation was set up on 16th March, 2010 after a ruling by the Gujarat High Court in 2009. Prior to that, Gandhinagar was the only state capital in India, which did not have an elected body administrating it. GMC was constituted to look after the provision of basic amenities like water, road, cleanliness, safety, transportation, health, sanitation, etc. for the residents of Gandhinagar. As of 2012, the Corporation had a very limited role, that of sanitary activities such as clearing of garbage in the city because the Government of Gujarat was yet to transfer the land under GMC's jurisdiction to the corporation from the forest, roads and buildings authorities. The Corporation also runs the Fire and Emergency Services wing of Gandhinagar City. The GMC performs basic sanitary functions such as removal of weeds, cleaning up of garbage, cleaning up drainage systems and removal of dead animals. Out of 62 kilometres (39 miles) of roads, 57 kilometres (35 miles) of roads come within the jurisdiction of the GMC. The GMC took over water supply from Gujarat Water Supply and Sewerage Board (GWSSB) (Gandhinagar Municipal Corporation, n.d.).

Based on the guidelines of The Municipal Solid Waste (Management and Handling) Rules 2000, GMC effectively carries out solid waste management practices. Almost 60 Metric Tons of solid waste is generated from the city on a daily basis. This waste is collected, transported, treated and disposed according to Rules. Nearly 50 percent of the entire waste is collected from municipal bins and from street sweeping. GMC has identified more than 941 locations as waste collection points.

Work Activities

GMC's work in waste management consist of three core operations viz., *domestic waste collection, commercial waste collection and road cleaning* on a daily basis. *Domestic waste collection* is a humungous task in which the waste-lifters, appointed by GMC's power-line contractors, collect solid garbage from households. As a part of strict protocol, households can neither mix liquid waste in solid waste, nor any non-biodegradable waste with other solid waste items. Non-biodegradable waste like rubber, plastic, glass or any other metal is to be packed and handed-over separately to the waste lifters, which they put it in separate bins. GMC collects the *commercial waste* (generated by shops, offices, hotels, restaurants) on the same roadmap by mobilizing the waste carriers across the nearest point of shops and offices. GMC does not collect any medical waste. As a precautionary measure, gloves and masks are provided to all waste lifters. The waste lifters put the door-to-door collected waste in the mobile hollow closed Hydraulic Euro III light commercial vehicle (LCV)- Mini Tripper, which is specifically designed to store and transport maximum waste. The large hotel waste van collects biodegradable waste from food-joints of Gandhinagar. Daily waste is collected from residential and commercial areas during the morning and evening hours respectively.

A group of sweepers carries out the *road cleaning* work. Road cleaning activity is carried out from 7.00 am to 12.00 pm and 3.00 pm to 6.00 pm. The male sweepers move with an iron-rod, which has a sharp tip at one end to pierce the on-road littered plastic bags or packets. All the collected plastic polythene and packets are put in a fixed chain tied trolley installed at appropriate points in every sector. The Mini Tripper lifts the plastic waste from the trolley and transports it

to the dumping site in a separate bin. The female sweepers sweep and clean the footpaths and side of the roads. The fallen dry leaves and branches of trees etc are gathered in a big separate bin, which is later lifted by a tractor to transport to the dumping site. A remarkable observation was made; earlier the sweepers would burn the collected dry leaves and branches, which resulted in air pollution. This practice was abolished due to the adoption of proper waste processing technique. To prevent littering on the streets, permanent street bins are installed on the footpaths and senior citizens sit out areas. 120 closed body M.S. Community storage bins have been provided on 120 sites for waste collection and waste is regularly lifted from it as well.

Work Demarcation Mechanism

The power line contractors undertake the GMC's door-to-door solid waste collection from domestic and commercial areas. GMC enters into 11-month contracts for doorstep solid waste collection. The average monthly bill raised by each contractor is Rs.2,50,000 to Rs. 3,00,000. Standalone operations of GMC consists of cleanliness and maintenance of roads, survey of houses (for collection of house-tax), renting of marriage halls ('Rangmach' located in every sector), ground levelling and cleanliness support for open plots in residential areas (for organizing social ceremonies) and providing the facility of mobile toilets based on the requirement of localities, during mass gathering on account of any event. GMC exclusively devotes Rs.60 per house per year (for waste management activities) from the amount collected by house tax.

Modus Operandi in Waste Management

GMC's treatment of waste management can be viewed in five parts viz., *waste collection, waste segregation, composting, recyclin*g, *and reducing*. Waste processing is an easy task for GMC, as a cautious approach (separation of biodegradable and non-degradable) is adopted in *collection of waste*. The door-to-door (domestic and commercial) waste stored in a Mini Tripper is transferred to Compactors (a large-sized van) which is temporarily stationary at the central points of Gandhinagar, like Sector7, Sector 16 and Sector 24. Roadside plastic waste carried by the Mini Tripper is also transferred to the compactors. The waste loaded compactor carries the compostable waste to the dumping site. GMC is designated with three dumping sites namely in Sector 30, Sector 24 and Sector 21 for centralized processing of waste. To be doubly sure that no plastic waste is mixed with biodegradable waste, a tricky '*Jatka Machine*' is run over the dumped compostable waste. The machine critically *separates* the plastic waste. The tractor that lifts the roadside dry leaves dumps them to the designated site.

Proper *vermi-composting* method is adopted to make organic manure from the waste of fruits, vegetables, food and leaves. A 10-foot pit is dug half a foot deep. It is layered with dry leaves, two to three buckets of water, fruit and vegetable waste, animal manure, mud, one-two buckets of water and 500 to 600 earthworms. The mixture is churned every ten days. Over 65 to 70 days, organic manure (made from vegetarian food waste) becomes ready for sale to nurseries, government gardens and farmers. This process is done at the dumping sites of Sector-21 and Sector-24 only. Exclusively at Sector 30's dumping site there is a vermi-composting process that takes place from non-vegetarian food waste. On an experimental basis, recently, GMC has started using a composting machine for quick production of organic manure. The vegetable waste, hotel waste and wood powder are

mixed and put in the machine for composting. The machine composts the mixture at the rate of 25kgs per hour.

At Sector 30's dumping site, another initiative of *recycling* of plastic is carried out. All the collected plastic waste and separated plastic waste (using 'Jatka machine') is processed at this site. In order to process a larger amount of plastic waste, GMC has recently adopted new collaborative initiatives to collect all the plastic waste from rag-pickers. Assurance of genuine weight and remunerative prices lures the rag-pickers to sell the plastic waste to GMC only. The collective plastic waste is washed and cleaned to process it in plastic cubes. On an experimental basis, GMC has used such plastic cubes to make a showpiece table and other displays of useful items. Thus, it adheres to the axiom of 'Best out of Waste'. Moreover, GMC also uses the plastic cubes as one of the raw materials to make roads sturdy.

As a part of *reducing* activity, GMC has severely banned the usage of plastic bags. It has adopted a stringent practice of confiscating plastic bags from greengrocers, grocers, shopkeepers, food-vendors, etc. on their regular and surprise visit to such places. It has not adopted any levy of fine as it perceives that shopkeepers tend to easily pay the fine and repeatedly stock plastic bags. The separated rubber, metal and glass waste is crushed into powder and packed for sale to industries, which uses it as raw material.

Apparatus Used in Waste Management
GMC uses various tools and equipment in waste collection and management.

Table 8 Waste Management Apparatus

Equipment for Waste Management	Number	Other Equipments	Number
LCV- Mini Tripper	60	Hand Driven Sweeper Machines	10
Compactors	05	Water Tankers	02
JCBs	03	Dead Animal Van	03
Sweeper Machine	11	Animal Catcher Van	01
Tractors	12	Tree Cutter	01
Hotel Waste Van	01		
Community Bins	120		
Street Bins	300+		

(Source: Authors' Compilation)

Employment Generation
Exclusively for waste collection and waste treatment, GMC has adopted a hierarchy starting from one Sanitary Superintendent at the top level, followed by two Zonal officers. Under each Zonal Officer, there are three Sanitary Inspectors. Under each Sanitary Inspector, there are eight Sub-Sanitary Inspectors, followed by 27 'Mukadams', under whom there are 167 'Safai Kamdars' appointed on a regular basis and 300 'Safai Kamdars' are appointed on contractual basis. 551 people are employed only in waste collection and waste management activity. 251 people are on permanent payrolls.

Supervisory Check

GMC has only three 'Safai Kamdars' per square kilometre to clean the city. Through a unique combination of a WhatsApp number and biometric recording of sanitary workers' attendance, the GMC ensures that waste collection takes place at designated places every day. Any lapse in maintaining cleanliness results in the GMC cutting the salaries of those found responsible. Biometric devices that use thumbprints of sanitary staff to mark their attendance have been installed at various locations in the city. Sanitary workers, including their supervisors and health inspectors, have to mark attendance using these devices. The GMC has provided a WhatsApp number through which residents can post pictures of their area. These will be checked against the concerned officer's or worker's presence in a particular locality.

Awareness Programmes

GMC has initiated IEC (Information, Education and Communication) activities for generating awareness among the general public towards cleanliness, waste treatment and waste disposal. Activities include formation of committees, conducting group meetings in the wards, advertisements in newspapers, distribution of pamphlets, erecting of banners, conducting street plays, and organizing rallies involving school and college students. Imparting awareness training to municipal staff and councillors has also been included.

Future Initiatives

GMC plans to use recycled plastic blocks for roads and construction. It plans to use plastic cubes to pave the household periphery across every house and commercial centre. This is to be implemented for commonly beautifying every forefront of the house and proper utilization of plastic. It plans to opt for mechanized composting, which will help in quick decomposition and prepare the organic manure in just two days against the traditional method of 70 days. This will facilitate in quick supply of organic manure. GMC also plans to organize Self-Help Groups (SHGs) or 'Sakhi Madals' of 'Women Safai Kamdars' to generate economic activities for beneficiaries.

Implications of the Study

The study describing the waste disposal practices in and around Gandhinagar city has practical utility for major stakeholders i.e. government authority (GUDA and GMC) and the citizens at large. Through this study, GUDA and GMC that are performing the activities of waste collection and disposal would get to know about the different types of waste generated by the residents and the method of disposal adopted by them. This knowledge will help the authorities in educating the residents about the right approach for disposal of waste. The authorities will also realize the opinion of the residents towards the services of waste-lifters, which will help them in improvising the same, if required. In addition to the empirical analysis, the study also describes the waste management approach of GMC. This can be a lesson for GUDA. The research would be useful to the citizens of the city as they would learn about the correct waste disposal behaviour and the activities of GMC towards waste treatment.

Limitations of the Study and Scope for Further Research

The study as reported here is unavoidably limited by the constraint of a small sample size of 470 residents of Gandhinagar; this has put a restriction on making the findings generally applicable. The study is based on survey method through questionnaire and therefore is subject to the common survey errors like social desirability issue, respondent's bias, measurement

error, etc. Other research methods like case study or participatory action research would have given more insightful findings and deepen the knowledge in specific areas.

Further, the study of waste disposal behaviour of residents is restricted to Gandhinagar city only. The same study may be replicated in other regions of the state and later in the country for external validity. The subsequent research can therefore focus upon inter-city or state comparison on waste management system which may provide some valuable insights. Besides, it was not possible to collect detailed information on waste management approach of GUDA. If this information is collected, future research can make a comparison between GMC and GUDA's working style in relation to waste collection and disposal.

Conclusion

Waste management activity is crucial to keep the environment clean and people healthy. According to empirical analysis the residents of Gandhinagar rated GMC's waste collection and disposal services as good. The waste management technique adopted by GMC is commendable and could be replicated by GUDA in treating waste. It was noted that in GUDA and non-GUDA areas, waste lifters did not insist on separation of waste. This needs to be made strict, as a pivotal step in waste management is initiated with the separation of waste. Storing the waste separately must be the moral duty of waste creators. Proper waste management would make the city clean and green in the true sense.

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