VOLUME 10 NO. I JANUARY-JUNE 2020

IPE Journal of

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Aims and Scope

IPE Journal of Management is a bi-annual, peer-reviewed journal which publishes empirical, theoretical and review articles dealing with the theory and practice of management. The aim of the journal is to provide a platform for researchers, academicians, practitioners and policy-makers from diverse domains of management to share innovative research achievements and practical experience, to stimulate scholarly debate both in India and abroad on contemporary issues and emerging trends of management science and decision-making.

Indexed in:

- Ebsco Database
- ProQuest
- Ulrichsweb
- International Impact Factor Services 11/5
- Indian Citation Index (ICI)
- International Institute of Organized Research (I2OR)
- International Services for Impact Factor and Indexing (
- Journals Directory.com
- Research Bible Research

We thank Indian Council of Social Science Research (ICSSR) for Financial Assistance for Publication of the Journal.

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Published by: Satyam N Kandula on behalf of Institute of Public Enterprise

Owned by: Institute of Public Enterprise

Printed by: Satyam N Kandula on behalf of Institute of Public Enterprise

Printed at: Wide Reach Advertising Pvt Ltd, 21, Surya Enclave, Trimulgherry, Hyderabad - 500015.

Place of Publication: Institute of Public Enterprise, OU Campus, Hyderabad - 500007.

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IPE Journal of Management

Volume 10 No I January-June 2020 ISSN 2249 - 9040

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ISSN 2249-9040 Volume 10, No 1, January-June 2020 pp. 1-11

Inclusive Growth & SHGs – An Optimizer in the Process of Financial Inclusion

Sushil Kumar Pattanaik*

Abstract

Poverty continues with the vast land like India since a long which is a cause of social disequilibrium around the country among the different states. Many states still have not achieved the rate of inclusion at the bottom level even they tried a lot for more development and growth in making social and economical fit to stay at par with others in the line of providing a good education, health and savings for future. This present paper focuses the optimization technique for which the bottom liner can able to get a benefit in the process of inclusion through different schemes of government or through performing SHGs in some areas where demand can be created. This present research is based on Primary data, collected from different 96 SHGs of Dhenkanal and Angul districts of Odisha. Around 200 were participated in the survey and out of that 198 respondents responded to all the ten questions asked to them. They opined clearly on savings and insurance for all. They have put their comments on the financial assistance by different local banks, RRBs and MFIs in providing financial support, but they feel certain distress on for the casual treatment and higher rate of interest. Only four factors they put emphasis out of ten questions for more effective optimization.

Keywords: Inclusion, Inclusive Growth, Finance at Bottom Level, MFIs, SHGs

Introduction

Indian economy is in a crisis as the economic scenario of the country till yet have not reached the target site as expected. To minimize the unemployment problem in the rural areas, government is continuously

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have inclusive plans for economy optimization at different levels. In recent years, community growth and development in form of SHGs have continuously attaining its objective for creating sustainability through inclusion process. In this process, some extent the poorness and earnings becomes easier for the bottom liner those are staying at village level without education and deprive from health facilities. This can minimize the inequality across different groups in the society. Government of India have a perennial planned schemes during different five year plans which creates employment.

Along with central government schemes, different state governments have also been trying to minimize the lag across different groups and create a parity among them from unequal to make equal in socio-economic priorities. Odisha government has also introduced different schemes to make it equal as the concept of provision of urban facilities in rural areas (PURA), the most ignite cites of Hon'bel President of India - APJ Abdul Kalam. Inclusive growth become possible for provisioning schemes for rural SHGs those a major role in creating a balance among the groups in socio-economic distribution. SHG members have that commitment to overcome the burden of poverty to a certain extent through their group effort, which can be stated as a best model for optimization in socioeconomic inclusion.

Relevance of the Study

The relevance of the study is because of the efficacy of inclusion and the solution for optimization through SHGs and accordingly goals have been preparing with a basket of products and services to serve the public demand and to create economic burst at bottom level. The optimiser basically relates to lower income group and the areas where no banking facilities are in presence till yet. Then after NBFCs, MFIs and commercial banks have come forward for empowerment and sustainability through different inclusion programmes, policies of the government.

Scope of the Study

The scope of this study is wide when inclusion comes and the initiatives are going on to cater to the rural poor since the time of Independence. It includes the required shifting from formal banking to social banking, inviting MFIs, Private players to the financial sector to create more competition .Establishing Regional Rural Banks (RRBs) are also in this process to give adequate credit facilities to the rural households. Financial inclusion programmes has come a long way, roping the vulnerable groups of the society to a formal financial institution, by providing them Ownership of accounts. Meaningful financial inclusion is attained when commercial banks, RRBs and NBFCs along with MFIs offer financial products and services which address the requirements for the target group at bottom level through empowerment schemes for all micro level businesses at community level.

This present paper is an individual effort to make understand the inclusive growth and its need for financial inclusion, which acts as an instrument to attain the optimised goal through different SHGs in Odisha and in particular the districts like Dhenkanal and Angul.

Literature Review

These studies high light on various aspects of financial inclusion. However, the measurement aspect of financial inclusion has, so far, not extensively been covered by these reviews and reports. For India, being a very diversified economy and society, it is an imperative to give adequate attention to measurement of financial inclusion. There are few scholars who have attempted to measure some aspects of financial inclusion.

Levine (1997) has tested the neo-classical concept and concluded that the countries with larger banks and more active stock market grows faster over the subsequent years even after controlling for many other factors underlying economic growth. Access to finance is also an important aspect in the growth driver of the country for all segments of the society.

According to (Levine 1997, Pande and Burges 2003), finance can also play a positive role in poverty reduction. A well developed financial system accessible to all reduces information and transition costs, influence saving rates, investment decisions, technological innovation and long-run growth rates (Beck 2009).

Binswanger and Khandker (1995), Pande and Burgess (2009) suggest on the Indian rural scenario and its expansion through different schemes and plans as it shows significantly lowered the rural poverty and increased non agricultural employment. In development economics, work out ways to upgrade rural people from poverty. Access to finance has been used as a social drive and is marked a awareness factor to enable to reach a more diversified income zone in the deprived segment of the society.

Honohan (2007) has reported on the adult population that requires financial intermediaries using the information on banking and MFIs referring to savings accounts in more than 160 countries. Further, it has been correlated with inequality and poverty.

Sharma (2008) developed an index for financial inclusion using aggregate banking variable, i.e., number of accounts, number of bank branch with total credit and deposits (a share of GDP) for 55 countries.

World bank (2009) reported the association between access to banking services, and the society can be measured by the number of bank accounts per thousand people and other factors like transaction offered at banks or required by banks and regulations adopted by their countries that may affect banking access for more than forty percent countries of the world. Nair and Tankha (2015) reported from their research that Centre for Financial Inclusion at Action (CFIA) provides a generic definition of financial inclusion whereby "everyone who can use them will have access to a range of quality financial services at affordable prices with convenience, respect and dignity, delivered by a range of provides in a stable, competitive market to financially capable clients."

Objectives of the Study

The specific objective of the study are as follows:

- To make study on the role of SHGs in the process of inclusive growth and
- To understand the extent of diversity with regard to financial inclusion in the state.

Research Methodology

This present research is based on primary and secondary sources of data, which are collected from 96 SHGs of the districts like Dhenkanal and Angul (central region of the state) and more number of SHGs are in these districts are continuing. The questionnaire was prepared to ask the respondents (members of SHGs) on inclusive growth, which are the biggest challenges of the country as well as in the state of Odisha.

Rapid growth has become possible because of SHGs in the rural economy to ensure sustainable growth, growth of infrastructure, reforms in primary level of education, reform in health and sanitisation segment, future energy creation for need, a public-private partnership to secure more inclusion in making all round development in the sphere of socio-economic development for the neglected sections and to maintain a good governance in the state as well as in the country. The major thrust areas of SHGs are mentioned below:

- Community development through SHGs
- · Removal of income inequalities through schemes
- Income diversification through different demand products
- Socio-economic optimizer
- Approaching to sell for financial and non financial products like banking and insurance

However, to attain these objectives for inclusive growth, there is need for financial inclusion and proper mobilsation in bottom level through appropriate services and products, which becomes a challenge at rural level. Mobilsation of funds exist when proper demand for the product and services can be distributed among the rural poor. So, in this regard, to make sustainable, government of India and government of Odisha have that contribution through schemes to reach poor and along with this, MFIs, RRBs and commercial banks have come forward to make SHGs sustainable through funding either in banking and non-banking models at the time of need.

Eco-system of Inclusion

The financial services includes some of the major drivers in the eco-system to fulfill the entire equi-employment and income system by adopting both the financial in formal and non-formal mediums or facilities. The report of Rangarajan Committee (2008) revealed financial inclusion as – the process of access to financial services and products in timely with appropriate funds at affordable costs for the lower income group on demand at affordable costs for lower income groups and vulnerable groups of the society at large.

So, it a process of social and financial security in the eco-system of living in a ore better standard of living through some participation in business activities and earnings. Governments of different states and also in the state of Odisha, through different plans, schemes government prepares various sustainable models for financial inclusion and inclusive growth of the society. Through this process savings are encouraged in the rural areas and unemployed get employed through the adoption of certain business activities as per the need and demand of the society to take participation the non-financial institution come forward to provide credit in different sustainable odes to the beneficiaries for their interest in business activities and the attitude for savings and insurance can be changed through this. So, more focus is now in penetration to the rural economy for sustainability.

So, to make strengthen the resource base at local level for the beneficiaries, the financial institution of these areas come forward to provide economic facilities as a resource instrument and mobiliser.

Dimensions of Inclusion

The inclusion based on various dimensions for financial inclusion is a phenomenon. in India, also in the state like Odisha, where the access to financial products are constrained by different factors as lack of awareness, unavailability of credit funds in a lower cost, high transaction cost and pattern of unbound recovery, inflexible and low quality products. This present study on financial products which are constrained by different factors. And here the researcher has an endeavor to find out the extent of financial inclusion and how it is effective and the associated reason thereof in the state of Odisha in different time and in different areas.

The process of Financial Inclusion in the state of Odishais now the means for more combo packed growth, wherein, each group of SHGs of the state can be able to use his/her earnings as a financial resource that they can put to work to maintain and retain their earnings from community development programs, implemented by the government of Odisha. Their financial status can aid the inclusive growth process for the economy and at the local level.

Role of Financial Inclusion in Empowerment for Fin-Stat

Financial Inclusion is most imperative tool for inclusive growth, with more than twenty five percent of its population living in object poverty and cannot participate towards their growth and developmental process. The inclusive model like community enterprising optimizer (CEO) is one such measure which is targeted and attained in a proper manner can provide a solution to the problems of poverty and unemployment, more particularly in rural area of the state.

The inclusive finance measures fix the target and attain a solution to the problems of poverty and problem of unemployment of the rural areas of the state. Providing access to financial services play a significant role in creating potential to help lift the poor out of the cycle of poverty. Financial inclusion also promotes thrift and develops culture of savings and also enables efficient payment mechanism to strengthening the resource base of the financial institution which benefits the economy as resources become available for efficient payment mechanism and allocation.

Data Analysis & Interpretation of Results

A short questionnaire was prepared for the respondents from SHGs at different areas of the state like – Dhenkanal and Angul areas with 10 questions. Around 200 members were asked and the entire data collected from primary survey was analysed and interpreted here to know the key factors are responsible for inclusive growth and sustainable factor in rural Odisha. Out of the total sample only 2 are found invalid for some short of reasons and other 198 were found valid and taken for measurement. 10 questions were asked to them for this purpose.

Here, cross matrix test and factor analysis have been used to know the detailed of demographic factors and the key reasons associated with it.

| | Income per annum | | | | | | | |
|-----------------------|-----------------------|-------------------|---------------------|--------------------|-----------------------|-------|--|--|
| Years | Less than Rs.20000 | Rs.2001- 40000 | Rs.40001- 60,000 | Rs.60001- 80000 | More than Rs.80000 | Total | | |
| Less than 30 years | 0 | 2 | 19 | 5 | 3 | 29 | | |
| 31-40 | 5 | 18 | 29 | 8 | 7 | 67 | | |
| 41-50 | 4 | 8 | 15 | 2 | 8 | 37 | | |
| 51-60 | 17 | 4 | 5 | 3 | 5 | 34 | | |
| More than 60 years | 3 | 9 | 11 | 5 | 3 | 31 | | |
| Total | 29 | 41 | 79 | 23 | 26 | 198 | | |

| Table-1: Age and Income | of Members of | of SHGs (Cros | s Tabulation) |
|-------------------------|---------------|---------------|---------------|
|-------------------------|---------------|---------------|---------------|

In this table, age of the respondents have been categorized in five scales as below - 30 years, 31-40 years, 41-50 years, 51-60 years and 61 years above age. Like income of each member also has been categorized

as below Rs. 20,000, below Rs. 40,000, below Rs. 60,000, below Rs. 80,000 and more than Rs. 80,000 per annum. Nearly 15 percent members have less than Rs. 20,000 income per annum, where as 20 percent, i.e., 41 members are having income of Rs. 20,000 to Rs. 40,000 per annum. Maximum members are having an income within Rs. 60,000 per annum, whose number is 79. (that is 35 percent of the total). So above all, nearly 30 percent members are having income more than Rs. 60,000 per annum, which is much encouraging in the bottom level platforms in the process of inclusion they are benefited.

| | 0 | 0 (| / | | |
|-------|--------------------|-----|--------|------|-------|
| | | | Gen | der | Total |
| | | | Female | Male | Iotai |
| | Less than 30 years | | 28 | I | 29 |
| | 31-40 | | 64 | 3 | 67 |
| AGE | 41-50 | | 35 | 2 | 37 |
| | 51-60 | | 29 | 5 | 34 |
| | More than 60 years | | 27 | 4 | 31 |
| Total | - | | 183 | 15 | 198 |

Table-2: Showing Gender And Age (Cross Matrix Test)

Out of total (Table-2), 198 respondents, female members represent 183, which is nearly 90 percent of the total and they manage their SHGs. They show their entrepreneurial skill through adoption of suitable trades, business and service factors at the bottom level. Maximum are in the age group of 31-40 years of age and they represent 30 percent and more of the total.

| | | Турез | Tatal | | |
|-------|-------------|---------|-----------|---------|-------|
| | | Trading | Producing | Service | Iotai |
| | <30 Years | 14 | 14 | I | 29 |
| | 31-40 Years | 43 | 20 | 4 | 67 |
| AGE | 41-50 Years | 19 | 9 | 9 | 37 |
| | 51-60 years | 27 | 6 | I | 34 |
| | >61 years | 22 | 9 | 0 | 31 |
| Total | - | 125 | 58 | 15 | 198 |

Table-3: Age and Types of Business (Cross matrix test)

Table-3 reported that, Maximum of 125 are engaged in trading of different products like food packaging, spice packaging, agarbati, handicrafts, poultry, dairy and eggs. Some are involved with bricks and sand trading, where as 54 members are having production units of items like foods (dry cakes, all type of village-level food packets, puja items etc.). In service sector some of are having repairing shops, some are engaged in hospitals as attendants etc.)

| Table-4: KMO and Bartlett Test | | | |
|---------------------------------|--------------------|---------|--|
| Kaiser-Meyer-Olkin measure of s | 0.891 | | |
| | Chi-square results | 562.933 | |
| Bartlett test of Sphericity | df | 45 | |
| | P-value | 0.000 | |

KMO table (Table-4) results indicated 0.891 value which is higher than the standard value and reported a positive factor values relating to the cause mentioned here. Also the Chi-square result found to be 562.933 which also indicate a wider gap in between the variables taken here. So sample justifies with this results.

Table-5: Communalities for Inclusion

| | | Initial value | Extraction value |
|---|---|------------------|---------------------|
| A | Insurance for all is much apparent in the locality and motivated for selling on behalf of companies | 1.000 | .922 |
| В | Financial counseling is updated more frequently | 1.000 | .792 |
| С | Financial savings are mandatory for all members | 1.000 | .825 |
| D | Financial process involves with credit management | 1.000 | .768 |
| E | Members are more concerned about the financial transactions and keep updated records | 1.000 | .597 |
| F | Business of any type is carried on by all members | 1.000 | .855 |
| G | More frequently they go for meeting for a new product or service | 1.000 | .629 |
| Н | The members are more concerned about the repayment schedules of banks | 1.000 | .684 |
| I | Government support are made time to time on counseling | 1.000 | .621 |
| J | Local level support are provided as per demand | 1.000 | .585 |

Extraction Method: Principal Component Analysis

Table-5 reported the communalities values related to 10 factors with their initial values, which is based on Principal component analysis in response to the factors based on financial inclusion.

Here, the initial values of individual factor variables show 1.00. The extraction values show highest to the extent of 0.922. Four factors have been marked with more extraction values relating to the involvement process of financing from different MFIs, Banks and recommendations from Blocks through contact programmes of different SHG members. These groups also avail support from state government with this linkage. Moreover, the factors are fit for further analysis.

| 6 | I | nitial Eigen | /alues | Extraction Sums of Squared Loadings | | |
|-----------|-------|------------------------|------------------------|--|-------------------|-------------------------|
| Component | Total | % of Total variance | Cumulative Value(%) | Total | % of Variances | Cumulative Variances |
| | 2.638 | 26.380 | 26.380 | 2.638 | 26.380 | 26.380 |
| 2 | 1.934 | 19.336 | 45.715 | 1.934 | 19.336 | 45.715 |
| 3 | 1.135 | 11.345 | 57.060 | 1.135 | 11.345 | 57.060 |
| 4 | 1.072 | 10.720 | 67.781 | 1.072 | 10.720 | 67.781 |
| 5 | .959 | 9.590 | 77.371 | | | |
| 6 | .869 | 8.694 | 86.065 | | | |
| 7 | .706 | 7.064 | 93.129 | | | |
| 8 | .329 | 3.288 | 96.417 | | | |
| 9 | .252 | 2.522 | 98.940 | | | |
| 10 | .106 | 1.060 | 100.000 | | | |

Table-6: Total Variance on Financial Inclusion

Table-6 reported the results of total variances referring to the Eigen values and sum of square factor loadings. The total cumulative variance reported 26.380,45.715,57.080 and 67.781. The last factor shows 68 percent of valid data with a loss of 32 percent. Further, the extracted sum of squares factor loading are reflected in the table where the values are mostly equal with the initial eigen values without any significant change in values. So no differences arise among the factors loading. Similarly, the Percentage of variances show the similar values of the eigen values.

| Table-7: Component | : Matrix ^a | of Inclusive | Growth |
|--------------------|-----------------------|--------------|--------|
|--------------------|-----------------------|--------------|--------|

| | | Co | mpone | ent Val | ues |
|-------|---|------|-------|---------|------|
| | | I | 2 | 3 | 4 |
| а | Insurance for all is much apparent in the locality and motivated for selling on behalf of companies | .953 | 022 | .092 | 073 |
| b | Financial counseling is updated more frequently | .875 | 057 | .096 | 117 |
| с | Financial savings are mandatory for all members | .908 | 009 | .014 | .027 |
| d | Financial process involves with credit management | .178 | 031 | .204 | .833 |
| e | Members are more concerned about the financial transactions and keep updated records | .534 | .618 | 386 | 104 |
| f | Business of any type is carried on by all members | 016 | .922 | 036 | .054 |
| g | More frequently they go for meeting for a new product or service | 075 | .769 | .102 | .144 |
| h | The members are more concerned about the repayment schedules of banks | .078 | .244 | .442 | .152 |
| i | Government support are made time to time on counseling | .050 | 211 | 523 | .548 |
| j | Local level support are provided as per demand | 197 | 016 | .668 | .022 |
| Extra | action Method: Principal component analysis. ^a | | | | |

Extraction Method: Principal component analysis a. 4 components extracted.

Table-7 indicates that the analysis of components matrix of inclusive growth, where Component '1' highlights the highest positive values on the factors as friendly attitude among the members, Insurance for all is much apparent in the locality and motivated for selling on behalf of companies followed by Financial savings are mandatory for all members, Financial counseling is updated more frequently and members are more concerned about the financial transactions and keep updated records with the values 0.953, 0.908, 0.875 and 0.534 respectively. Here, in the SHGs, the beneficiaries have opined on these factors. MFIs follow it nicely with the different SHGs. But, the factor showed negative value as: Business of any type is carried on by all members shows -0.016, More frequently they go for meeting for a new product or service shows -0.075, and Local level support are provided as per demand indicates -0.197. In considering the component values of columns, it has been observed that, the system in providing financial assistance to SHGs, which are mostly suitable with MFIs, banks etc in most positive values. The other three factors which are excluded with the above factor are of low value in providing support from the side of the government, banks even they express their happiness for all programme and the employees of the different MFIs, banks etc.

Conclusion and Suggestions

In the process of accessing the inclusion in the financial process through SHGs in the state of Odisha can minimize the gap in employment, gap in education and health. Further it has been encouraging to earn income through sensitive activities in local areas. The members in that areas s promote savings, insurance among groups and make a culture for more promotional avenues as an opimiser. Inclusive growth lead to stability in finance at bottom level, creates asset and creates employment through empowerment. SHG groups have that endeavor to make more sustainability approach to lead these areas for minimization of poverty through inclusion process.

So, managing SHGs and formation that all have initiatives aimed at taking banking services to the masses at community level. It is suggested that, there is a need for increasing banking penetration (BP) for increasing availability of banking services and need to push usage of banking system.

Moreover it is felt that there is need of a combo financial inclusion prospective plan for Odisha as a whole along with region specific inclusion plans targeting its content requirements based on its existing level of financial inclusion system. Business of any type is carried on by all members, More frequently they go for meeting for a new product or service, and Local level support are provided, the system in providing financial assistance of the SHGs, are mostly suitable with MFIs, banks etc in most positive values on Insurance for all is much apparent in the locality and motivated for selling on behalf of companies, Financial counseling is updated more frequently, Financial savings are mandatory for all members, Financial process involves with credit management, Members are more concerned about the financial transactions and keeping updated records. So, it is suggested to achieve the inclusive growth and sustainability at bottom level, the government must keep a more closer contact with the SHGs for above cited reasons those have identified in negative values. So here the optimizer is set on – Insurance for all in selling on behalf of companies, Financial counseling and Financial savings. So the rural women can be engaged in selling, counseling for all in timely and to motivate for small savings attitude which can help to optimize their income and minimize their poverty at large.

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The Effect of Volatility on Future Volatility – GARCH and EGARCH Forecasts of Stock Prices and Volatility

T. Lakshmanasamy*

Abstract

In any stock market, the stock prices are generally volatile over time. While stock prices either increase or decrease gradually in short periods, the fluctuations are wide and more persistent over long periods. This paper analyses the effects of such short period and long period volatility on stock prices. Using error variance i.e. volatility in residuals, specifically volatility clustering, the future volatility in stock prices is forecasted. With data on the stock prices of TATA Steel Limited, a listed company in the NSE, for 1237 days between January 1, 2013 and December 29, 2017, the effects of short period and long period stock price fluctuations on stock prices and on stock price volatility are predicted for the next 69 days. The stock prices are predicted first by ARIMA model, and then the future stock price volatility is predicted applying the GARCH and EGARCH models on the resultant residuals. The EGARCH fitting shows that the long period fluctuations have significant effect on the future stock price volatility relative to the GARCH fitting. The comparison EGARCH forecasts with the actual stock price fluctuations during January I - April 13, 2018, shows that the long period stock price volatility is more reliant than the short period volatility in forecasting future stock price volatility as well as the stock prices.

Keywords: ARIMA, Asymmetry, EGARCH, Error Variance, Forecasting, GARCH, Heteroscedasticity, Leverage, Stock Price Volatility, Volatility Clustering

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The research assistance of Boddapatti Aditya Prakash is gratefully acknowledged.

Introduction

A stock or capital market is a network of transactions of shares or securities of companies or firms and a place where buyers and sellers make crucial decisions on stock trading at certain stock prices. A stock market also acts as the basement of major investment decisions. Participants in the stock market include individuals, brokers, agencies, non-bank financial institutions like insurance companies, chit fund companies and many more. The prices of shares generally fluctuate both during the time of transactions and over time also. Fluctuations in stock prices include both positive and negative changes. The stock price of any product is affected by a host of factors such as inflation, demand for that good in the market, government policies, changes in budget, the worth of the organisation or company that manufactures that particular good, etc. Among all the factors that cause stock price fluctuations, the performance of the company whose shares are traded matters a lot for stock price as well as its volatility. Further, the stock prices and volatility are related with systematic risk as well as unsystematic risk in the stock market. The investor's timing of buying and selling of shares are also influenced by calendar effects like January effect, Friday the 13th effect, and first half of the month effect. The volatility of the stock price is generally measured by the variability of the stock prices over time, and the common measure of volatility is the standard deviation of returns on the stocks.

The Indian stock market covers major sectors of the Indian economy, including financial services, information technology, automobiles, energy, metal, engineering, etc., and offers investment managers a vibrant exposure to the Indian market. In India, there are two major stock exchanges: the Bombay Stock Exchange (BSE) operating from Mumbai and the National Stock Exchange of India (NSE) operating from New Delhi. The oldest financial market in India is the Bombay Stock Exchange (BSE). As on March, 2017, among the world's largest stock exchanges, the NSE stands at the tenth place. The performance of stocks in stock exchanges is measured by some indices. The two such indices in India are the BSE30, commonly the SENSEX, of the BSE and NIFTY50 of the NSE. The NIFTY50 stock index is widely considered as the benchmark and barometer for the capital markets in India. The corporate sector, whose shares are traded in the stock exchanges, accounts for about 12 to 14 percent of India's GDP. Of all the companies in India's corporate sector, only 7800 companies are listed in NSE, out of which about 4000 companies only trade on both the NSE and BSE. Hence, the contribution of stock trading at NSE and BSE to India's GDP is only 4 percent, unlike the US where the large corporate companies contribute close to 70 percent of the GDP of US.

In trading of stocks in a day, the stock prices are bound to fluctuate in between the open price and the close price of the day due to various reasons. It is also possible that the price of a stock experienced in a day is influenced by its previous price, even the price a long past ago. If such is the case then today's price may have an effect on the price that comes into effect on tomorrow or later. Thus, there may be lagged effects of own price in the current stock price. It is also possible that current stock price volatility is a reflection of past fluctuations. Therefore, the past stock prices and its volatility may be crucial to forecast future prices and their volatilities. Econometrically, based on previous prices, the future price of a stock can be forecasted and also its volatility can be forecasted. Among the many econometric models of forecasting, autoregressive integrated moving average (ARIMA), autoregressive conditional heteroscedasticity (ARCH) and generalised autoregressive conditional heteroscedasticity (GARCH) models are commonly used to forecast the future stock prices and their volatilities. While the ARCH and ARIMA models assume constant common variance, GARCH model takes into account the timevarying conditional variance of stock prices. The conditional variance includes past variances in the autoregressive term and the moving average term is the square of residual from the autoregression of present variance on the past variance.

This paper analyses the impact of long term and short term stock price volatility on the future stock price as well as on the variance of the forecasted stock price. Specifically, this paper forecasts the future stock price using datasets for long and short time periods and forecasts the variance from the long term and short term stock price fluctuations. The empirical analysis is based on the daily stock prices of the TATA Steel Limited, a listed company in the NSE that manufactures metal steels. The Tata Steel Limited, a Tata Group subsidiary, is the second largest steel manufacturing company in India, after Steel Authority of India Limited, a public sector undertaking in India, with a global presence. In 2017, the steel production of the TATA Steel Limited is 27.5 million tons, with 13 million tons domestic steel production. Metal manufacturing sector is one of the growing sectors in India. It contributes to almost 2.5 percent of India's GDP. The daily data on the stock prices of TATA Steel for five years from January 1, 2013 to April 13, 2018 from the National Stock Exchange of India has been used. Empirically, this paper follows the Box-Jenkins methodology for forecasting. The residuals of the ARIMA model are used in the GARCH and EGARCH models for an understanding of the error variance effect on the forecast of the future volatility in stock prices.

A Brief Review of Recent Literature

In many analyses of stock market performance and stock prices, the ARIMA model based on the Box-Jenkins method is used for forecasting. The ARIMA method easily handles the nonstationary data, an important nature of stock price series. However, the ARIMA model forecasts only the future stock prices, but not the variance fluctuations. The ARIMA-GARCH method forecasts the future values of stocks as well as the fluctuations in the variance of stock prices.

Maity and Chatterjee (2012) apply the ARIMA of order (1,2,2) for the period 1959 to 2011 for forecasting the GDP of India for the next ten years, 2012 to 2021. The forecasted GDP shows an increasing trend and its rate of growth rates shows a decreasing trend. In the maximum likelihood estimates, the coefficient of AR terms is negative and less than 1 and the coefficients of MA are more than 1. Statistical validity of the model is checked by modified Ljung-Box statistics. The estimates show a parsimonious model with only one AR coefficient and one MA coefficient with statistical significance. Therefore, they argue that ARIMA model is very effective not only in forecasting GDP but also in predicting growth rate of GDP in India.

Guha and Bandyopadhyay (2016) apply the ARIMA model on the November 2003 to January 2014 nonstationary gold price data for forecasting the gold price. They compare various statistics of fitness like mean absolute error, mean absolute percentage error and root mean squared error of ARIMA models of different orders. They conclude that the ARIMA (1, 1, 1) forecast is the most accurate forecast for the data. The forecasted gold prices show an increasing trend.

Ashik and Kannan (2017) apply the ARIMA model on 2015 NSE Nifty 50 closing price to forecast the future stock prices. Among all the ARIMA models, the ARIMA (0,1,1) forecast is the most precise forecast, with lowest BIC value and small mean absolute percentage error. The closing stock price of Nifty 50 shows a trend with slow decreasing fluctuations for future trading days.

The assumption of common variance may not be satisfied commonly in all the time series errors. Fluctuations in errors may produce volatility in variance also. In many instances, the variance may be conditional and vary over time. Under such conditions, the ARIMA modeling is inappropriate. To overcome the common variance assumption, Engle (1982) proposes a time-varying conditional variance model, the ARCH model. A generalisation of the ARCH model, the GARCH model is proposed by Bollerslev (1986). In the GARCH model, the periods of fluctuations are clustered and the volatility of future stock prices is predicted. The GARCH model predicts the future variances on the basis of AR or MA or ARIMA forecasts of the variance of residuals.

There may also be an asymmetry in volatility due to large positive and negative stock returns. The positive stock returns could arise because of good news when there is calmness in the financial market and the negative returns on stocks may arise because of bad news in a period of volatile financial market. When there is asymmetry in volatility and leverage effect, the GJR-GARCH or TGARCH is used for forecasting the variance (Glosten, Jagannathan and Runkle, 1993).

Ahmad et al. (2015) use a hybrid of linear ARIMA and GJR-GARCH to model and forecast the Malaysian gold price. They compare the TARCH forecasts with ARIMA forecasts for forecasting accuracy. The gold prices are forecasted using the best fit ARIMA model whose order is (2,1,2). Then, the residuals of the forecasted values are subjected to TGARCH analysis. The ARCH-LM test is applied on the residuals for ARCH effects. Then, the GJR-GARCH model of order (1,1) has been applied to forecast the gold price. Based on lowest AIC values, the ARIMA (2,1,2)-GJR-GARCH (1,1) hybrid model is shown to perform better than the ARIMA model in forecasting gold price. Further, in terms of forecasting, the ARIMA-GJR-GARCH produces lower in-sample and out-sample mean absolute percentage errors (MAPE) compared to those of the ARIMA model.

Yaziz et al. (2016) use the 5-day-per-week frequency data on daily gold price for 40 days from November 26, 2005 to January 18, 2006 to forecast the gold price in Malaysia applying the ARIMA-GARCH hybrid model. The ARIMA (1,1,1) has been fitted to the 35 observations, and the remaining 5 observations are used to check the accuracies of the forecasts. To the residuals of these forecasts, GARCH has been fitted to forecast the variance of the prices. The results show that the ARIMA (1,1,1)-GARCH (0,2), with low mean square error and mean absolute error, is the most efficient model which produces optimum results.

Epaphra (2017) apply the GARCH and EGARCH models on the exchange rate of Tanzanian Shilling and UD\$, in order to study the volatility in exchange rate in Tanzanian. The data used is from January 4, 2009 to July 27, 2015. The variance is modeled using GARCH (1,1) and the asymmetry and leverage effects are captured by EGARCH (1,1) models. The negative coefficient of asymmetric volatility signifies less volatility with respect to positive shocks relative to the negative shocks. The GARCH (1,1) model is the good fit asit's root mean square error is low.

Data and Methodology

This paper uses the daily data of the listed TATA Steel Limited stock prices from the National Stock Exchange of India. The time period considered is five years, from January 1, 2013 to April 13, 2018. The daily data on stock prices from January 1, 2016 to December 29, 2017, consisting of 495 observations is used for short run variance forecasting, and data from January 1, 2013 to December 29, 2017, a total of 1237 observations is used for long run variance forecasting. The forecast accuracies are validated with the data for 69 days, from January 1, 2018 to April 13, 2018. The daily stock price data of TATA Steel Limited is collected from the NSE website that contains information on open, close, high, low, previous close, last stock prices, volume weighted average price (VWAP), number of trades,total traded quantity, total deliverable quantity, percentage of deliverable quantity to traded quantity, turnover, etc.

Empirical Methodology

The VWAP i.e. volume weighted average price has been taken for fitting the ARIMA model, since unlike open, close and last prices, VWAP takes into account all the prices that existed throughout the day and the total trades that have taken place for different prices.

$$WWAP = \frac{\sum stockprice \times no. of stocks bought at that price that day}{Totalno. of stocks traded for that day}$$

The future stock prices are forecasted by the ARIMA model and the GARCH is fitted on the residuals of the forecasts. First to check for stationarity, the data are plotted at levels and the Augmented Dickey-Fuller (ADF) test is performed on the levels data. The time series is then differenced and the stationarity of the differenced series is checked by applying the ADF test vet again. After differencing, the series achieves stationarity. Based on the Autocorrelation Function (ACF) and the Partial Autocorrelation Function (PACF) plots of the differenced series, tentative orders of the autoregressive and moving average terms are taken just to get a point to begin from. Then, based on the significance of coefficients and lowest AIC values, the best fit model is identified. The variables in the resultant estimating equation are in differenced forms. Hence, the difference is eliminated from the equation by using basic sum-difference arithmetic and then forecasting is carried out. The Breusch-Godfrey LM and ARCH LM tests are applied on the residuals of the forecasts to test for serial correlation and ARCH effects respectively. Once the existence of ARCH and GARCH effects is confirmed, the GARCH model is applied, thereby obtaining forecasts of the varying conditional variance i.e. volatility. After checking for significance of coefficients, EGARCH model is applied on the residuals of the forecasts generated from the data set taken for long time period.

Box-Jenkins Methodology

A time series data ordinarily does not reveal itself what process it follows – AR or MA or ARMA or ARIMA. Even if the appropriate process is

known, the orders of the model, the p or q or d of the process are not easily identifiable. Box-Jenkins (1976) address these issues. The B-J methodology proceeds in four steps: (i) identification, (ii) estimation, (iii) diagnostic checking, and (iv)forecasting. For, example, the ARIMA(p,d,q) could be fitted to the time series if only the orders the autoregressive process (p), integration (d), and moving average process (q) are identified.

First, the unit root test has to be applied on the time series before and after differencing to identify the order of integration, d. If the ADF test on the undifferenced series reveals no unit root i.e. the series is stationary at levels, then the order of integration is zero. If the ADF test shows that the undifferenced series has unit root and the differenced series has no unit root i.e., the series is stationary at difference, the order of integration is one. The differencing process continues until the series achieves stationarity i.e. till the unit root is eliminated from the time series. Thus, the order of integration, d, is identified as that level of differencing at which the series is stationarised by the elimination of the unit root.

The ARIMA is the fitted on the difference-stationarised time series for determining the AR (p) or MA (q)in order to correct for any autocorrelation present in the differenced series. The orders of AR and MA terms of the series are identified by the autocorrelation function (ACF) and partial autocorrelation (PACF) plots of the differenced series. These plots show the correlation of the series with its own lags. In time series data, the partial correlation propagates to higher order lags, and hence the correlation between the lags also propagates. When the series is not fully differenced i.e. if the PACF of the differenced series shows a cutoff and/or the lag-1 autocorrelation is positive, an AR(p) term may be added to the model indicating the number of AR terms. On the other hand, if the series is over differenced i.e. the ACF of the differenced series indicates a cutoff and/or the lag-1 autocorrelation is negative, an MA(q) term indicating the lag at the ACF cut off may be added to the model. Once the model order (p,d,q) is identified, then ARIMA model is fitted on the integrated series of order d, autoregressive terms p, and moving average terms q, applying the ordinary least squares regression.

In the ARIMA model of stock prices, the current price is expressed in terms of sum of past prices Y_{t-p} 's and sum of moving average terms or past error terms u_{t-q} 's. Each u_{t-q} is obtained by regressing Y_{t-p} on Y_{t-p-1} (p=0,1,2...n). As the correlogram and partial correlogram are the basis for determining the order of the AR and MA terms, there may also exist many other models that can fit better to the data. The best fit ARIMA model among different orders of the autoregressive and moving average terms is generally chosen on the basis of significance of coefficients and on certain criteria such as log likelihood, Bayesian Information Criteria (BIC), Akaike Information Criteria (SBIC).

After choosing the best fit ARIMA model, the next step is to check if there is more information available i.e. to check if there are any more significant autocorrelations and partial autocorrelations at any lags present. In essence, the diagnostics is to confirm white noise residuals. In correlogram and partial correlogram analysis, the Box-Pierceq-statistic or Ljung-Boxq-statistic tests the joint hypothesis that all the autocorrelations upto certain lags are simultaneously equal to zero.

The best fit ARIMA model obtained through the foregoing identification, estimation and diagnostic checking steps can now be used for forecasting the future stock prices. The estimating equation consists of Y_{t-p} autoregressive and u_{t-q} moving average terms based on the order. Thus, the ARIMA model is a self-determining model as there are only current and past values of the data series that depend on the own autoregression of the variable and the moving average of the errors, and no exogenous variables are there in the model.

ARIMA Model

Generally, the autoregressive model AR(p) is specified as:

$$Y_t = a + \gamma_1 Y_{t-1} + \gamma_2 Y_{t-2} + \dots + \gamma_p Y_{t-p} + u_t \qquad \dots (1)$$

where Y_t is a finite linear sum of its past values, u_t is the random shock or white noise term identically and independently distributed, $u_t \sim NIID(0, \sigma^2)$, γ_i (i=1,...,p) are the parameters of the model, and Y_t is stationary.

The moving average model MA(q) is specified as:

$$Y_{t} = u_{t} - \lambda_{1}u_{t-1} - \lambda_{2}u_{t-2} - \dots - \lambda_{a}u_{t-a} \qquad \dots (2)$$

where Y_t is a linear weighted sum of the current and past values of the random shock series, and the λ_j (j=1,,q) are the moving average parameters. When the series is nonstationary at level, the series Y_t is reduced to stationarity by differencing:

$$\Delta Y_t = Y_t - Y_{t-1} \tag{3}$$

Then, the AR (1) model for the differenced series is specified as:

$$\Delta Y_t - \gamma_1 \Delta Y_{t-1} - \dots - \gamma_p \Delta Y_{t-p} = u_t \qquad \dots (4)$$

The combination of AR and MA models along with appropriate degree of differencing (integration), the ARIMA (p,d,q) model is specified as:

$$Y_{t} = a + \gamma_{1}Y_{t-1} + \gamma_{2}Y_{t-2} + \dots + \gamma_{p}Y_{t-p} + u_{t} - \lambda_{1}u_{t-1} - \lambda_{2}u_{t-2} - \dots - \lambda_{q}u_{t}. \quad \dots (5)$$

or
$$\Delta Y_t - \gamma_1 \Delta Y_{t-1} - \dots - \gamma_p \Delta Y_{t-p} = u_t - \lambda_1 u_{t-1} - \lambda_2 u_{t-2} - \dots - \lambda_q u_{t-q} \qquad \dots (6)$$

Using the backward shift operator B, a compact ARIMA model is specified as:

$$Y_{t-1} - Y_{t-2} = BY_t - B^2 Y_t \qquad \dots (7)$$

...(9)

$$\Rightarrow Y_{t-1} = B(1-B)Y_t; \ \Delta Y_{t-2} = B^2(1-B)Y_t; \ (1-B)Y_t = Y_t - Y_{t-1} \qquad \dots (8)$$

where $B^d Y_t = Y_{t-d}$.

The general ARIMA (p,d,q) model, with d degree of differencing, is expressed as:

$$(1 - \gamma_1 B - \gamma_2 B^2 - \gamma_3 B^3 - \dots - \gamma_p B^p)(1 - B)Y_t = (1 - \lambda_1 B - \lambda_2 B^2 - \dots - \lambda_q B^q)u_t$$

The ARIMA model can be estimated by the OLS method by regressing the differenced series on the autoregressive and moving average terms. However, when the data is fitted with the model, errors bound to arise showing the deviation of the fitted values from the actuals. The estimated residuals are calculated as:

$$\hat{u}_t = Y_t - \hat{y}_t \qquad \dots (10)$$

Then, the GARCH model is applied to estimate the error variance i.e. volatility in residuals. The common variance of errors is tested by applying the ARCH-LM test.

GARCH Model

When the errors of the time series exhibit time-varying errors, then the OLS method cannot be applied. The Engle's (1982) ARCH modelling is applied when the time series exhibits time-varying conditional variance. The Bollerslev's (1986) GARCH modelling is applied when the series exhibits volatility clustering. to predict the future volatility. The GARCH model incorporates the variance and variance forecast of the previous periods in the forecast of future variance. In the standard GARCH model, the past volatility and variance are symmetric.

The basic structure of symmetric and normal GARCH (p,q) model is specified as (Brooks, 2008):

$$Y_{t} = \gamma_{0} + \gamma_{1} Y_{t-1} + \dots + \gamma_{a} Y_{t-a} + u_{t}$$
...(11)

where the error term u_t , conditional on information of period t-1, is distributed as:

$$u_t \sim [N(0, (\gamma_0 + \gamma_1 u_{t-1}^2 + \lambda \sigma_{t-1}^2)] \qquad \dots (12)$$

The error variance follows the ARCH (1) process. The error variance depends on the squared error as well as its conditional variance in the previous period. As the error variance is not directly observed, Engle (1982) suggests the conditional variance for GARCH modelling:

$$u_t = v_t \sigma_t^2 \qquad \dots (13)$$

$$\sigma_t^2 = \delta + (\gamma_1 u_{t-1}^2 + \gamma_2 u_{t-2}^2 + \dots) + (\lambda_1 \sigma_{t-1}^2 + \lambda_2 \sigma_{t-2}^2 + \dots) \quad \dots (14)$$

$$\sigma_t^2 = \delta + \sum \gamma_i u_{t-q}^2 + \sum \lambda_j \sigma_{t-p}^2 \qquad \dots (15)$$

where $v_t \sim N(0,1)$ and $\delta = \gamma_0(1 - \lambda_1)$. The GARCH term is the conditional variance σ^2 , where order p represents the forecast variance of the last period. The ARCH term u² represents the previous period volatility, the q lags of the squared residual from the mean equation.

EGARCH Model

The disadvantage of the GARCH model is that it assumes the parameters to be non-negative and symmetry in residuals. Nelson and Cao (1992) propose an Exponential Conditional Heteroscedasticity (EGARCH) model that takes into account the leverage effect i.e. asymmetry in the residuals induced by big positive and negative changes. The EGARCH model is specified as:

$$\log \sigma_t^2 = \omega + \sum_{k=1}^q \alpha_k g(z_{t-k}) + \sum_{k=1}^p \beta_k \log \sigma_{t-k}^2 \qquad \dots (16)$$

$$g(z_t) = \alpha z_t + \beta[|z_t| - E|z_t|] \qquad \dots (17)$$

$$z_t = \frac{u_t}{\sqrt{\sigma_t^2}} \qquad \dots (18)$$

If
$$z_t \sim N(0, 1)$$
, then $E|z_t| = \sqrt{\frac{2}{\pi}}$...(19)

Inserting equations (18) and (19) into equation (17) gives:

$$g(z_t) = \alpha \frac{\varepsilon_t}{\sqrt{\sigma_t^2}} + \beta \left[\frac{|u_t|}{\sqrt{\sigma_t^2}} - \sqrt{\frac{2}{\pi}} \right] \qquad \dots (20)$$

Substituting one period lagged form of equation (20) in equation (16) yields:

$$\log \sigma_t^2 = \omega + \lambda ln \sigma_{t-1}^2 + \theta \frac{u_{t-1}}{\sqrt{\sigma_{t-1}^2}} + \gamma \left[\frac{|u_{t-1}|}{\sqrt{\sigma_{t-1}^2}} - \sqrt{\frac{2}{\pi}} \right] \dots (21)$$

where $\sigma_t^2 = \gamma_0 + \gamma_1 u_{t-1}^2 + \lambda_1 \sigma_{t-1}^2 + \theta u_{t-1}^2 I_{t-1}$ and I being the information asymmetry.

Thus, the EGARCH model has the advantage of less restrictiveness, since σ_t^2 as modeled is always positive even with negative parameter values. The persistence of conditional volatility is measured by the term λ and the asymmetry or leverage effect is measured by θ . For large λ , the volatility

takes long time to decay. When $\theta=0$, the model is symmetric, $\theta<0$ implies less volatility with positive shocks than with negative shocks, and $\theta>0$ implies more volatility due to good news than bad news. The γ measures the symmetric effect or the GARCH effect of the model. The equation (21) is an EGARCH model of the first order, where the conditional variance σ_t^2 is asymmetric with respect to u_{t-k} , the lagged disturbances. The EGARCH model uses the logarithmic value of the conditional variance.

Empirical Analysis

As shown in Figures 1 and 2, the stock price of TATA Steel Limited in NSE has experienced fluctuations between the time period January 1, 2013 to December 29, 2017. The Figure-1 presents the plot VWAP data at levels. While the stock prices show ups and downs during long period from 2013 to 2017, the stock prices from 2016 to 2017 show steady increase. Hence, there is no mean reversal phenomenon in the plot. Since VWAP comprises all the prices that exist throughout the day including open and close prices, the plot of VWAP resembles with that of open and close prices.



Figure-1: Plot of TATA Steel Stock Prices (at levels)

The stationarity of the series is checked by plotting VWAP data at first difference. The differenced data plot in Figure-2 exhibits the phenomenon of mean reversal i.e. the graphs are frequently cutting the mean line. Thus, the data has become stationary after differencing it once. The descriptive statistics of the VWAP for both long and short data sets are presented in Table-1. The average stock price is Rs.397 during the long period and Rs. 455 during the short period. The standard deviations and variances for both periods show considerable fluctuations in the stock prices.



Figure-2: Plot of TATA Steel Stock Prices (at first difference)

| Table-1: Descriptive statistics of TATA steel stock Frice | Table-I | : Descri | ptive Statis | stics of TAT | A Steel S | Stock Price |
|---|---------|----------|--------------|--------------|-----------|-------------|
|---|---------|----------|--------------|--------------|-----------|-------------|

| Period | Mean | Median | Mode | Standard Deviation | Sample Variance |
|------------------------------------|--------|--------|--------|-----------------------|--------------------|
| January 1,2013 to December 29,2017 | 397.09 | 377.67 | 377.74 | 122.15 | 14920.61 |
| January 1,2016 to December 29,2017 | 454.57 | 427.63 | 375.08 | 138.74 | 19249.69 |

Towards the fitting of ARIMA model for the data, identification of the orders (p,d,q) of autoregressive, integration or differencing and moving average terms are to be determined by performing the standard tests on the data series. The Augmented Dickey-Fuller test for stationarity is performed both at the levels and on the first difference. The ADF test is performed on the data by estimating the regression of the form:

 $\Delta Y_t = \beta_0 + \beta t + \delta Y_{t-1} + \sum \beta_i \Delta Y_{t-k} + u_t \qquad k = 1, \dots, T \dots (22)$

where u_t is a pure white noise error term and Δ is the first difference. The Akaike Information Criteria (AIC) is used to determine the number of lagged difference terms to be included in the model to avoid serial correlated in the error term. In ADF, the test is whether δ =0 i.e. if ρ =1 for the presence of unit root in the time series. The Table-2 presents the ADF test results showing that the series is nonstationarity at levels. Hence, the series at levels has a unit root, which is also revealed by the time series plot of the differenced series. At first difference, the series has become stationary, as the t-statistics > 0.05 p-value. Thus, the data series is integrated of order 1 i.e., I(1).

Table-2: ADF Stationarity Test

| At L | _evel | At First | Difference |
|-------------|-------------|-------------|-------------|
| t-statistic | Probability | t-statistic | probability |
| -2.05365 I | 0.2639 | -35.21691 | 0.0000 |

The orders of AR and MA terms are determined by checking the ACF PACF of the data series. The Figures 3 and 4 plot the ACF and PACF correlograms of the differenced short period and long period data series. The ACF and PACF plots reveal a significant autocorrelation at the first lag in both ACF and PACF.





Figure-4: Long Period Autocorrelations of First Differenced Series



The Effect of Volatility on Future Volatility – GARCH and EGARCH Forecasts of Stock Prices and Volatility



Therefore, based on the correlogram and unit root test, the (p,d,q) order of the model has to be (1,1,1), due to the presence of autocorrelation at the first lag itself. However, correlogram can indicate only the orders, and do not identify the appropriate order for the ARIMA model. Hence, the AIC has to be applied for the identification of the most appropriate order to be chosen for model fitting. The best fit model is the one with lowest AIC value. The Table-3 presents the AIC and SIC values for various orders of both short period and long period time series. Based on the significance and the lowest AIC, the orders (1,1,2) and (3,1,3) are identified as the best fit models for short run and long run data series respectively.

| | A · · D | | | | |
|----------------|---------|--------|--------|--------|--|
| Ouden (n.d.n.) | Short | period | Long | period | |
| Order (p,a,q) | AIC | SIC | AIC | SIC | |
| (1,1,1) | 6.9628 | 6.9883 | 6.7672 | 6.7796 | |
| (1,1,2) | 6.9571 | 6.9911 | 6.7684 | 6.7849 | |
| (1,1,3) | 6.963 I | 7.0055 | 6.7699 | 6.7907 | |
| (2,1,1) | 6.9587 | 6.9927 | 6.7683 | 6.7848 | |
| (2,1,2) | 6.9627 | 7.0051 | 6.7684 | 6.7891 | |
| (2,1,3) | 6.9667 | 7.0176 | 6.7700 | 6.7949 | |
| (3,1,1) | - | - | 6.7685 | 6.7892 | |
| (3,1,2) | - | - | 6.7698 | 6.7946 | |
| (3,1,3) | - | - | 6.7629 | 6.7920 | |

Table-3: AIC for Orders (p,d,q)

The OLS regression estimates of the best fit ARIMA model for the first differenced series on the autoregressive and moving average terms are presented in Table-4.

...(24)

...(26)

| Data Period | Parameter | Coefficient | Standard error | t-statistics | p-value |
|-------------|-----------|-------------|-------------------|--------------|---------|
| | AR(I) | 0.877* | 0.0721 | 12.1642 | 0.000 |
| | MA(I) | -0.733* | 0.0814 | -9.0044 | 0.000 |
| Short run | MA(2) | -0.187* | 0.0451 | -4.1503 | 0.000 |
| | Constant | 1.016* | 0.2362 | 4.3023 | 0.000 |
| | AR(I) | -1.715* | 0.1127 | -15.222 | 0.000 |
| | AR(2) | -1.302* | 0.1658 | -7.8511 | 0.000 |
| | AR(3) | -0.220** | 0.1093 | -2.0143 | 0.044 |
| | MA(I) | 1.948* | 0.1037 | 18.7918 | 0.000 |
| | MA(2) | l.668* | 0.1539 | 10.835 | 0.000 |
| Long run | MA(3) | 0.454* | 0.1025 | 4.4261 | 0.000 |
| | Constant | 0.247 | 0.2418 | 1.0203 | 0.308 |

| Table-4: OLS Estimates of the Best Fit ARIM | IA Model |
|---|----------|
|---|----------|

Note: * Significant at 1 percent level. ** Significant at 5 percent level.

Thus, the short period model is:

$$\Delta y_t = 1.016 + 0.877 \Delta y_{t-1} - 0.733 u_{t-1} - 0.187 u_{t-2} \qquad \dots (23)$$

The long period model is:
$$\Delta y_t = 0.247 - 1.715 \Delta y_{t-1} - 1.302 \Delta y_{t-2} - 0.220 \Delta y_{t-3} + 1.948 u_{t-1} + 1.0000 u_{t-1} + 0.0000 u_{t-1} + 0.00000 u_{t-1} + 0.00000 u_{t-1} + 0.00000 u_{t-1} + 0$$

 $1.668u_{t-2} + 0.454u_{t-3}$

Since the regression is on the differenced series, the resultant forecasted prices would be in differenced forms as well. Hence, using ordinary sum-difference arithmetic, the differenced term from the equations are eliminated to get estimated equations in terms of actual values of prices. Then, the stock prices are forecasted in the base form. Thus, from equation (23), the forecasted stock price at time t is:

$$y_t = 1.016 + 0.123y_{t-1} + 0.877y_{t-2} - 0.733u_{t-1} - 0.187u_{t-2} \qquad \dots (25)$$

From equation (24), the forecasted stock price at time t is:

$$y_t = 0.247 - 715y_{t-1} - 0.414y_{t-2} - 1.082y_{t-3} + 1.948u_{t-1} + 1.668u_{t-2} + 0.454u_{t-3}$$

Therefore, based on short data and long data, equations (25) and (26) respectively are used in the forecasting of the TATA Steel stock prices.

Before forecasting the stock prices, following the Box-Jenkins methodology, the residuals of the best fit models are tested if they are white noise terms. The Figures 5 and 6 show the correlograms of residuals generated by the short period and long period models respectively. As can be seen from the correlograms, no significant spikes can be noticed in both ACF and PACF, implying that the residual of the identified ARIMA models are white noise, and no further information is available. Hence, there is no need to consider AR (p) and MA (q) any further.

| Auto-correlation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---------------------------------------|--|----|--------|--------|--------|-------|
| , du | | I | -0.007 | -0.007 | 0.0232 | |
| | 11 | 2 | -0.038 | -0.038 | 0.7607 | |
| | | 3 | -0.021 | -0.021 | 0.9754 | |
| | 1 11 | 4 | 0.004 | 0.003 | 0.9846 | 0.321 |
| 1 1 | | 5 | 0.053 | 0.052 | 2.4195 | 0.298 |
| 1 1 | l : !!! | 6 | 0.010 | 0.011 | 2.4681 | 0.481 |
| 1 1 | | 7 | 0.034 | 0.038 | 3.0393 | 0.551 |
| 1 1 | i : P: | 8 | -0.004 | -0.001 | 3.0476 | 0.693 |
| i hi | | 9 | 0.038 | 0.040 | 3.7602 | 0.709 |
| 1 11 | | 10 | -0.029 | -0.031 | 4.1956 | 0.757 |
| 101 | | 11 | -0.056 | -0.055 | 5.7965 | 0.670 |
| i bi | | 12 | 0.043 | 0.038 | 6.7356 | 0.665 |
| 1 1 | | 13 | 0.002 | -0.003 | 6.7388 | 0.750 |
| 10 | l ili | 14 | -0.020 | -0.024 | 6.9424 | 0.804 |
| i)u | - du | 15 | 0.016 | 0.021 | 7.0819 | 0.852 |
| 1 1 | 1 1 | 16 | 0.005 | 0.007 | 7.0955 | 0.897 |
| i)u | 1 | 17 | 0.020 | 0.020 | 7.3069 | 0.922 |
| 1 1 | 1 1 | 18 | 0.004 | 0.007 | 7.3136 | 0.948 |
| 101 | 101 | 19 | -0.045 | -0.043 | 8.3651 | 0.937 |
| 10 | 101 | 20 | -0.047 | -0.045 | 9.5106 | 0.923 |
| i i [] i | e di se di | 21 | -0.058 | -0.069 | 11.260 | 0.883 |
| 1 1 | 10 | 22 | 0.002 | -0.009 | 11.263 | 0.915 |
| i i bi | i i ju | 23 | 0.029 | 0.028 | 11.703 | 0.926 |
| ייםי | 1 1 | 24 | 0.047 | 0.046 | 12.874 | 0.913 |
| קי ן | j ja | 25 | 0.071 | 0.082 | 15.516 | 0.839 |
| i i i i i i i i i i i i i i i i i i i | ի հերություն | 26 | 0.024 | 0.046 | 15.805 | 0.863 |
| <u>ין</u> י | 10 | 27 | -0.037 | -0.024 | 16.508 | 0.869 |
| | լիներու | 28 | 0.017 | 0.027 | 16.657 | 0.894 |
| | ון י | 29 | 0.035 | 0.027 | 17.320 | 0.899 |
| 1 <u>1</u> | 1 1 | 30 | 0.053 | 0.038 | 18.797 | 0.877 |
| 1 11 | 1 | 31 | -0.015 | -0.024 | 18.910 | 0.901 |
| 1 :4: | ן יני | 32 | -0.041 | -0.048 | 19.804 | 0.899 |
| l : #: | · · • | 33 | 0.025 | 0.022 | 20.137 | 0.913 |
| 1 11 | '[' | 34 | 0.012 | 0.007 | 20.214 | 0.931 |
| | | 35 | 0.011 | 0.010 | 20.281 | 0.946 |
| | 101 | 36 | 0.022 | 0.040 | 20.540 | 0.955 |

Figure-5: Correlogram of Residuals of Short Period Data

Figure-6: Correlogram of Residuals of Long Period Data

| Auto-correlation | Partial Correlation | - | AC | PAC | O_Stat | Prob |
|------------------|--|-------|--------|--------|-----------|-------|
| Addo-correlation | | · · · | 0.001 | 0.001 | 0.0013 | 1100 |
| ili. | - du | 2 | -0.000 | -0.000 | 0.0013 | |
| ili. | ili ili | 3 | -0.013 | -0.013 | 0.2166 | |
| | | 4 | -0.073 | -0.073 | 0.2760 | |
| | | 5 | 0.002 | 0.002 | 0.8821 | |
| 11 | 11 | 6 | -0.001 | -0.001 | 0.8828 | |
| 11 | 11 | 7 | 0.010 | 0.009 | 0.9992 | 0317 |
| - ip | վել | 8 | 0.014 | 0.007 | 1 2562 | 0.517 |
| - ip | | 9 | 0.029 | 0.029 | 2 3 1 9 0 | 0.509 |
| - ip | - ipi | 10 | -0.010 | -0.010 | 2 4540 | 0.653 |
| ų. | | | 0.008 | 0.009 | 2.5372 | 0.771 |
| · · · | | 12 | 0.004 | 0.006 | 2.5593 | 0.862 |
| 11 | 11 | 13 | 0.003 | 0.004 | 2.5678 | 0.922 |
| 11 | | 14 | 0.015 | 0.015 | 2.8556 | 0.943 |
| 11 | 111 | 15 | 0.013 | 0.014 | 3.0725 | 0.961 |
| 10 | | 16 | 0.018 | 0.018 | 3.4959 | 0.967 |
| 16 | | 17 | 0.036 | 0.036 | 5.1562 | 0.923 |
| | i ii | 18 | 0.022 | 0.023 | 5.7706 | 0.927 |
| ili | ili | 19 | 0.004 | 0.005 | 5.7890 | 0.953 |
| | | 20 | -0.023 | -0.022 | 6.4273 | 0.955 |
| | | 21 | -0.012 | -0.010 | 6.5992 | 0.968 |
| ų. | | 22 | -0.012 | -0.012 | 6.7765 | 0.977 |
| 11 | | 23 | -0.008 | -0.010 | 6.8596 | 0.985 |
| - iju | վել հերուներին հերուների հերունենի հերուներին հերունենի հերուների հերուների հերուների հերունենի հերունենի հերուներին հերուներին հերուներին հերուներին հերուներին հերուներին հերուներին հերուների հերունենի հենենի հենենի հերունենի հենենի հերունենի հենենի | 24 | 0.017 | 0.014 | 7.2398 | 0.988 |
| - ili | 1 | 25 | 0.009 | 0.006 | 7.3488 | 0.992 |
| | 1 | 26 | 0.009 | 0.006 | 7.4507 | 0.995 |
| q. | | 27 | -0.049 | -0.050 | 10.488 | 0.972 |
| 11 | 1 | 28 | -0.004 | -0.003 | 10.507 | 0.981 |
| ' P | 'P | 29 | 0.038 | 0.040 | 12.380 | 0.964 |
| 12 | 12 | 30 | 0.047 | 0.046 | 15.155 | 0.916 |
| 12 | 12 | 31 | 0.034 | 0.032 | 16.647 | 0.894 |
| 16 | | 32 | 0.015 | 0.014 | 16.924 | 0.911 |
| 12 | 15 | 33 | 0.067 | 0.068 | 22.583 | 0.707 |
| | | 34 | 0.022 | 0.025 | 23.186 | 0.724 |

Using the identified models for forecasting, ARIMA models have been fitted for long period with 1237 observations and short period with 495 observations, and TATA Steel stock prices have been predicted for the next 69 working days of the NSE of India. The plots of these static forecasts are compared with the plot of actuals for the period January 1, 2018 to April 13, 2018 for checking the forecasting accuracy. The Figures 7 and 8 present the plots of actual and forecasted stock prices of TATA Steel for short period and long period respectively. Remarkably, the forecasted values closely follow the actual stock prices in both cases. The low mean absolute percentage error and root mean squared error, presented in Table- 5, also validate the fit of the models.



Figure-7: Plot of Short Period Actual and Forecasted TATA Stock Prices





| Period | р | d | q | RMSE | MAPE |
|-------------------|---|---|---|--------|-------|
| Short period data | I | I | 2 | 14.824 | 1.729 |
| Long period data | 3 | Ι | 3 | 14.341 | 1.665 |

The Figure-9 plots the conditional variance of stock prices from January 1, 2013 to December 29, 2017, and Figures 10 and 11 plot the volatility clustering for short period and long period respectively.



Figure-9: Plot of Conditional Variance of Stock Price Series 2013 to 2017

Figure-10: Plot of Volatility Clustering in ARIMA Residuals for Short Period



Figure-II: Plot of Volatility Clustering in ARIMA Residuals for Long Period



The Table-6 presents the ARCH-LM test results for the ARCH effects in the ARIMA residuals. The null hypothesis of no ARCH-GARCH effects is rejected, as the calculated ARCH-LM test probabilities are less than the significance level. Hence, the variances can be forecasted by fitting the GARCH model on the residuals of the ARIMA forecasts. Therefore, GARCH (1,1) has been fitted to the forecasts of the resultant residuals of ARIMA forecasting. The Table-7 presents the GARCH model estimates. The estimates of the GARCH model provides the effects of both past variances of the forecasted residuals and squares of residuals of those variances on current variances.

| Short pariod data | F-statistic | 4.094 | Prob.F(1,492) | 0.0436 |
|-------------------|-------------------------|--------|-------------------|--------|
| Short period data | Observed R ² | 4.076 | Prob.Chisquare(1) | 0.0435 |
| Long pariod data | F-statistic | 14.155 | Prob.F(1,1230) | 0.0002 |
| Long period data | Observed R ² | 14.017 | Prob.Chisquare(1) | 0.0002 |

Table-6: Heteroscedasticity Test for ARIMA Residuals

| Table-1: GARCH Estimates on ARIMA Residua |
|---|
|---|

| Variable | Coefficient | Standard Error | p-value |
|----------------------------|-------------|----------------|---------|
| Residual (-1) ² | -0.1036 | 0.223803 | 0.6436 |
| GARCH(-1) | 0.5856 | 1.063476 | 0.5819 |
| Constant | 108.7559 | 238.8774 | 0.6489 |

Thus, the estimated variance forecasted by the GARCH model is:

$$\sigma_t^2 = 108.7559 - 0.1036u_{t-1}^2 + 0.5856\sigma_{t-1}^2 \qquad \dots (27)$$

Since the forecast of variances by GARCH fitting on short time data produces highly insignificant results, the stock price variance is neither effected by its past value nor by the residuals of the variance. As none of the residuals has any effect on the forecast of variances, the short period effect is not observed on the stock price volatility. Therefore, the variances are forecasted again with long period data for 5 years and this time fitting EGARCH model for the time series. The estimated EGARCH results presented in Table-8 show that three out of four coefficients are highly significant.

| Parameter | Coefficient | Standard Error | p-value |
|-----------|-------------|----------------|---------|
| α | 1.4448 | 0.0097 | 0.000 |
| λ | -0.6194 | 0.0176 | 0.000 |
| θ | -0.1258 | 0.0463 | 0.006 |
| γ | 0.8237 | 0.0006 | 0.000 |

Table-8: Estimated GARCH Model on ARIMA Residuals

Therefore, the estimated variance forecasting of EGARCH model is:

$$\log \sigma_t^2 = 1.444 - 0.619 ln \sigma_{t-1}^2 - 0.126 \frac{u_{t-1}}{\sqrt{\sigma_{t-1}^2}} + 0.824 \left[\frac{|u_{t-1}|}{\sqrt{\sigma_{t-1}^2}} - \sqrt{\frac{2}{\pi}} \right] \dots (28)$$

The Effect of Volatility on Future Volatility – GARCH and EGARCH Forecasts of Stock Prices and Volatility

The estimated coefficient λ , the persistence of conditional volatility, is the least in terms of magnitude out of all the parameters and is highly significant. Hence, the volatility decays at very short time in the market. Since θ , the asymmetry parameter, is significantly negative, there is leverage effect implying that positive shocks generate less volatility than the negative shocks. The significant positive coefficient γ , measuring the GARCH effect, implies there is GARCH effect i.e. the present variance is effected by its past values. The Figure-12 presents the EGARCH plot.



Figure-12: Plot of EGARCH Model Variance for Long Period

The Figure-13 presents the plot of actual vs forecasted variance by fitting EGARCH model on stock prices of TATA Steel Limited for the first 69 days of 2018, from January 1, 2018 to April 13 i.e. from 1238th day to 1307th day. The plot shows remarkably close fit of the EGARCH model to the actuals. Especially, the high volatility in the first half of the period gradually decaying in the latter half of the time period considered, as the EGARCH model explains. It is to be noted that the actual variance is calculated by taking standard deviations of the actual stock prices for the 69 days and then squaring them to variances, whereas the forecasted variance is generated as a result of the heteroscedasticity model with error variance that includes certain factors like leverage effects, asymmetry, etc. Therefore, in Figure-13 the plot of calculated variance.



Figure-13: Performance of Actual vs Forecasted Volatility of Stock Prices

It can be observed that the stock prices are highly volatile in the month of January 2018. This volatility is caused by negative shocks as shown by the θ coefficient. The high volatility in stock prices in the month of January is generally attributed to the phenomenon of "January effect" in the stock market (Thaler, 1987). This happens as investors buy more stocks during the month of December owing to the fall in stock prices that happen during the end of a year and sell them during the last week of January of the next year when stock prices rebounds. Also, generally the total trade volume of stock in December is relatively high in the month of January, leading to relatively more volatility in January. The volatility in stock prices that is present during the month of January will not last long as it will decay in the following days, as the coefficient of λ parameter reveals. The forecasting performance of the EGARCH model is evaluated by the root mean square, 14.373 for the fitted EGARCH model.

While fitting the ARIMA model for short period data, the price on the present working day is dependent on prices in the preceding periods along with the errors made in two preceding periods, and for long period data, the price on the present working day is dependent on longer preceding periods and the errors made in those periods. The parameters in the fitted ARIMA model to short data are all significant, hence the plot for the forecasted values almost overlapped the actual stock prices. In the case of long period data, all the parameters other than the intercept and the third autoregressive term are highly significant, thus the plot for the forecasted series closely follow the plot of the actual series of stock prices.

However, the residual plots of both time period models show volatility clustering as a result of which GARCH model has been used to study the variances in the prices in the short data. As the coefficients of fitted GARCH model are highly insignificant, the ARCH and GARCH terms are quite ineffective in studying the fluctuations in conditional variance. The GARCH model also assumes symmetry in residuals and volatility. In order to capture any possible asymmetry in the stock prices, the EGARCH model is estimated to understand the variance fluctuations for a relatively long period data The parameters that signify symmetry, persistence of volatility and leverage effect are significant, implying that the volatility in the stock prices will die out within a very short span of time. The plot of forecasted variance shows that the volatility in the TATA Steel stock prices that is observed in the month of January 2018 does not extend to February. Hence, the volatility in the TATA Steel stock prices are not quite persistent. Thus, the forecasted stock price variance on the basis of long period price series is more reliant than the one forecasted on short period price series.
Conclusion

Generally, an economy is said to be healthy when the stock market is stable. The stock market performance is also considered as a barometer of the health of the manufacturing and financial sector, the important pillars of economic development. An increasing trend in stock market indices imply the growth of the economy and a decreasing trend indicates poor performance. In any stock market, the stock prices are generally volatile and fluctuate over time which are measured by various indices. This paper analyses the effects of long period and short period stock price variations on stock prices and using the volatility in residuals i.e. error variance, the future volatility in stock prices are forecasted. Empirically, based on the stock prices of TATA Steel Limited in the NSE for 1237 days, between January 1, 2013 and December 29, 2017, the short period and long period stock prices are used to predict the future stock price and future volatility. First, ARIMA model has been fitted to forecast the stock prices, and to the resultant residuals, GARCH and EGARCH models have been applied to examine the effects of short period and long period price fluctuations on the forecasts of future price variations respectively. The EGARCH fitting shows that the long period fluctuations have significant effect on the future stock price volatility relative to the GARCH fitting. The predictability of the EGARCH model has been compared with the actual stock price variations for 69 days, for January 1 - April 13, 2018. The econometric forecasts show that the long period stock price volatility is more reliant than the short period volatility in forecasting future stock price volatility as well as the stock prices.

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Contagion Effect of Automobile Companies Stock Returns on Indian Stock Market

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Abstract

As Indian automobile sector stocks are more admirable and consistent traded stocks and commodities in the benchmark of Bombay stock exchange, these stocks are emerging as one of the dominant sector in the capital market. The research data obtained from the period 1st January 2009 to 31st December 2019. The research paper has evaluated the collected data by employed the statistical tools like Descriptive statistics (Normality), Correlation (degree of relationship), Regression (impact) and Granger Causal test (causal effects). The study found that presence of normality of selected variables and also Correlation result revealed BSE Indices and selected companies in automobile industries are correlated and therefore development of one can be predicted by the development of other. This indicates that economic trends and development of the country are directly related by the performance of auto sector and its return in the Stock market. It suggests the investors who preferring to invest their investment in the automobile company to get the high return where the risk is high.

Keywords: Automobiles, Economic, Financial Investments, Industry Investment Decision

Introduction

Explosion in the Indian economy has been major impacted by the crucial role of the companies in Indian automobile industry consisted of trucks cars buses and 2 wheelers. Indian Automobile Industry acted as an Asia's fourth largest exporter of automobile Industry. After decade of Independence,

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Before India started a manufacturing process, Indian Market was only deal with importing vehicles and it also proliferate the dealership, servicing, maintenance work of vehicles, and financing by the Indian automobile industry. Indian automobile sector faced the hitches and challenges towards the success and growth of the industry among the world. By 2050 it is expected to increases the car volume up to 611 million vehicles to top the world. The progression of the Indian automobile industry is affected by the several dynamics includes low cost of skilled labour, robust R&S, volatility of share prices on the stock exchanges based on the demand of the automobiles. The Volatility of stock price in the stock exchange affects the Indian markets. Stock exchange is the market place segmented of the secondary market where securities such as stocks bonds of all types and other securities are traded respectively. The Stock exchanges are the fundamental trading platform/place for dealers, brokers, settlement of transactions, and supply of long term funds and also helps the shrewd business to reduce the risk in speculation and increases the return.

The Bombay stock exchange and the National stock exchange are the two essential benchmarks of the stock exchanges in India that stimulate the economy growth of a country. The Bombay stock exchange is one of the yardstick/primogenital stock exchange in India formulated in 1887. Index helps the investors to compare the share prices and stock to make investment.

Risk and return are the two major endeavours that tempt the investors to buy or sell their stocks or share in the share market. The investors should be in cautious while investing in long term investment that stimulated by the common metrics such as volatility of investment returns.

This research article "Contagion effect of Automobile companies stock returns on Indian Stock market" has chosen the two indices includes BSE Sensex and BSE Auto EX to ascertain and forecast the share movement and its fluctuations of prices that affect the returns of the selected company's indices in automobile industry. It has analysed the secondary facts composed from 1st January 2009 to 31st December 2019 by adopting the statistical tools like Descriptive statistics (Normality), Correlation Test (degree of relationship), Linear Regression Test (Impact), and Granger causal test (Causal effect). The research paper chose the 6 companies from automobile sector as sample size which includes Apollo, Ashok Leyland, Bajaj Auto, Maruti Suzuki, Mother Sumi and MRF to ascertain the share price fluctuation to determine Indian economy growth and development. The study helps both individual/retail and institutional investors both domestic and foreign to aware about the magnitude of risk and returns from the share market. The study assisted the institutional investors and other investors to build the investment decision and industrialists to control demand besides supply profitability and prices for the product and services rendered by the automobile industries. The research work found that positive variations of price movement or volatility of stocks on BSE Sensex and auto indices of the Bombay stock exchanges has the positive significant changes in the movement of prices and returns of the selected 6 companies in the automobile industries. This research article helps the investors to know their niche in the style of investment decision making and also insists policy makers to frame guidelines for the investment strategy regarding automobile business. The study helps to ascertain the risk and return trade off while making the long term investment to investors who have motive to invest in automobile industries in order to sustain in the market.

Review of Literature

This research paper "Contagion effect of Automobile company's stock returns on Indian Stock market" reveals the impression of crusade of prices and its variations in the BSE Sensex returns and BSE Auto returns by the company's returns of automobile industries and also the causal relationship between them.

S. Baranidharan and N. Dhivya (2019) analyzed the association between the various selected macroeconomic variables and Indian stock market and Japanese stock market by employed the descriptive statics and correlation test. The researcher obtained the secondary data from April 2013 to March 2019. The result explored that macroeconomic variables were significantly associated and affected on both capital market. The investors should consider macroeconomic variables and also market information while building the investment decision making.

S. Baranidharan, A. Alex and N. Dhivya (2019) employed the statistical tools like Descriptive statistics and Granger causality tests were used to analyze the causal connection and degree of volatility in BSE Sensex return and sectoral indices. They scrutinized the data collected from 2014 to 2018. The Jargue-Bera test evidenced that distributions of selected variables were partially normality, and also found that there was existence in a long run association drive the various indices of BSE return hits Indian Stock Market.¹

The research work of S. Baranidharan, M. Om Prakash and N. Dhivya (2019) to evaluate the movement of shares price of selected Indian cement companies and They explored that the tendency/movement value of Ultratech cements consume additional chance to high returns in future. The study found that there was affirmative trend stocks price listed under

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cement industry and explored that among the selected companies, ACC limited stock price was significant therefore investor should mull over for making investment.²

The research work of Charumathi. S, Rampilla Mahesh and Ranjith Kumar S (2019) to analyzed the insinuation of Goods and Services Tax on automobile industry returns for the period of 4 years during 2014 to 2018. The research found that Tata motors passenger vehicle sales were increased after executing the Goods and Services Tax. It revealed that the commercial vehicle sales rate growth was average before implementing Goods and Services Tax while after implementing the Goods and Services Tax it was boost up to 25.8 percent on the stock prices. This study evidenced that Macroeconomic factor caused the positive impact on stock price.

S. Baranidharan, N. Dhivya and A. Alex (2018) examined the shock of Selected Macroeconomic Variables on Bombay Stock Exchange (BSE) Sensex. The study found that there was no existence of normality between BSE SENSEX indices and selected macroeconomic variables. The study concluded that that exchange rate changes were directly influenced the BSE SENSEX.

Dr. M. Jegadeeshwaran and Siva Thivya R (2017) investigated dynamic shock of selected macroeconomic factors/variables on Indian BSE Sensex Stock prices. The study found that BSE Sensex has positively impact by the selected macroeconomic factors/variables such as changes in inflation rate, gold price, and Forex reserve during the study period.

Ahmad and Sinha (2016) analyzed the affiliation between GDP, Exchange rate, and BSE Sensex by employed the statistical tools. They revealed that the optimistic connection existence between GDP and Exchange rate during the study period. Though, GDP acted as significant forecaster for change in BSE Sensex, while considering individually, Exchange rate were insignificantly nexus with BSE Sensex during the study period.

Objectives of the Study

- To examine the association between BSE Sensex, BSE Auto and the selected automobile companies.
- To study the impact of selected automobile company's returns on BSE Sensex returns and BSE Auto returns.
- To analyse the causal effect of selected automobile company's returns on BSE Sensex returns and BSE Auto returns.

Hypotheses of the Study

• NH1: There is no association between BSE Sensex, BSE Auto and the selected automobile companies

² https://www.ijirmf.com/wp-content/uploads/IJIRMF201906006.pdf

- NH2: There is no impact of selected automobile company's returns on BSE Sensex returns and BSE Auto returns.
- NH3: There is no causal effect of selected automobile company's returns on BSE Sensex returns and BSE Auto returns.

Research Methodology

Statement of Problem

BSE AUTO index has fallen 35% during the last one year due to main effect of mirroring the weak consumer sentiment and slowdown in the sector. Since July 2019, the sales rate of automobile sector have reduced in 12 of 13 months signalling decelerate in demand in the global fourth largest automobile market. India has been facing the automobile recession due to increasing production of vehicles more than demand. The major reason that cause automobile recession such as weak consumer sentiment, aggregate quarterly production of the automobile sector grow 7.21 million recorded in June 2019, decrease of demand of automobile vehicles in rural areas. Automobile industry has the major dominant spot in the overall economy of the country. On account of automobile recession, other segment of economic activities also affected. The research work would be backbone to stock holders to overcome the hesitation and avoid the hindrances to make the investment decision.

Scope

The purpose of Contagion effect of Automobile company's stock returns on Indian Stock market is toward analysing risk and return of the equity market in order to provide the information to potential investors to make investments without any hesitation. The study revealed the impact of BSE sensex returns and BSE Auto on the automobile company's stock price by using eviews.9 software through take out the facts about the stock price from 1st January 2009 and 31st December 2019. The researcher through this work influences the investors too aware about high risk association in the selected 6 companies of automobile industry and changes in 2 indices such as BSE Sensex and BSE Auto.

Sample Selection

Research work has done by choosing sample as 2 indices in Bombay stock exchange besides 6 companies from automobile industry. Based on the stock market performances and market capitalization, the study has selected the companies as sample during the study period.

- BSE Sensex
- BSE Auto
- Apollo Tyres Limited

- Ashok Leyland Limited
- Bajaj Auto Limited
- Maruti Suzuki Limited
- Mothersumi Limited
- MRF Limited

Study Period

The research work enabled as "Contagion effect of Automobile company's stock returns on Indian Stock market" has endeavoured by obtained data from 1st January 2009 to 31st December 2019.

Tools

In order to evaluate the causal relationship and versatile deeds of Bombay Stock Exchange on Automobile Industry, the following tools has been employed:

- Descriptive Statistics (Normality)
- Correlation Test (Degree of Relationship)
- Regression (Impact)
- Granger Causality Tests (Causal effect)

Descriptive Statistics

Descriptive statistics is summarising the given set of information in the direction of entire or sample of a population. It has consisted of methods/ measures of central tendency and also the methods/measures of variability.

Standard Deviation

Standard deviation evaluates the mean of the given data and it is calculated by square root of variance.

$${}^{3}SD = \sqrt{\frac{\Sigma(x-\overline{A})^2}{n}} \qquad \dots (1)$$

- 1. \sum sum means "sum of",
- 2. x denotes value,
- 3. \overline{A} denotes mean and
- 4. n denotes number of values.

Kurtosis

Kurtosis is used to measure the tails of the distribution whether the distribution is thick or heavy. It can be considered as three such as Mesokurtic, Leptokurtic and Platykurtic.

³ https://www.khanacademy.org/math/probability/data-distributions-al/summarizing-spreaddistributions/a/calculating-standard-deviation-step-by-step

Correlation

Correlation test is employed to test the level of significant association exists between the variables or factors. The range of coefficient of correlation from -1.00 to +1.00. In this test, when two or more variables exhibit a degree of relationship/association with each other then it indicate that there is a existence of high and strong correlation, while a weak or low correlation means that the variables are inversed related. When two variables have high correlation denotes the +1.00 i.e. will be a significant and perfect positive association between the factors/variables whereas weak correlation denotes the -1.00 indicates the perfect significant negative connection between the variables.

Regression

Regression is assisted to determine the level of impact of independent or control variables on dependent variable/factor. Independent variable is the variable to predict or forecast the variable of interest whereas the variable that trying to predict or estimate or forecast is called the dependent variable otherwise called as explained variable.

⁴ Y= a+bX

$$N = \Sigma y - b\Sigma x$$
 $b = N\Sigma xy - (\Sigma x) (\Sigma y)$...(2)
 $N = N\Sigma x^2 - (\Sigma x)^2$

- 1. N = number of observations or years
- 2. x = a year index (decade)
- 3. y = population size for given years

Pair wise Granger Causal Test

It is an arithmetical instrument/tool which provides a way to determine the interconnection between the 2 variables in time series.

Analysis and Interpretation

Descriptive Statistics

Table-I: Exploration of Descriptive Statistics for BSE Sensex and BSE Auto and Selected

 Companies Returns of Automobile Industry

| | Apollo Ty | Ashok Lay | Bajajauto | Maruti Suzu | Mother Sumi | MRF | BSE Auto | BSE Sensex |
|-------------|--------------|--------------|--------------|----------------|----------------|-----------|-------------|---------------|
| Mean | 0.0010 | 0.0006 | 0.0006 | 0.0008 | 0.0005 | 0.0013 | 0.0006 | 0.0004 |
| Std. Dev. | 0.0252 | 0.0257 | 0.0190 | 0.0173 | 0.0272 | 0.0195 | 0.0126 | 0.0099 |
| Skewness | -0.2146 | -2.6454 | -7.4604 | 0.2127 | -2.8267 | 0.9619 | 0.0046 | -0.1330 |
| Kurtosis | 8.9024 | 58.9526 | 203.0412 | 6.5177 | 40.1210 | 8.8579 | 4.7402 | 5.0155 |
| Jarque-Bera | 3683.2660 | 332187.9000 | 4231815.0000 | 1320.3910 | 148277.3000 | 3997.9580 | 318.4697 | 434.6615 |
| Probability | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Source: The data obtained from www.bseindia.com and analyzed in Eviews 9.

4 https://byjus.com/linear-regression-formula/

Interpretation

Table-1 showed the result of Descriptive Statistics which has been examined the acquisitive consisted of data mean, median, standard deviation, kurtosis, skewness and Jarque Bera of each free too needy variable. The research work interpreted that MRF has highest mean of 0.0013 compared with all companies such as Apollo Tyr (0.0010), Ashoklay (0.0006), Bajaj Auto (0.0006), Maruti Suzu (0.0008), Mothers Sumi (0.0005) and index of BSE which includes BSE Sensex returns (0.0004) and BSE AUTO returns (0.0006). Mother Sumi has recorded the highest standard deviation of 0.00272 while concerning with other companies and indices such as Apollo Tyr (0.0252), Bajaj Auto (0.0190), Maruti Suzu (0.0173), Ashoklay (0.0257), BSE Auto (0.0126) and BSE Sensex (0.0099). The values of Kurtosis and Skewness depicted the symmetric distribution of normality of the samples has been analyzed. In kurtosis, BSE Auto (4.7402), BSE Sensex (5.0155), Apollo Tyr (8.9024), Ashoklay (58.9526), Bajaj Auto (203.0412), Maruti (6.5177), Mother Sumi (40.1210) and MRF (8.8579). It is resulted that the selected variable distributions are Leptokurtic. It depicted that all the selected indices and companies since the values are greater than 3 indicates. Maruti (0.2127), MRF (0.9619) and BSE AUTO (0.0046) are positively skewed towards right tail whereas Apollotyr (-0.2146), Ashoklay (-2.6454), Bajaj Auto (-7.4604) Mother Sumi (-2.8267) and BSE SENSEX (-0.1330) are negatively skewed towards the left tail. The probability values of Jarque-Bera Test of BSE AUTO (0.0000), BSE Sensex (0.0000), Apollo Tyr (0.0000), Ashoklay (0.0000), Bajaj Auto (0.0000), Maruti Suz (0.0000), Mother Sumi (0.0000), and MRF (0.0000). It exhibited that the selected variables were at 1 percent significant level and normally distributed during the study period. The returns of the selected samples of automobile industry and BSE sensex, BSE Auto were distribution is normal and the results evidenced that further analysis results would be reliable. Hence, The Null Hypothesis is rejected.

Correlation

| | Apollotyr | Ashoklay | Bajaj Auto | Maruti Suzu | Mother Sumi | MRF | BSE Auto | BSE Sensex |
|-------------|-----------|----------|---------------|----------------|----------------|---------|----------|---------------|
| Apollotyr | I | | | | | | | |
| Ashoklay | 0.2980 | 1.0000 | | | | | | |
| Bajaj Auto | 0.2428 | 0.2234 | 1.0000 | | | | | |
| Maruti Suzu | 0.2756 | 0.3337 | 0.2991 | 1.0000 | | | | |
| Mothersumi | 0.1944 | 0.1969 | 0.1684 | 0.2001 | 1.0000 | | | |
| MRF | 0.5044 | 0.2940 | 0.1920 | 0.2881 | 0.1852 | 1.0000 | | |
| BSE Auto | 0.4669 | 0.5036 | 0.5082 | 0.6682 | 0.3415 | 0.433 I | 1.0000 | |
| BSE Sensex | 0.4364 | 0.4389 | 0.3942 | 0.5149 | 0.3007 | 0.4271 | 0.7876 | I |
| | | | | | | | | |

Table-2: Exploration of Association for BSE Sensex and BSE Auto and Selected

 Companies Returns of Automobile Industry

Source: The data obtained from www.bseindia.com and analyzed in Eviews 9.

Interpretation

Table-2 designates that the correlation between the Bombay Stock Exchange Indices and Selected companies of automobile industry. There is extremely substantial positive relationship existence between the Ashoklay with Apollo Tyres is 0.2980. Bajaj Auto is positively correlated with Apollo Tyres (0.2428), Ashoklay (0.2334). It depicted that highly positive relationship existence the Maruti Suzu with Apollo (0.2756), Ashoklay (0.3337), and Bajaj Auto (0.2991). It exhibited the highly positive significant relationship between the BSE Auto and Apollo (0.4669), Ashoklay (0.5036), Bajaj Auto (0.5082), Maruti Suzi (0.6682), Mother Sumi (0.3415), MRF (0.431). There is positive correlation between BSE Sensex and Apollo (0.4364), Ashoklay (0.4389), Bajaj Auto (0.3942), Maruti Suzi (0.5149), Mother Sumi (0.3007), MRF (0.4271), BSE Auto (0.7876).

BSE Sensex returns and BSE Auto returns have an optimistic association with the Apollo Tyres stock prices, Ashoklay stock prices, Bajaj Auto stock prices, Marutisuzu stock prices, Mother Sumi stock prices and MRF stock prices. Hence it portrays that existence of Robust positive connection between BSE Sensex, BSE Auto, Apollo Tyres, Ashok Leyland, Bajaj Auto, Maruti Suzuki, Mother Sumi and MRF. It indicated that increase in selected automobile company's stock prices, increases in BSE Sensex and BSE Auto. Thus, investors should consider these companies stocks by changes in BSE Sensex returns and BSE Auto returns. The result evidenced that Null Hypothesis is rejected and accepted alternative hypothesis.

Regression

Table-3: Exploration of Impact of BSE Sensex and Selected Companies Returns of Automobile Industry

| Method: Least Squares | | | | |
|-----------------------|-------------|--------------------|-------------|----------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| С | 0.0000 | 0.0001 | 0.0173 | 0.9862 |
| Apollo Tyres | 0.0621 | 0.0068 | 9.0702 | 0.0000 |
| Ashoklay | 0.0727 | 0.0062 | 11.6758 | 0.0000 |
| Bajaj Auto | 0.0936 | 0.0082 | 11.4774 | 0.0000 |
| Maruti Suzu | 0.1652 | 0.0093 | 17.6754 | 0.0000 |
| Mother Sumi | 0.0428 | 0.0055 | 7.7232 | 0.0000 |
| MRF | 0.0784 | 0.0088 | 8.8963 | 0.0000 |
| R-sq | 0.470523 | Mean DV | | 0.000417 |
| Ad R-sq | 0.469261 | S.D. DV | | 0.009945 |
| S.E. of reg | 0.007245 | AIC | | -7.01412 |
| Sum sq. resid | 0.132133 | SC | | -6.99794 |
| Log. L | 8858.82 | HQC. | | -7.00825 |
| F-stat | 372.7913 | Durbin-Watson stat | | 1.96574 |
| Prob(F-stat) | 0.0000 | | | |

Dependent Variable: BSE Sensex

Source: The data obtained from www.bseindia.com and analyzed in Eviews 9.

Interpretation

The Coefficient value of R-square at 0.7405 and adjusted R^2 at 0.4692, and also the probability of F stat value is 0.0000. It indicates that R square value was higher than adjusted R square value and revealed the model is fit and significantly explains the relationship. R value is 0.470523 and it represents the modest overtone among the needy variable BSE Sensex and predictors such as Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price. The adjusted R^2 is 0.469261 designates total deviation in the needy variable by the liberated variable. The result depicted that moderate abnormality among the BSE Sensex and the other variable.

The influence of independent/control variables on dependent/response variable can be explained by using the coefficient values. The above table indicated that coefficient value of Apollo Tyres (0.0621), Ashoklay (0.0727), Bajaj Auto (0.0936), Marutisuzu (0.1652), Mother Sumi (0.0428), and MRF (0.0784) were positive influenced and significant at 1 percent level. It indicated that increases value by 1 percent of Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price would positive increase the BSE Sensex (0.0621%), (0.0727 %), (0.0936%), (0.1652%), (0.0428%),and (0.0784) respectively.

The Durbin Watson value is 1.96574 which is very close to value 2 and it indicate that absence of auto correlation between the BSE Sensex and selected auto companies during the study period.

Thus the result evidenced that changes in the selected auto company's stock price were positively and significantly affected the BSE Sensex returns. Therefore, investor's community should take the automobile companies stock price movement which would be betterment for investment decision.

Dependent Variable: BSE AUTO

| Squares | | | | |
|--------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| С | 0.0000 | 0.0001 | -0.3074 | 0.7586 |
| Apollo Tyres | 0.0750 | 0.0068 | 11.0560 | 0.0000 |
| Ashoklay | 0.1000 | 0.0062 | 16.2292 | 0.0000 |
| Bajaj Auto | 0.1709 | 0.0081 | 21.1622 | 0.0000 |
| Maruti Suzu | 0.3106 | 0.0093 | 33.5664 | 0.0000 |
| Mother Sumi | 0.0575 | 0.0055 | 10.4937 | 0.0000 |
| MRF | 0.0656 | 0.0087 | 7.5278 | 0.0000 |

Table-4: Exploration of Impact of BSE Auto and Selected Companies Returns of

 Automobile Industry

Method: Least

| (| Contagion | Effect | of Au | tomobil | e Con | npanies | Stock | Returns | on | Indian | Stock / | Market | |
|---|-----------|--------|-------|---------|-------|---------|-------|---------|----|--------|---------|--------|--|
| | | | | | | | | | | | | | |

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---------------|-------------|-----------------------|-------------|----------|
| R-sq | 0.676 | Mean DV | | 0.00055I |
| Ad R-sq | 0.67523 | s.d. dv | | 0.012586 |
| S.E. of reg | 0.007172 | AIC | | -7.0344 |
| Sum sq. resid | 0.12948 | SC | | -7.01822 |
| Log. L | 8884.415 | HQC. | | -7.02853 |
| F-stat | 875.263 | Durbin-Watson stat | | 2.00323 |
| Prob(F-stat) | 0.000 | | | |

Source: The data obtained from www.bseindia.com and analyzed in Eviews 9.

Interpretation

The Coefficient value of R-square at 0.6760 and adjusted R^2 at 0.67523, and also the probability of F stat value is 0.0000. It indicates that R square value was higher than adjusted R square value and revealed the model is fit and significantly explains the relationship. R value is 0.6760 and it represents the modest overtone among the needy variable BSE Auto and predictors such as Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price and MRF stock price. The adjusted R² is 0.67523 designates total deviation in the needy variable by the liberated variable. The result depicted that moderate abnormality among the BSE Sensex and the other variable.

The influence of independent variables on dependent/explained variable can be explained by using the coefficient values. The above table indicated that coefficient value of Apollo Tyres (0.0750), Ashoklay (0.1000), Bajaj Auto (0.1709), Marutisuzu (0.3106), Mother Sumi (0.0575), and MRF (0.0676) were positive influenced and significant at 1 percent level. It indicated that increases value by 1 percent of Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price would positive increase the BSE Auto (0.0750%), (0.1000 %), (0.1709%), (0.3106%), (0.0575%),and (0.0676%) respectively.

The Durbin Watson value is 2.00323 which is equal to value 2 and it indicate that absence of auto correlation between the BSE Auto and selected auto companies during the study period.

Thus the result evidenced that changes in the selected auto company's stock price were positively and significantly affected the BSE Auto returns. Therefore, investor's community should take the BSE Auto and selected automobile company's stock price movement which would be betterment for investment decision.

Granger Causality Tests

Table-5: Exploration of Granger Causality Test for BSE Sensex and BSE Auto and

 Selected Companies Returns of Automobile Industry

| Pairwise Granger Causality Tests | | |
|----------------------------------|-------------|---------|
| Null Hypothesis: | F-Statistic | Prob. |
| Ashoklay and Apollo Tyres | 3.11294 | 0.0083* |
| Apollo Tyres and Ashoklay | 2.73678 | 0.018* |
| Bajajauto and Apollo Tyres | 2.06133 | 0.0674* |
| Apollo Tyres and Bajaj Auto | 3.4301 | 0.0043* |
| Maruti Suzu and Apollo Tyres | 2.30339 | 0.0424* |
| Apollo Tyres and Maruti Suzu | 0.70714 | 0.6181 |
| BSE Auto and Apollo Tyres | 3.95901 | 0.0014* |
| Apollo Tyres and BSE Auto | 2.20433 | 0.0513* |
| BSE Sensex and Apollo Tyres | 2.59487 | 0.0239* |
| Apollo Tyres and BSE Sensex | 2.04437 | 0.0696* |
| Bajaj Auto and Ashok Lay | 2.73238 | 0.0181* |
| Ashoklay and Bajaj Auto | 2.89776 | 0.0130* |
| Maruti Suzu and Ashok Lay | 2.69226 | 0.0196* |
| Ashok Lay and Maruti Suzu | 1.6384 | 0.1464 |

Source: The data obtained from www.bseindia.com and analyzed in Eviews 9.

Interpretation

The research work uses the Granger Causality Test to scrutinize the impulsive connection stuck between twofold variables in a time series. The probability values of Ashoklay at 0.0083 and Apollo Tyres at 0.0180 were significant at 1% and 5% level, and it exhibited that there was existence of bidirectional connection between Ashoklay and Apollo Tyres. The probability values of Bajaj Auto at 0.0674 and Apollo Tyres at 0.0043 were significant at 10 percent and 1 percent level. Therefore, Bajaj Auto and Apollo Tyres cause bidirectional association.

The probability values of Marutisuzu at 0.0424 and Apollo Tyres at 0.6181 were significant at 5 percent and Apollo Tyres was insignificant. Therefore, only Marutisuzu cause effect on Apollo Tyres. The probability values of BSE AUTO at 0.0014 and Apollo Tyres at 0.0513 were significant at 1% and 10% level. It indicates that existence of causal bidirectional association between BSE Auto and Apollo Tyres. The probability values of BSE Sensex at 0.0239 and Apollo Tyres at 0.0696 were significant at 5 percent and 10 percent level. It indicates that existence of mutual causal effect between BSE Sensex and Apollo Tyres.

The probability values of Bajaj Auto at 0.00181 and Ashoklay at 0.0130 were significant at 1 percent level respectively. It evidenced that Bajaj Auto and Ashoklay casually caused each other. The probability values of Marutisuzu at 0.0196 and Ashoklay at 0.1464 were significant at 5 percent and Ashoklay was insignificant. Therefore, only Marutisuzu cause effect on Ashoklay.

This result evidenced that there was existence of casual effect and relationship between selected automobile companies and BSE Sensex and Auto Index of the Indian Stock Market. Among the selected automobile companies only Apollo Tyres causally caused both BSE Sensex and BSE Auto at significant level. Hence, the null hypothesis is rejected and accepts the alternative hypothesis. Therefore investor's community removes their hesitation to invest their long term risk bearing funds of automobile sector.

Findings

- The Descriptive Statistics showed that MRF has secured the highest mean value 0.0013 and the Mother Sumi has recorded the highest standard deviation of 0.00272 among the selected variables. The possibility of Jarque Bera values towards selected automobiles companies and Indices are BSE Auto, BSE Sensex, Ashok Lay, Apollo Tyr, Bajaj Auto, Mother Sumi, Maruti Suz, and MRF were indicates that the series are normal distributed. The study found that changes in the stock prices in the BSE Sensex and Auto positively affect the stock price of the Apollo Tyres, Ashoklay, Bajaj Auto, Marutisuzu, Mother Sumi and MRF.
- The result of Correlation indicated that there will be an optimum affiliation stuck between increases the stock prices of BSE Sensex and BSE Auto and Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price.
- The Durbin Watson test (1.96574) value of BSE Sensex and selected automobile companies portrays that positive and around 2. It exhibited absence of auto correlation. The Durbin Watson test (2.00323) value of BSE Auto and selected automobile companies portrays that positive and around 2. It revealed that not present of auto correlation.
- The selected automobile companies were significantly and positively impact on BSE Sensex returns and BSE Auto returns during the study period.
- The Granger Causality Test depicted that amid the selected automobile companies only Apollo Tyres were significantly causally caused bidirectional with BSE Sensex returns and BSE Auto returns during the study period.

Conclusion

This research paper Contagion effect of Automobile company's stock returns on the Indian Stock market discovered that the existence of nexus/ integration. The price changes/price movement of BSE Indices such as BSE Sensex returns and BSE Auto returns by the selected companies of automobile such as Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price. The study has been scrutinized by using the statistical tools such as Descriptive statistics (Normality), Correlation (relationship), Regression (impact) and Granger Causal test (causal effect). The study revealed positive correlation existed between Changes in stock prices of BSE Sensex, BSE Auto and selected automobile companies during the study period.

Thus the research will helpful for investors to aware about the high risk and return on equity share market and rational decision making on the BSE Sensex returns and BSE Auto returns on the selected companies of auto mobile such as Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price. The Granger causality test articulated that there was a mutual association existed between BSE Sensex, BSE Auto and APOLLO TYRES.

Through this research article, the study concluded that the individual investor are emphasised to aware about the risk and return trade off involved in the venture strategy for automobile sector. This paper stimulate the individual and institutional investors investing in automobile industry for effective decision making who are seeking to preserve and grow wealth as an investment adviser. The study concluded that the long term risks and returns of Apollo Tyres stock price, Ashoklay stock price, Bajaj Auto stock price, Marutisuzu stock price, Mother Sumi stock price, and MRF stock price in Automobile Industry have positive connection with the volatility of BSE Sensex returns and BSE Auto returns.

Hence, the investor's community can remove their hesitation to invest their funds in automobile sector for long term. This research work also assist the investors to know their niche in investment the style of involvement in decision making and also insists the policy makers to frame policies and guidelines for the investment strategy regarding automobile industry. Correlation tells that BSE Indices and selected companies in automobile industries are correlated and therefore development of one can be predicted by the development of other. This indicates that economic trends and development of the country are directly related by the performance of auto sector and its return in the stock market. It suggests the investor's community to invest their investment to get the high return where the risk is high in automobile industry.

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ISSN 2249-9040 Volume 10, No 1, January-June 2020 pp. 51-64

Convolution of Managerial IM Tactics on Expressions: An Empirical Study

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Abstract

The purpose of this paper is to understand the relationship between emotional-expressions and tactics of impression-management in the Indian context. There is a need for this paper as there is an absence of Indian contextual paper and differences in inter-country culture. The study includes the hypothesis that says the employees' expressions vary with the use of different tactics for impression-management and for data collection, the structured questionnaire is being used. The data after the analysis said that there is a negative correlation between the intimidation. The self-promotion tactic has its relationship with the positive emotionalexpression in a negative form. Other tactics are better positively correlated with positive expressions and intimacy. The results of this study will have foremost implications for the salesperson or subordinates because, through this, they will be able to get an idea of choosing a better impression tactic to influence the behavior of customers. Also, it has its implications on managers as they can use the correct bundle of tactics to ensure the work assigned to the sub-ordinates done on time. This paper contains the investigation of the relation between emotional-expressions and the tactics of impression-management which has implications for the managers and their subordinates because it will help them to understand the tactics of impression-management that will be useful to make effective use of them.

Keywords: Emotion, Exemplification, Intimidation, Impression-Management, Self-Promotion, Supplication

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Introduction

Emotions of the working employees are usually not taken into the prominent concern in the organization's behavior context and ignored in the organization setting (Arvey, Renz, & Watson, 1998); (Putnam & Mumby, 1993). The environment of work in which managers work was seen as a cogent situation and viewed as a place where the emotional feelings of the managers would hinder sound judgment. Hence, in the organizational setting, the emotions had no place and never used as the clarifications for any specific given work. However, many of the authors came into existence who showed their research interest in the field of emotional-expression and they found some level of impact of emotion on the work performance of the employees working. The behavioral and attitudinal state of the mind got influenced by neglecting the emotional factor in the work environment (Weiss, 2002), so there is an immense need to focus on the emotional-attributes (Fineman, 2003). The effect can be named as positive and negative expression (Lee & Allen, 2002) (Staw, Sutton, & Pelled, 1994). The positive aspect of emotions is related to the favorable outcomes that can be the job-enrichment, achievement, and quality in a social context (Staw, Sutton, & Pelled, 1994). And the flip side, there are negative emotions, which include such as stress, hostility and, finally, guilt, though, it will upsurge the overall probability of workplace eccentricity (Lee & Allen, 2002). The emotions typically are related to particular occasions or events and are extreme enough to disturb points of view (Weiss, 2002).

The term and overall concept of impression-management came into its existence from the field of social psychology and this is related to the study of the behavior of the individuals towards other people in order to gain a favorable impression on others (Hooghiemstra, 2000). The most basic objective of the study is to find out the correlation between the impressionmanagement and the emotional-expression, this is the objective because of the reason that the literature to prove the relationship is little to no existence. One study says that there is a significant relationship between emotional-expressions and tactics of IM. But here, the degree of scale related to the emotional-expressions differs according to the tactics. This means that somewhere there is a negative relationship between the tactics and emotional-expression and vice versa (Soran & Balkan, 2013).

Gap Review

There is a very less amount of studies that all have incorporated the keyword of impression-management and emotions collectively. Amongst such studies, the study of (Soran & Balkan, 2013) investigates the cultural environment of Turkey through the medium of their made a questionnaire. It is a given fact that the culture, including the working culture or the general

culture, differ from one country to another, can be made clear by the point of view of 'arousal of emotions' (Markus & Kitayama, 1991). Also, the people associated with low arousal emotions culture may work better than that of people with a culture of high arousal emotions (Tsai, Miao, Seppala, Fung, & Yeung, 2007). Subsequently, in order to address such an issue, the authors of this study tested the questionnaire into the context of the Indian sub-continent. As India is a diversely cultured country, the authors conducted this study under the boundaries of one of its states, i.e., Delhi and NCR.

Objectives

- To find out the impression-management tactics that all are used by managers.
- To find out the connection between the emotional-expressions and the impression-management tactics.

Thematic Review

As all the days are passing and after acknowledging the way of evolution of the organizational culture, there is a need to understand and manage the emotions of the working employees and the concepts that all have any effect on the organization as well as individual performance and overall health (Gross, 1999). In order to follow such activities, need is there to find out the emotional leadership direction to the correct path. This thing is very imperative in order to understand and identify the thoughts of employees related to their willingness to work in the organization (Jackson & Shams, 2006). If the company suppresses the emotion in their organization, then there is less chance to accumulate information related to the employees (Barutcugil, 2003).

In the natural social framework, there is a need to have overseen on emotions along with the covertness of the emotions, then the person should make a decision as per the circumstances prevailing there. Such individuals will get the right stuff to better deal with the emotions in that specific situation (Goleman, Emotional Competence, 2000). Also, the emotions of any person have its linkage with the social insight because this will have verbal communication along with the non-verbal communication with all the members of a society or organization working in different departments and groups (Riggio & Reichard, 2008).

The late studies have represented their findings saying that the emotions of any person can be measured in the form of two expressions, that can be named as a positive and a negative one (Gençöz, 2000). Also, it has been said that the negative version of the emotions has a comparatively significant impact on the employees working either in which position (Silvia, Phillips, Baumgaertner, & Maschauer, 2006).

Impression Management (IM)

IM is a typical spectacle in the organizations (Wayne & Liden, 1995), and the working employees are regularly discovered occupied with such practices for the creation of a positive picture as a primary concern of others (Bolino & Turnley, 1999). People recognize that they can be considered as the imperative resources for any company by conveying the superior state of performance. By all this phenomenon, they all will be perceived as proficient specialist workers of that company because they have made a favorable impression on the accompanying colleagues and the superiors.

Also, it can be said that it has a sequence that has an influence on the views of people nearby to oneself, through the medium of the spectacles that oneself is demonstrating to others. Also, the study of Goffman (1959) gets into the study of this broad concept through the mechanism of the dramaturgical framework which was describing the one's way to present themselves and the way in which the other person understands that introduction (Cole & Rozelle, 2011). An on-screen character deliberately picks conduct to present to the group of spectators fully expecting the coveted impact. Expecting the group of spectators reacts in the manner in which the on-screen character proposed, the performing artist will keep on utilizing this procedure. This theory gives an immediate connection of interface between the performer and the people in any organization (Cole & Rozelle, 2011).

So, through this, it can be said that the parties' meetings with each other at any point in time deliberately shape the mindsets of each other through the conversion process. This formation of impression about each other along with the given constraints is a vivacious and common pattern that is usually involved in it (Taylor, Peplau, & Sears, 1997). Subsequently, it contains the theory that says that the process of formation of an impression on others about one is much critical, dynamic and strategic by its very nature which cumulatively affecting the life processes of that person (Sallot, 2002).

These tactics are typically a part of a usual day existence, also it has its own list of impacts that has on the organizational culture and execution (Cacioppo & Gardner, 1999). Jones & Pittman (1982) offered a few tactics for this: exemplification, self-promotion, supplication, and intimidation. The level of utilization of these tactics relies upon what attribution the individual is looking for from the group of onlookers.

In the intimidation tactic, people endeavor to establish a connection that they can make the things troublesome for them in the event that they are attempted to be strapped too far. Such people handle other people intensely with the people who meddle in their issues or practice potent conduct to influence their other working groups in order to make them act suitably (Jones & Pittman, 1982). The surmising of the analysis of Jones & Pittman (1982) and Wayne & Liden (1995) can be stated as there is a presence of positive and negative aftermaths both by using this tactic on the overall assessments of performance.

Another is the exemplification in which the individual shadows the impression of excessively devoted and focused on his/her activity on their given superiors while making a sentiment of blame among others. This particular case can be exemplified if any person says a statement that 'This specific work will be done by me at any cost of myself and you can go and attend your life' (Sharma, Umalme, Muralikrishnan, Lalita, & Maumita, 2005).

Also, an individual uses the self-promotion tactic, for building an image in which the promoting person wishes to be accredited as capable in any given specific area of knowledge. Even if that person has some flaws in his/ her personality, by using this tactic he/she can exaggerate his/her robust merits of his/her personality to make a favorable impression on his/her bosses. But, here can be one problem that if the said merits will not be found by his/her bosses (Sharma, Umalme, Muralikrishnan, Lalita, & Maumita, 2005). This tactic is best useful during job interviews and somewhat useful during job-appraisals (Higgins, Judge, & Ferris, 2003).

The supplication tactic has the objective to get the sympathy of the other group members by representing the weak areas of themselves (Gwal, 2015). The person using this tactic gets the help of other group members as they show themselves as helpless (Sharma, Umalme, Muralikrishnan, Lalita, & Maumita, 2005) (Arif, Rizvi, Abbas, Akhtar, & Imran, 2011). A person who says 'I lead others to believe that I cannot do something in order to get help.' (Lewis & Neighbor, 2005) is using this tactic.

Hypothesis Development

Impression-Management and Emotional-expression are themes important to every type of organization. This study plans to connect IM tactics and Emotional-expression. Therefore, the authors have proposed intimacy and positive expression have an association with positive IM tactics; while negative expression has an association with the negative IM tactics.

- There is an association between the self-promotion and positive emotional-expression.
- There is an association between the supplication and positive emotionalexpression.
- There is an association between self-promotion and intimacy.
- There is an association between supplication and intimacy.
- There is an association between the exemplification and intimacy.
- There is an association between the intimidation and negative emotionalexpression.

Research Methodology

In the first instance, the secondary sources are explored to find out the relationship between the tactics for IM and the emotional-expression related to it. But most of the literature didn't show their interest in these two terms and did researches on both the terms independently. Later, the primary data has been collected to test the said model. The data has been collected from both the public and the private companies and from different levels of management. Hereafter, diversification is used in the study. The data has been collected through a well-structured questionnaire that is based on a Likert scale from 1 to 5 (1= Never, 5= Always). 227 responses are being collected for this purpose. The responses are collected mainly from the private sector from the technique of convenience sampling and snowball sampling. The analysis is being done on IBM SPSS Statistics 20 and Amos 25.

Data Analysis and Results

Reliability Analysis

Table-I: Reliability and Variances Statistics

| | Values | N of Items |
|------------------|--------|------------|
| Cronbach's Alpha | 0.770 | 22 |
| Variances | 0.26 | 23 |

In Table-1, it is shown that the alpha value for the collected data is 0.770 which means data is sufficient for reliability. Also, variance among variables is 0.26 which can be considered as having the least variance between the variables.

Factor Analysis

IM Tactics

| Table-2: IM Tactics Factor A | Analy | /sis |
|------------------------------|-------|------|
|------------------------------|-------|------|

| KMO Value | | Bartle | tt's Test Sig. | |
|---|------------|--------------|-----------------|----------------|
| 0.756 | | | 0.000 | |
| | | I | Factors | |
| | Intimidate | Supplication | Exemplification | Self-Promotion |
| I make things difficult for others if they ignore me. | 0.841 | | | |
| l terrify people to act accordingly for work. | 0.880 | | | |
| l use intimidation for getting work done timely. | 0.934 | | | |
| l use intimidation when others hamper my ability to work. | 0.833 | | | |

| KMO Value | | Bartle | tt's Test Sig. | |
|---------------------------------|---------------|--------------|-----------------|----------------|
| 0.756 | | 241010 | 0.000 | |
| | | F | Factors | |
| | Intimidate | Supplication | Exemplification | Self-Promotion |
| l deal emphatically or | | | | |
| forcefully with others if | 0.831 | | | |
| they meddle in my work. | | | | |
| I endeavor to provide help | | | | |
| others who all need some | | 0.868 | | |
| sort of help. | | | | |
| Profess to know | | | | |
| comparatively less what l | | 0.836 | | |
| do as such I can evade out | | 0.050 | | |
| of the horrendous task. | | | | |
| I pretend to show myself | | | | |
| in need of help, to get | | 0.908 | | |
| others' help. | | | | |
| Profess not to | | | | |
| comprehend something to | | 0.906 | | |
| get the others' help. | | | | |
| Go to the workplace | | | | |
| during the evening or | | | 0.868 | |
| on ends of the week to | | | | |
| demonstrate dedication. | | | | |
| Go to the workplace early | | | 0.815 | |
| to demonstrate dedication. | | | | |
| Stay at work late so | | | 0 000 | |
| Individuals will realize my | | | 0.660 | |
| Attempt to seem | | | | |
| occupied even on the | | | | |
| occasion when things are | | | 0.646 | |
| slower. | | | | |
| I make individuals aware of | | | | 0.070 |
| my abilities. | | | | 0.8/8 |
| , I make individuals mindful | | | | |
| of my achievements. | | | | 0.863 |
| l appreciate my associates' | | | | |
| personal lives to | | | | 0.5.45 |
| demonstrate that I am | | | | 0.545 |
| their friend. | | | | |
| l discuss gladly my | | | | 0 000 |
| experience or training. | | | | 0.822 |
| Extraction Method: Principal | Axis Factorii | ng. | | |
| Rotation Method:Varimax. | | | | |

In Table-2, it is shown that the KMO value for this factor analysis is 0.756, which is showing the sufficiency in the data. Bartlett's Test is giving a p-value of less than 0.001. Also, it is shown that the 17 variables are classified into 4 factors, i.e., Intimidate, Supplication, Exemplification, and Self-Promotion, based on the 'principal axis factoring extraction method' and 'varimax rotation method'.

Emotional-expression

Table-3: Emotional-expression Factor Analysis

| KMO Value | Ba | rtlett's test S | lig. |
|---|----------|-----------------------------|------------|
| 0.562 | Intimacy | 0.000 Factor Positive | Negative |
| I frequently touch friends during | | Expression | Expression |
| conversations. | 0.799 | | |
| I demonstrate that I like somebody by embracing them. | 0.800 | | |
| My facial expression is quite evident to express my feelings. | | 0.962 | |
| My smile is delicate and repressed. | | 0.782 | |
| I laugh so hard that my sides throb. | | | 0.653 |
| I always try to laugh much. | | | 0.578 |
| Extraction Method: Principal Axis Factoring. | | | |
| Rotation Method:Varimax. | | | |

In Table-4, it is shown that the KMO value for this factor analysis is 0.562, which is showing the sufficiency in the data. Bartlett's Test is giving a p-value of less than 0.001. Also, it is shown that the 6 variables are classified into 3 factors, i.e., Intimacy, Positive Expression, and Negative Expression, based on the principal axis factoring extraction method and varimax rotation method.

Correlation Matrix

The numbering in the matrix is been done on the basis of the sequence shown in the factor analysis table. Also, the mean and standard deviation values are given to support the sufficiency of data (Table-4).

Findings

Self-promotion VS Positive emotional-expression

Figure-I: SP vs Positive



This model is fit because GFI is 0.93, CFI is 0.95, NFI is 0.94, TLI is 0.90, IFI is 0.95 (in Figure-1) (Radzi, Hui, Mohamed, Rahman, & Jenatabadi, 2017) (Boon, 2013), and this shows that there is a negative correlation between the self-promotion and positive emotional expression. This means that the intensity of its usage will determine the positivity in expression.

Supplication VS Positive emotional-expression Figure-2: Supplication vs Positive



This model is fit because GFI is 0.99, CFI is 0.99, NFI is 0.99, TLI is 0.99, IFI is 0.99 (in Figure-2) (Radzi, Hui, Mohamed, Rahman, & Jenatabadi, 2017) (Boon, 2013), and this shows that there is a positive correlation between the supplication and positive emotional expression. This means that supplication will result to create positive expressions within and between groups.





This model is fit because GFI is 0.95, CFI is 0.95, NFI is 0.93, TLI is 0.91, IFI is 0.95 (in Figure-3) (Radzi, Hui, Mohamed, Rahman, & Jenatabadi, 2017) (Boon, 2013), and this shows that there is a positive correlation between self-promotion and intimacy. Also, this model shows that self-promotion is the real cause of the existence of intimacy emotion among the employees.

Supplication Vs Intimacy

Figure-4: Supplication vs Intimacy



This model is fit because GFI is 0.96, CFI is 0.97, NFI is 0.96, TLI is 0.95, IFI is 0.97 (in Figure-4) (Radzi, Hui, Mohamed, Rahman, & Jenatabadi, 2017) (Boon, 2013), and this shows that there is a positive correlation between the supplication and intimacy. This means that the use of supplication will help in gaining intimacy among the group.

Exemplification Vs Intimacy

Figure-5: Exemplification vs Intimacy 01 intimacy3 10 21 Intimac 03 17 23. intimacy4 1.41 78 9. Exemplication1 88 55 .74 Exemplication2 10 xemplication 86 74 11. Exemplication3 60 36 12. Exemplication4

This model is fit because GFI is 0.96, CFI is 0.96, NFI is 0.94, TLI is 0.92, IFI is 0.96 (in Figure-5) (Radzi, Hui, Mohamed, Rahman, & Jenatabadi, 2017) (Boon, 2013), and this shows that there is a positive correlation between the exemplification and intimacy. This means that the use of exemplification will create intimacy among the group.

Intimidation Vs Negative Emotional-Expression

Figure-6: Intimidation vs Negative



This model is fit because GFI is 0.91, CFI is 0.93, NFI is 0.92, IFI is 0.93 (in Figure-6) (Radzi, Hui, Mohamed, Rahman, & Jenatabadi, 2017) (Boon, 2013), and this shows that there is a negative correlation between the intimidation and negative emotional expression. This means that intimidation will lower down the chances of the emergence of negative expression.

Conclusion

The most primary objective of this study that is mentioned at the start of this study was to find out the relation between the emotional-expression and impression-management tactics. The data were analyzed with the objective to find the relation between the positive IM tactics and the positive emotional-expression and intimacy and on the other side of the coin, it was to find the relation between the negative impression-management tactics and the negative emotional expression.

The data after the analysis is saying that there is a negative correlation between the intimidation, i.e., the negative impression-management tactic, and the negative emotional-expression, as the value of correlation is -0.30. The self-promotion tactic of impression-management has its relationship with the positive emotional-expression in a negative form (-0.12). This means that as more the person uses this tactic, the more it will level of positive expression attitude of the nearby people or the group in which this tactic is used. Also, the other tactics of the impression-management are better positively correlated with positive emotional-expression and intimacy. It also found that intimacy within and between groups existed because of the cause of the self-promotion tactic.

Research Implications

The results of this study will have foremost implications for the salesperson or the subordinates because, through this, they will be able to get an idea of choosing a better impression tactic to influence the behavior of the senior or supervisor. Also, it has its implications on the managers as they can, on the other side, can use the correct bundle of tactics to ensure the work assigned to the sub-ordinates done on time. This has its importance over here because, in a case of application of the wrong set of tactics, the managers' motive will not be accomplished.

Limitations of the Study

Due to the diverse culture presence in India, the authors conducted the study within the boundaries of Delhi and NCR region, which furthermore, limited the number of sample size for the research work. By taking this into perspective, this study will provide the awareness of the condition of the employees working in the region of Delhi and NCR which will help the managers to take the choice of impression-management tactics to make them work accordingly.

Future Scope of the Study

This study will be furthermore being investigated in the regions beyond the boundaries of Delhi and NCR, which may reflect the overall condition of the employees working in all over India.

The other aspects of culture with reference to the emotional-expression will be examined by the authors in their future studies, which will give an idea of overall awareness of the association between the emotionalexpression and the culture of the country.

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ISSN 2249-9040 Volume 10, No 1, January-June 2020 pp. 65-87

CSR: A Tool for Rural Development - An Indian Paradigm

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Abstract

This study is to understand CSR efforts of corporate in India as an outcome of compulsory CSR two percent of the profits made mandatory by law. This paper intends to classify the types of CSR activities under prespecified parameters and explore the possibilities of such funds to be used for rural development.

This is an Analytical study conducted from the secondary information collected from the websites of the sampled corporates. CSR activities undertaken by the companies are classified and analyzed to understand various components of such initiatives leading to rural development. This paper will be of immense help to the policy makers by providing them an insight on the two percent CSR and its effectiveness.

Information available in the websites of corporates shows that most of the funds is used for community development but there is no need identification before designing the CSR program. Firms are found to be focusing on the regional development and not national development. CSR policy does not define the regional factor thus, the regions which are not industrialized do not get any CSR expenditure towards their growth and development though these areas might have higher need for such expenditure.

Keywords: CSR, CSR Models, CSR Policy, CSR and Village Development

Introduction

Researchers, practitioner's, representatives of the society and politicians are trying to understand the meaning of CSR and its forms (Carroll, 1979, 1999). Scholars and managers in recent years have paid greater attention

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to the key implication of CSR. (Williams & Siegel 2001). CSR is defined as a scenario instigating a firm to go ahead compliances and involves in services for social cause beyond interests of the firm and compelled by law. CSR involves responsibilities such as economic, legal, ethical and discretionary through which companies have to take a crucial decision (Carol 1979). Frank etal (2001) in a study argued on the vagueness of CSR stating that CSR can mean anything to anybody and has no meaning by itself. Mac Milian (2007) & Vanhamme &Vogel, (2005) defined CSR as an important responsibility depicted by corporates to provide an account of Behavior, Brands and Products they own and overall reputation in terms of Responsibility for the society.

None of the numerous definitions of the CSR clearly underline the various activities that can be considered admissible for CSR, making theoretical development and measurement of CSR difficult. Fundamental idea of CSR is integration and Business and society corporate social responsibility is to integrate business and society as they are not unconnected and are closely related to each other (Wood 1991). Indian corporates have understood that their responsibilities beyond shareholders and stakeholders and is extended also towards other parties viz, Suppliers, Customers and entire society who are indirectly a part of the business and thus have adopted corporate social responsibility (Khan and Atkinson 1987). CSR comprises of role of a firm in reducing environmental impact and improve its competitiveness by contributing funds for the cause (Porter et al 1995).

CSR is a dedicated ethical behavior of the company and mentioned emerging methods to assess corporate social performance though these methods are yet to be established. The author also stated that society is keenly observing the business activities indicated as CSR (Moir 2001).

Corporate social responsibility is a part of all the activities the company engages through its day to day operations and is also stretched and applied to the firm's competitive conditions (Porter and Kramer 2006). Theories and executions that use CSR viz., accountability of the company with business partners, customers and society at large (Blowfield and Frynas 2005).Corporate social responsibility is no longer a thought of moral responsibility towards the society for the corporate managers, but it is rather used as a strategic resource by the managers to improve performance of the firm (Mc Williams et al 2006).CSR benefits in building company's image by creating a positive feeling in the mind of consumers when they understand the efforts made by corporates (Yoon et al 2009). CSR attracts both socially conscious consumers and employees (Lazlo 2003).

CSR activities are largely focused on roads, education and power and the least is communication and education (Verma and Chauhan 2007). There is shift in the activities of CSR from philanthropist to socially responsible.

Importance of CSR in India is increased because organization realized that it helps in creating a good company image which helps in building trust and thus enhances profits of the firm Rajeev (Prabhakar and Sonam Mishra 2013).CSR practices create a favorable image for the organization in the society but also found that community involvement is the most popular CSR activity when compared to other categories of CSR (Kabir 2011). CSR initiatives vary based on the size of the firm (Kiran & Sharma 2011).

There are five dimensions corporate social responsibility which relate to the value creation first being knowing the mission and objective of the company and second being the firm's ability in capturing the private benefits. (Burke and Logsdon 1996).Society values, reduced regulatory involvement, modern business opportunities, company fame and better stakeholder association are the driving forces for CSR influencing and motivating firms to implement various CSR initiatives (Neilson and Thompson 2009). Emergence of sustainability and growth of company's participation are seen as an enthusiastic motive (Enquist etal. 2007). There are deficiencies in the transformation of the corporate from philanthropic mindsets to CSR (Arora 2004).

Elimination of Poverty from People and society is in the list of priority as stated by United. UN continuously encourages member nations to eradicate from the society. Adoption of Universal Declaration of Human Rights (UDHR) in 1948 further increased the emphasis on reduction of poverty and hunger. In a span of 25 years starting from 1990 (millennium development goal) drafted by UN depicts its focus of reduction of poverty from current state to half.

UNO suggested a multifaceted approach and asked agencies and international aid organizations to extend support in eliminating poverty through capacity building, development of Private sector and entrepreneurial opportunities & skills, and developing industries to provide employment and enhance per-capita Income.

Modern CSR practices include managing human resources viz., empowering employees increasing environmental performance by reducing pollution adopting to stricter emission norms as laid by the authorities, Community development and elimination of poverty through rural development. According to the data provided by World Bank 70% of the poor people live in rural areas and depend on agriculture. Fifty percent of the population in India still depend on agriculture and allied activities even after years of independence. Eighty percent of the population in areas of high poverty depend on agriculture or business related to agriculture for their livelihood.

People living in villages in India earn their living usually from agriculture & allied activities or handlooms and handicrafts. Over the years average

landholding in the villages has significantly declined with increase in the number of members in the family. Supporting such large population only with the opportunities and Income generated from agriculture is quite difficult. Lower per-capita income in rural areas due to over dependence on agriculture is forcing rural population to move towards cities in search of alternative employment opportunities.

Industries involved in operations to take products from farm to fork are a part of agribusiness. An agribusiness is a process involving operations strengthening supply chain to provide agricultural produce to the buyers.

Inadequate supply chain is the root cause of loss in the agricultural output in rural areas. More than 50% of the agriculture is lost due to improper supply chain. Agriculture not only provides employment opportunities in rural areas but also contributes to exports. In developing economies agriculture and related products contribute to half of the exports. Large part of theses exports are unprocessed agriculture goods having lower economic value when compared to the processed goods. Agriculture sector can become more efficient by enhancing the efficiency of allied sector like food processing and linkages with manufacturing which depend on raw material for agriculture.

According to the data given in the World Bank report 20% of the Indians are poor which consists of 25% of rural population and 15% of the urban population. Eighty percent of the population below poverty line live in rural areas thus, any Poverty eradication and social development program should be definitely targeted towards rural population for better results.

In a nutshell, it can be summarized that poverty alleviation in India needs development of rural economy because a large group of these poverty stricken people live in rural areas and development of rural area demands better employment opportunity in rural areas, reduction of burden on agriculture sector, develop efficient supply chain for agriculture produce, and develop linkages between farmers and consumers. CSR initiatives can be directed to efficiently contribute towards rural development which is a priority for the government in the present circumstance.

Identification of need in the rural area which might vary regionally and geographically should be the first step towards rural development planning. CSR Project can be planned through need identification survey and involvement of local population (Jatin Maniktala 2015). Studies reveal that social development is the most common CSR objective of the corporate and most of the organizations do not have a system of measuring the outcome

Poverty alleviation can be directly linked to rural and farm development to bring sustainable rural and agricultural development. CSR directed
towards sustainable social development can be considered as a tool to develop rural areas. This paper is an attempt to identify the possibilities of using CSR to develop rural India and eradicate poverty. Companies should have a separate division for CSR which should contain well-trained and experienced professionals, so that the CSR activities can be planned, implemented and evaluated properly (Vastradmath 2015).

Need for the Study – Corporate social responsibility has taken an important direction with the government initiative of 2% contribution of the revenue compulsory for CSR activities. This research is an analytical study intended to identify the CSR initiatives of top 10 corporate houses according to BSE market capitalization index and identify the type of initiatives taken and the initiatives directed towards rural development.

Rural development being a priority of the government agenda the extent to which CSR funds can be directed towards such initiative is a way towards success of rural development initiative of the government. Research shows that most of the companies in India direct their CSR efforts towards community and social development. (Panigrahi R. & Paluri S, 2015). Thus, this research is intended to identify CSR initiatives and classify them into categories and area towards it is directed viz., national or local level activities.

Objectives

- Analyzing and classification of the CSR activities of selected companies on the listed pre-specified parameters.
- Understanding the various CSR activities undertaken by the selected companies for rural development.
- Suggesting a list of steps that can be taken in initiating a rural development project as an outcome of CSR activities.

Methodology

This is an Analytical study totally depends on the secondary information collected from the websites of the companies selected for the study. CSR initiatives taken by the corporates are analyzed to understand various components of such initiatives leading to understand its existing role in village development.

Sampling technique – Government has made 2% of the revenue as compulsory contribution to CSR the table is a clear indication of the revenue earnings of the companies selected thus leading to more contribution to CSR activities. Sampled companies are presented in Table-1 below.

| S. No. | Type of Design | Details |
|-----------|----------------------|--|
| Ι | Type of research | Descriptive research based on content analysis |
| 2 | Sampling Design | 10 companies are selected from the list of 100 companies comprising of service sector, FMCG and consumer durables from BSE index by market capitalization. |
| 3 | Observational Design | The CSR information is collected from the websites of the sampled companies and content analysis is done converting CSR information into tabular form based on pre specified parameters for analysis. |
| 4 | Statistical Design | Chi-Square test is used to test the association between type of the firm and CSR activities. |

Table-1: Research Design

List of Companies Sampled

Table-2: List of companies selected and the revenue earned for FY 2015-2016

| S. No. | Name of the Company | Revenue Earned in the Financial Year 2015-2016 |
|-----------|---------------------------|---|
| Ι | Tata Consultancy services | Rs. 1,08,646.21 crores |
| 2 | Reliance Industries Ltd | Rs. 2,96,091 crores |
| 3 | Nestle India Ltd | Rs. 92,238.0 Million |
| 4 | ITC ltd | Rs. 38,641.13 crores |
| 5 | Maruti Suzuki Ltd | Rs. 5,90,835 crores |
| 6 | Infosys Ltd | Rs. 62,441 crores |
| 7 | Bharati Airtel | Rs. 965,321 Million |
| 8 | Tata Motors | Rs. 2,75,561.11 crores |
| 9 | Dabur India Ltd | Rs. 8,673.25 crores |
| 10 | Hindustan Unilever Ltd | Rs. 32,487.80 crores |

CSR activities of the selected companies are collected from their website and classified into 8 broad factors (Pre-Specified category) identified from the review of the literature are listed as follows. All the factors listed are again sub classified into national and into national and local initiatives. Sample companies are than classified as FMCG, Consumer durables and Service.

- Economic.
- Social and community (Community development Sanitation and hygiene, Skill development program directed towards creating selfemployment opportunities)
- Environmental and ecological.
- Promoting Democracy and leadership.
- Reducing poverty and inequality.
- Employees' right.
- Working Conditions.

- Ethical Behavior of the firm.
- · Healthcare.
- Infrastructure development

Null Hypotheses – There is no association between type of company and the geographic concentration of CSR activities.

Chi-Square is used to test the hypotheses and examine if there is an association exists between type of company and Type of CSR activity undertaken is significant.

| S. No. | Company Name | Environmental and Ecological | Social and Community | Reducing Poverty and Inequality | Infrastructure Development | Health Care | Employee's Rights | Total |
|-----------|-----------------|------------------------------------|----------------------------|---------------------------------------|-------------------------------|----------------|----------------------|-------|
| (i) | TCS | I | 6 | | | I | | 8 |
| (ii) | Reliance | 2 | 8 | | 3 | 5 | | 18 |
| (iii) | Nestle | I | 8 | | | | | 9 |
| (iv) | ITC | I | 6 | | | I | 1 | 9 |
| (v) | Maruthi Suzuki | | 10 | | I | | | 11 |
| (vi) | Infosys | I | 8 | 2 | I | I | | 13 |
| (vii) | Bharathi Airtel | | 3 | 3 | I | I | | 8 |
| (viii) | Tata Motors | I | 5 | | I | I | | 8 |
| (ix) | Dabur | 7 | 9 | 2 | 2 | 2 | | 22 |
| (x) | HUL | I | 5 | I | | I | | 8 |
| | Total | 15(13.1) | 68(59.6) | 8 (7.01) | 9 (7.8) | 3(.4) | l (0.8) | 114 |

Table-3: Classification of the CSR Activities of the Company

Figures in the bracket indicate percentage

Total number of activities of 10 selected companies - 114

Table-3 is the information collected from the websites of the sampled companies is classified and tabulated on the pre-decided criteria. The data above shows that ten selected companies are having 114 activities as a part of CSR and 59.6% of these are in the area of social and community followed by 13.1% for Environment and ecological and 11.4% towards creating health care facilities. A very negligible effort goes to reducing poverty and inequality 7.01% and infrastructure 7.8% the least effort i.e., is 0.8% is towards employee's right.

Tata Consultancy Services (TCS) - Tata group has a profound care for the country and the society clearly evident from the CSR initiatives of TCS. CSR Programs designed at TCS is usually undertaken after a thorough study and identification of the local and community development needs. CSR board of the company takes a decision after a need identification process and designs the list of the programs that need to be carried out as CSR activities. CSR Programs of the company are implemented through TCS foundation. TCS foundation comprises of a dedicated team for the cause and also the employees volunteering towards implementation of the CSR projects. NGOS, Educational institutions, Industry associations and government bodies are partnered for effective implementation of such CSR projects.

CSR policy of the company is guided towards "sustainable well-being" and "impact through empowerment". CSR Initiatives are directed towards measurable impacts delivered thorough long term sustainable projects and employee empowerment. Large employee base and global presence help the company in delivering efficient and effective CSR programs.

TCS focuses on projects to develop education and skill, Health and wellness and environment protection initiatives like biodiversity energy and water conservation. TCS also extends support and help in instances of natural calamities and disasters. TCS as an elaborate CSR Process which starts with budget allocation followed by need assessment of the area where CSR activities are planned CSR program is designed and implemented. Employees also actively participate in the CSR activities. CSR projects are reviewed quarterly basis to judge the effectiveness and success of the program. It has an elaborate 6 step program to implement its CSR activity

Out of total of 8 activities by TCS 6(75%) are in the area of social and community and 1 (12.5%) each in the area of Health care and Environmental and ecological.4 (50%) CSR activities are at national level and 4 (50%) at regional level. This shows TCS provides equal importance for both national and regional needs while spending its CSR budget.

Reliance Industries Ltd - CSR activities comprises of initiatives in Education, Health and development of the weaker sections of the society through outreach programs are the important CSR projects seeking to achieve sustainable development around all business through thriving ecosystems. Company tries to bring in a positive change in the lives of people living around its manufacturing plant and support underprivileged.

CSR projects of the company are thus, directed towards developing Community, Infrastructure, and protection of the environment. CSR projects of the firm comprise of Water conservation, Construction of community halls, Schools and Health centers. Company has also taken initiatives in sources of renewable energy. Promoted Green Plantations and created environmental awareness.

CSR decision at Reliance industry starts with the allotted budget for the purpose in alignment with the CSR policy followed by the CSR programs and investment in each program is planned and finally the Planned program in implemented. Reliance as presented in the flow chart does not have any CSR evaluation system.

Reliance has a massive list of 18 activities confined to 4 categories of CSR activities highest being i.e. 8 (44%) activities in the area of Social and community, followed by 5(27.78%) into healthcare, 3(16.67%) infrastructure and the only 2(11.11%) in the area of environmental and

ecological. All 18 (100%) activities undertaken by reliance industries are undertaken at regional level and to provide benefit to local areas.

Nestle India Ltd - Nestle is a market leader in nutrition health and wellness. Company participated in business activities intended towards improving quality of life and providing better livelihood opportunities.

Company designs its CSR activities in consultation with its stake holders and base line study of the community as a need identification method. These are continuously monitored with periodic reporting.

Nestle India Ltd has a list of 9 activities as a part of its CSR Program and 8(88.89%) directed towards social and community and only 1(11.11%) is for Environment and ecological protection.6 (66.66%) CSR activities are regional Level and only 3(33.33%) at National Level.

ITC Ltd - ITC recognizes and strongly believes that business is an important social organ as it draws resources from the society and thus, contributes towards building Economic .Social, and Environmental capital directed towards increasing societal sustainability. The company as a matter of policy thinks beyond mere financial resource building and instead builds models by unleashing entrepreneurial ability, Creativity and Innovation. CSR Projects initiated by the company are unique in a way that they are replicable and scalable having multidimensional impact on sustainable creation of livelihood, Environment Protection and replenishment.

CSR policy of the company is aimed at Enhancing natural and Environment capital Supporting Health care, rural development and providing education, sanitation and drinking water facility and above all creating and supporting livelihood opportunities for the rural and weaker section of the society.

ITC has a very simple way of developing its CSR project stating with a budget allotment for its CSR activities and then identifying CSR projects in alignment with the CSR policy of the company. ITC has a unique system of evaluating the results and all those projects which provide good result are scaled up for better results

ITC has a list of 9 activities towards CSR and the largest number i.e. 6(66.67%) towards social and community and 1(11.11%) each for Environmental and ecological, Health care and Employees right. ITC through its CSR activities proves that it's a national brand as 8(89%) activities are at national level and only 1(11%) is at regional level. The company has a unique system of having the highest i.e. 8 (88.88%) at national level and only 1(11.11%) regional level, highest when compared to other companies. CSR presence of the company at a national level would be helping the company in its national presence and brand building.

Maruthi Suzuki Ltd - CSR activities of this company are largely in the areas of rural development and skill development. Company seeks meaningful and positive impact on the lives of community around it by spending CSR funds in sustainable projects and also yields results over a period of time.

Some of the popular skill building initiatives are setting up driving schools in collaboration with dealers to enhance employability. These activities are usually well planned with clear cut objectives to be implemented within a stipulated period of time and also includes robust monitoring and evaluation parameters.

The decision starts with allocating the budget followed with the CSR Program decision with the inputs of the stake holders and the decision of the time objective plans and targets in discussed in detail. The program is than implemented and also evaluated.

CSR activities comprise of a total number of 11 activities 10(90.9%) are in the area of social and community and 1(9.09%) in the area of infrastructure development and all 11 activities are at regional level.

Infosys Ltd – Infosys being an early adopter of CSR has an established nodal body named Infosys foundation to fulfill CSR commitments and plans. CSR activities of the firm are directed towards Sustained economic environment and Environment & Social governance are the prime factor of business growth.

Infosys foundation invests its CSR funds for Improvement of health care, Eradicating malnutrition, Improving Healthcare and infrastructure facility, rehabilitation of abandoned women and children and Preserving art and culture. Infosys foundation is responsible for designing and implementing suitable programs in the available project.

Infosys has a list of 13 CSR activities and the highest 8 in the area of social and community followed by (2) directed towards reducing poverty and inequality and 1 each for infrastructure development and health care. The activities are almost equally divided at national and regional level with 7(53.84%) towards national and 6(46.15%) regional.

Bharati Airtel – Bharti Airtel believes in success through a wider socio economic and cultural development and not just profiteering and shareholder returns. The organization has always endeavored to live up to the expectation of the community and even exceed the expectations. CSR policy of the organization is directed towards quality education being considered the most powerful tool for social development as company believes. Company invests its CSR funds into providing quality education through the use of technology especially to underprivileged children from disadvantaged marginalized communities. CSR comprise of activities for promoting education, enhancing employability skills through vocational training and livelihood enhancement projects.

The company has a system of undertaking CSR Projects after the approval of the committee constituted by the board of studies usually revised at regular intervals in compliance with statutory requirements. List of activities undertaken are as specifies in the Schedule VII of companies act.

Members of the constituted committee of senior management representatives and other members as it deems necessary to take decision.

CSR proposals from Bharati foundation and other eligible organizations are procured and the budget than is decided by the company. The budget and project after being finalized the timeline for implementation and the eligibility of the proposal under the company's act is studied followed by implementation of the project.

CSR activities comprise of a total number of 8 activities out which 3 each in the area of social & community and Reducing poverty & inequality and 1 each in the area of health care and infrastructure. Twenty five percent of the total CSR projects of the company is directed towards providing national benefits and seventy five percent are at regional level.

Tata Motors – CSR Initiatives undertaken by TATA Motors are directed towards improving quality of life of People Communities preferably in the local areas around business operations. CSR activities of the company primarily focus on Education, Employability, Health, and Environment Protection.

These activities are intended towards needy and deserving communities living in urban India. CSR Policy and implementation are reviewed at regular intervals by a three tiered governance structure to review outcomes of the CSR activities and create a measurable impact.

- Tier I Board and CSR Committee of the Board,
- Tier II CSR Steering Committee
- CSR Team comprising of Corporate Office, Manufacturing Plants and Commercial Offices.

Tata motors has a brief list of 8 CSR activities out which 5(62.5%) are in the area of Social and community and 1(12.5%), each in the area of Environmental & ecological, Infrastructure and health care. Eighty Seven percent of the total CSR funding goes to the regional level and only 12.5% goes to the national level.

Dabur India Ltd – Dabur India Ltd as a part of CSR contributes to Social Economical & Environment Development of the community in which it operates. Four prime areas of CSR focus on eradicating poverty, hunger & malnutrition, ensuring Environment sustainability, promotion of health care and education and Employment generation.

Dabur has a largest list among the sampled firms i.e. 23 activities in its CSR list of activities. The highest 8 Nos is for activities related to social and community development followed by 7 for environment and ecological 2 each for poverty & inequality, health care and infrastructure development.

Hindusthan Unilever Ltd – CSR Goal of HUL to improve health and well-being of the people living, reduce environmental impact of the products produced by the company and additionally considering India as a water scarce region and identifying key areas of intervention and conservation. The CSR policy is governed by Board of Directors and has structured procedure and governed by schedule VII of the company's act and the CSR activity comprises of the activities listed in the schedule.

Hindustan Unilever has a list of 8 activities out which 5(62.5%) in the area of social and community 1(12.5%) each in the area of Poverty and inequality, health care and environment & ecological.

| S. No. | Activity | Number of Companies | Percent |
|-----------|---|------------------------|---------|
| I | CSR Budget Allocation and Implementation | 10 | 100 |
| 2 | Project Planning and Designing | 9 | 90 |
| 3 | Company Policy/ CSR Foundation/Action as per Companies act on CSR | 4 | 40 |
| 4 | CSR Committee or board | 3 | 30 |
| 5 | Success of the program evaluated | 3 | 30 |
| 6 | Actual budget and success of the program measured | 2 | 20 |
| 7 | Need Identification | I | 10 |
| 8 | Target group determination of the program | I | 10 |

Table-4: CSR Process Classification

Complete CSR process adopted by sampled companies is classified and presented in Table-4 above. As presented in the table all the companies have a system of allocation of the budget and implementation of the program (9) firms plan and design their own project and one outsources the project planning. Four firms have a CSR policy & CSR foundation and Act according to the companies act on CSR. Three firms are found to be having a CSR committee or board to plan and monitor the CSR activities of the organization. Two of the sampled firms have a system of examining the relationship between the actual budget spent on various activities and measurement of the outcome of the program. A very dismal i.e. 1 firm each have a system of need identification and target group determination as a part of the CSR process determination.

The data above indicates that the from the CSR information available in the websites of the respective business organization the evidence of need identification and success measurement and evaluation is very dismal.

Regional classification and type of industry classification of the sampled firms is presented in the Table-5 below.

| S. No. | Name of the Company | Type of Industry | National | Regional | Rural | Total |
|-----------|--------------------------------|---------------------|----------|----------|--------|-------|
| I | Tata Consultancy services(TCS) | Service | 4 | 4 | 0 | 8 |
| 2 | Reliance Industries Ltd | Service | 0 | 18 | 0 | 18 |
| 3 | Nestle India Ltd | FMCG | 3 | 4 | 2 | 09 |
| 4 | ITC ltd | FMCG | 7 | I | I | 09 |
| 5 | Maruti Suzuki Ltd | Consumer Durable | 0 | 10 | I | 11 |
| 6 | Infosys Ltd | Service | 6 | 6 | I | 13 |
| 7 | Bharati Airtel | Service | 2 | 6 | 0 | 08 |
| 8 | Tata Motors | Consumer Durable | I | 7 | 0 | 08 |
| 9 | Dabur India Ltd | FMCG | I | 21 | 0 | 22 |
| 10 | Hindustan Unilever Ltd | FMCG | 8 | 0 | 0 | 08 |
| | Total | | 32(28%) | 67 (59%) | 5 (4%) | 114 |

Table-5: Classification of CSR activities by area of implementation.

CSR activities of 10 corporate houses are tabulated and classified and the above Table-5 above. Data shows that out of 10 companies four are from FMCG and service sector and 2 from the consumer durable. Total of 114 activities are conducted out which 67 (59 %) are at the Regional level and 32 (28%) at National level and only 5 (4%) of the CSR activities are done rural areas.

| /1 | / | | / | |
|------------------|-----------------------------------|------------------------------------|--------------------------------|---------------------|
| Type of Industry | National (No of activities) | Regional (No of activities) | Rural (No of Activities) | Total Activities |
| Consumer Durable | I | 17 | I | 19 |
| FMCG | 19 | 26 | 3 | 48 |
| Service | 12 | 34 | I | 47 |
| Total | 33 | 81 | 5 | 114 |

Table-6: Type of Industry and Concentration of CSR Activity

Table-6 above provides the cross tabulated data of geographic concentration of the CSR activities and the type of industry. The data above shows that the activities towards rural areas is very dismal. Five activities out of the 114 activities are in rural areas. Rural area being the priority in the government Agenda, CSR expenditure in rural area will reduce the financial burden on the government. Suitable policy initiatives on CSR expenditure providing detail guidelines and direction for CSR can ensure rural development also on the CSR agenda.

Chi Square test is done to test the hypotheses and examine the association between type of industry and geographical concentration of CSR. Results of the Chi square test are presented in Table-7 below.

| Table-7: Chi Square lest Results | | |
|----------------------------------|----------|--|
| Chi-square test: | Values | |
| Chi squared value(observed) | 4.962166 | |
| Critical value | 0.05 | |
| DF | 4 | |
| p-value | 0.291202 | |

Table-7: Chi Square Test Results

H0 – There is no association between Type of industry and geography Concentration of CSR activity.

H1 – There is an association between type of the industry and concentration of CSR activity.

The observed chi-square test statistic is greater than the critical value thus, the null hypothesis is rejected and the alternate hypotheses is accepted which indicates type of industry and geographic concentration of CSR activity have an association. Consumer durable and Service sector have larger contribution towards Regional CSR activities and Firms belonging to FMCG give equal importance to CSR activities in both national and regional areas. The contribution towards rural area is found to be very dismal. Most of the firms prefer carrying out CSR activity in the area they operate to create an identity and brand value for themselves.

CSR as a Rural Development tool

Problems in Rural India Post Reform Period

Rural Indian is characterized by week human capital base, Low income level, poor quality of life. The economic reform period post 1991 witnessed growth in Per-capita income, standard of living but there was not much change in the economic disparity amongst people and rate of unemployment. Developing villages would require providing health and hygiene, employment opportunities other than agriculture and education facilities to the rural population. Neo liberal policy regime has failed to tackle this issue and there is an increasing evidence of rural and urban divide and the magnitude has accentuated in the recent years due to change in the income and growth trajectories of urban rural Globalization and liberalization of the Indian economy with greater reliance on efficiency of the market mechanism. High GDP along with its distribution across sectors, regions, sections and locations is important for the holistic development of the country. Low growth rate of the agriculture sector is the contributing factor for underdeveloped rural areas as the rural economy largely depends on agriculture. Agriculture and allied sector supporting 55% of the livelihood contributes less than 18% to the GDP.

Scope of CSR to be Used as A Tool for Rural Development

A report of 1505 companies amongst the listed 4887 companies in BSE

qualify for CSR spending shows an increase in the number of firms that are in compliance with CSR Rules thus, resulting in an increase of the overall CSR expenditure made in the country. The rule directs all the companies with a net worth of 500 crores or revenue of 1000 crore or net profit of 5 crore to spend 2% of the average profit in the past 3 years on Social Development.

A report by CRISIL presents that out of an increased expenditure of 22% on CSR bulk goes towards expenditure on education skill development, health care and sanitation. Financial Year 2016 presents and sharp increase in the CSR in an absolute terms expenditure on CSR increased by Rs 2,500 crores to Rs 8,300 cr in F16. Average Spending increased to 29 basis points to 1.64% when compared with 1.35% in FY15. The higher spend on CSR portrays a positive step towards increasing private sector participation in social development.

As per census 2016 World Bank report 67% of the Indians live in rural areas. Development of rural area in the country implies the economic development of the people and also greater social transformation. Rural India needs better economic prospects and sustainable growth and development opportunities. Indian Government proposed increased participation of rural people in the village and rural development programs, better enforcement of land reforms and greater access to credit and infrastructure facilities and decentralized planning is needed. To bridge the Gap between rural and urban areas and providing better standards of living for rural people government has initiated employment generation and skill building, Panchayat Raj Institutions, Development authorities, drinking water, road construction, sanitation, Electrification of villages and food supply etc are some of the important programs. The activities listed and analyzed above in this paper do not really portray any kind of CSR expenditure specifically targeted to rural India. Most of the companies are found performing CSR activities in the local areas where the company is situated.

Rural Development Dimensions Suggested by Authors

| S. No. | CSR Activities Listed under Schedule 7 Companies Act 2013 | Rural Development dimensions |
|-----------|--|--|
| I | Eradication of extreme hunger and Poverty | Poverty alleviation (Mahatma Gandhi 1931) Economic dimension by Spencer Hatch (1928) Decrease inequalities of wealth and Income(5 years Plan) |
| 2 | Promotion of education | Women education Frank Lugard Brayne (1927), Development of Education Department Shantinikethan Rabindra Nath Tagore (1921) |

Table-8: CSR Activities and Rural Development Dimensions

| S. No. | CSR Activities Listed under Schedule 7 Companies Act 2013 | Rural Development dimensions |
|-----------|--|--|
| 3 | Gender equity and women empowerment | Develop a socialistic society based on equality ,Justice and absence of exploitation (5 years Plan) |
| 4 | Reducing child mortality and improving maternal health | Improvement of health and Hygiene(Frank Lugard Brayne (1927) |
| 5 | Combating Diseases | Improvement of health and Hygiene(Frank Lugard Brayne (1927 |
| 6 | Environmental Sustainability | Improvement of the form coston Frank |
| 7 | Social Business Projects | Lugard Brayne (1927) |
| 8 | Contribution to prime minister relief fund and other such state and central fund | |
| 9 | Employment enhancing vocational skills | Increase rural employment opportunities and achieve full employment (5 years Plans) |
| 10 | Such other matters as may be prescribed | |

Table-8 portrays the relationship between the CSR activities listed in article 13 of companies act and rural development dimensions identified by various researchers pre independence and the 5 year Plans stated by the government. Most of the activities mentioned for CSR are also the rural development dimensions. A Policy change from the government can promote rural development through CSR activities.

Fig-1: Companies act 2013 (CSR Rule)

CSR Applicability



CSR Committee

- 1. Three ore more directors with at least one independent director.
- 2. Formulate and recommend CSR Policy to the board.
- 3. Recommended activities and the amount of expenditure to be incurred.

Role of Board

- I. Form a CSR Committee
- 2. Approve the CSR Policy
- 3. Ensure implementation of activities under CSR
- 4. Ensure 2% spend
- 5. Disclose the reasons of not spending the amount (if applicable)



The modalities and activities listed above pertaining to 10 companies above shows that the fund allotted towards CSR is spent in social and community building activities and usually in the area the firm operates. Companies Act 2013 provides the activities in CSR but does not specify the outcome expected not mention about the geographic segment that can be targeted through these activities. This study brings to the foray the understanding of the rural development and CSR activities Thus, suggesting an improvement in the CSR guidelines. The new suggested amendment should bring rural development in CSR fold stating a particular percentage of the total expenditure should be towards developing rural India.

Suggested CSR Expenditure Model

The division of the CSR Funds is suggested to be divided almost equally across Regional, Rural and National development

- **Regional Development** Initiating CSR activities in the area of operation is usually getting affected directly or indirectly by the company.
- **National** Can be an activity which gives the benefit to the country as a whole. The beneficiary can be any one from the country and not geographically targeted to the firm's area of operation.
- **Rural area Rural Development** Developing a rural area as defined "Rural" by government of India. The Company can select any rural area around its place of operation or other selected rural area decided by the CSR Board. A need assessment is to be carried out to identify the area and dimension that needs development in the selected area.

Types of contributions that can be made –

- Direct expenditure of the CSR fund attributed for the cause.
- CSR project implementation through in-house CSR Committees or through monitored third parties.
- Financial contribution without any physical involvement.

Rural Development (Models)

- By adopting a rural area close to the vicinity of the firm-Company can adopt a village close to the vicinity identify the need of the villages viz., Developing education, Providing drinking water, Helping farmers in farming activity, Skill development activities to enhance their financial status and be an alternative opportunity of employment.
- Contributing to the rural development activities through Registered NGOs-Firms can take of the NGOs and identify an area.

Regional Development

- Partnering with government through regional development initiatives by sharing the financial burden.
- Identifying a suitable project and implementing as a CSR program. Contribution for the project can be done financially and through employee's participation.

National Development

- Directly contributing to Central government development ventures like Swach Bharat.
- Contributing financially to funds created by government which is approved for CSR.

Firms can apportion their CSR budget equally to all the mentioned geographic location i.e. National, Regional and Rural. Appropriate policy initiatives should be made by the government to divert CSR expenditure even towards rural area development.



Fig-3: CSR Model for Skill Development in Rural Areas

The above model only provides a system that can be used for skill development in rural areas followed by identification of the need which may be skill deficiency in the adopted village. Similarly, there can be other models developed based on the need of the rural area. Rural development model need to start with adopting a village and identifying need of the area.

Benefits of CSR Activities Channelized towards Rural Areas

- Compulsory contribution of CSR funds for rural development if channelized properly will help in developing rural area
- Reduces the burden from the government.
- Villages get opportunity to develop through education and skill building efforts.
- Alternative skill can reduce the over employment in the agriculture sector.
- Can help in village infrastructure development.
- Adequate development of rural areas will reduce migration of rural people to urban areas

Findings

- Analysis of the information available in the company website shows that most of the companies contribute their CSR funds for the social and community development.
- Most of the expenditure is towards the development of the region the firm operates and not the nation as a whole.
- Very meagre contribution to rural areas as per the information provided in the website of the sampled firms
- Limited activity towards national benefit and out of which the popular one at national level is contribution to Prime Ministers National Relief fund.
- Some companies have an established organization structure to specially take care of the CSR activities.
- Every company has a different procedure for CSR project decision and implementation.
- Employees are also found to be contributing to the CSR activities of the company especially for companies like TCS who has a very large employee base.
- There is very less amount of need assessment and impact measurement effort found.
- There is no specific contribution to village or rural development as the firms are found to be working only in their regions very few activities are found in rural areas near to the area of operation of the firm.

- A government policy initiative is essential for channelizing the CSR funds towards rural development.
- There is a strong association of type of the company and locational preference

Conclusion

Corporate social responsibility is made compulsory by the government of India expecting the corporate to participate in the developmental activities and thus, within the purview of the guidelines given by the government 2% of the profit is made mandatory for the firms as per the clause presented in fig 12. The expenditure being defined the results of the expenditure is not measured. This paper presents a detailed analysis of 10 corporate houses and their CSR activities and procedures and it is identified that most of them have a system to plan for the CSR activities but none measure the impact. There is no specific effort put for rural development. Indian government through its five-year plans channelizes public funding towards rural development but there is no specific guideline to make rural development a part of CSR.

Specific guidelines to divert CSR funding towards rural development will pump extra funding to rural development. The paper through its village development model stated the benefit of channelizing the CSR funding towards rural development. It's suggested that government can lay down specific guidelines towards CSR through rural development and ensure that corporate also take the responsibility of rural development.

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ISSN 2249-9040 Volume 10, No 1, January-June 2020 pp. 88-100

Leading the Gen Z Workforce – Analogy on Communicative and Transformational Leadership Principles from the Bhagavad Gita

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Abstract

The workspace is gearing up to welcome GEN Z who are natives of digital age and are highly proactive. The leadership roles are adorned by GEN X & Gen Y and the multigenerational gap between Gen Y and Gen Z would pose greater challenges than what Gen X had with Gen Y as technology is their sixth sense (Randstadusa report, 2016), of Gen Z. They seek self fulfillment through engagement which can ultimately take us to a full fledged gig economy. Transformational leadership is the process of inspiring and empowering the team to reach towards the goal. Western Philosophies of management have always been the bench mark for corporate houses across the world. The growing global economic crises and failed joint ventures from time to time has compelled researchers and management practitioners to look towards oriental cultures. The present study focuses on how communicative leadership style converges to transformational leadership style drawing analogies from the Bhagavad Gita (the spiritual text of Hindus in India) on principles of transformational leadership of (Bass, 1995). The process of how communicative leadership and transformational leadership produce results even in an hour of crisis is portrayed by the dialogue between the protagonist who is Lord Krishna and his protégé, Arjuna. The study explores the relevance of leadership style as the gen Z techies who are driven by needs of Engagement & Happiness and not satisfaction & success enters the work force.

Keywords: Bhagavad Gita, Communicative Leadership, Gen Z, Motivation, Transformational Leadership

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Introduction

The influence of leaders in shaping world history is not new to any generation. India has numerous names to quote from Mahatma Gandhi to Dr. A.P.J. Abdul Kalam, who have made remarkable footprints in the country's history leading by 'example'. Not to mention about revolutionary leaders and business leaders the names are many. Research shows that (Duta, 2011) the last two decades leadership studies focused on leadership by discourse rather discourse analysis. It focuses on framing and making sense in various contexts. These studies focus on how leaders convey in various context and its sense as understood by employees. Organizations have increasingly recognized the importance of communication at the strategic level. Bhagavad Gita – The Indian epic song is a rich narration of Indian Dharma, Strategy and path towards Self fulfillment. Arjuna, the great Pandava warrior was in deep anguish driven by emotions in the battle field of Kurukshetra (place in India). Lord Krishna exhorts Arjuna to fight for the cause and up-lift dharma (righteousness). Western Philosophies of management has always been the bench mark for corporate houses across the world. With growing global economic crises, corporate wars, and failed joint ventures and over all, the market crash from time to time triggered by socio-economic and political factors has compelled researchers and management practitioners to look towards oriental cultures. The Bhagavad Gita stands apart here, though it is a contextual discourse, it is communication between Krishna and Arjuna in a situation of strategic crisis.

The workforce and workplace have changed in culture and practices from the age of the baby boomer generation. The millennial generation (GEN Y) who are born between 1981-1995 is 76 million strong and will comprise 46% of the workforce by 2020. The middle level and top level management comprise of GEN X and GEN Y who have certain aspects and outlooks which makes them a compatible component at workplace. There has been a lot of study on GEN Y or the millennial, now the industry is getting ready to welcome the GEN Z, they are turning 23 years and are entering the workforce. Gen Z are the people born between 1995-2010 this generation are the natives of Smart technology. They are tech savvy and are equipped to use technology with ease and expertise. This was evident during the disaster management drive during the floods in Kerala, the southernmost state in India to handling the current pandemic crisis. They are more connected and interactive in the virtual world but one cannot underestimate their capabilities in responding to social responsibilities. The Generation is highly informal and highly connected through social networks. They are ambitious and are highly competent in multitasking and believe in transparency unlike the GEN X and Y who could tolerate

ambiguity. This generation is highly entrepreneurial and driven by novelty, and is constantly in the pursuit for better products, services and the world at large. They are proactive than reactive and have the capability and commitment to work in dynamic environment as the case is today what is described as the VUCA world. The managers and people at the leadership position needs to evolve their styles of management to engage the GEN Z at the work place. In this context communicative and transformational leadership is examined from the backdrop of the Bhagavad Gita to understand how those principles can be compared with modern principles of these leadership styles.

Literature Review

Communicative Leadership

Leadership has radical influence on the growth and survival of organizations. Organization culture is nurtured by the philosophies a leader imbibes in his/her team. Leadership style is the way a person utilizes and performs the role assigned to him and not the way authority is exercised. The extent of autonomy shared with subordinates or followers and the extent of participative decision making style determines the leadership style. A leader brings the concept into the moment and leadership is leading others in an improvised and visionary way (Hamrefors, 2010).Leadership lessons have been a major area of research in the past decades and it is still continuing. Situational leadership, servant leadership, influences of emotional intelligence and motivation has all been the areas under study.

Leadership is the process of leading through communication. Communication, rather effective interpersonal communication is the core of leading a team or organization. Whether it is about success or crisis it is this ability of a leader which would instill courage, motivation and a sense of commitment in his /her team. Research of (Tengblad, 2006) states that managers spend around 70 to 90 percent of their time daily in the process of active communication. In fact today like never before the roles of mentors, facilitators and coaches has increased. The type of communication between the leader and his team depends on the kind of leadership style he/she exercises. Communicative leadership should create situations where people are guided by stable concepts, while being stimulated by variable activities (Hamrefors, 2010). It is a process of dialogue involving responsive forms of interaction. Traditional leadership practices were based on communicating to people through directives as to what they are expected to do and how it can be accomplished and what results or targets are to be achieved. This system of practice was based on control mechanisms which were mostly one way communication. The traditional methods did not believe that people can contribute positively if they are asked for feedback and they can evolve better techniques of doing their work, apart from what the leader directs or a set of defined procedures. Communicative leadership is a two way process which includes not just top down approach but also bottom up initiative. This creates a participative environment wherein employees' involvement in decision making improves. The impact of technology has created a dynamic and fast paced organization, where knowledge and skill are the main drivers. The need to empower employees and keep them self directed and motivated is the new leader's role than ever before. Hence leadership is no longer a superhero's role but of a coach and a mentor (Raelin, 2012).

The importance of communication in leading and motivating is none the less. The world history talks of national leaders who took a nation or a civilization forward with their exceptional oratorical skills. In fact this study looks at communicative leadership from the perspective of transformation, transformation of the self, not moved by mass hysteria which can fade over a period of time but how Lord Krishna communicates the deepest knowledge of the self which transforms Arjuna in the battle field, a principle that can drive today's leaders in the battle field of corporate strategies and globalization war.

The communicative role of a leader involves taking initiative, representing employee and employer, relating, motivating his/her team. These role in fact bring in role clarity, confidence and engagement in the team which results in greater levels of efficiency and performance. The key principles of communicative leadership (Johansson, 2015) are: Coach and enable employees to manage things by themselves, Provide structures to facilitate work atmosphere, The leaders set clear expectations for quality, productivity, and professionalism., Communicative leaders are approachable, respectful, and express concern for employees, They actively engage in problem solving, follow up on feedback, and advocate for the unit, Communicative leaders convey direction and assist others in achieving their goals, Communicative leaders actively engage in framing of messages and events, communicative leaders enable and support sense making.

Communicative leadership was a concept emerged in Sweden in the late 1990s (Eriksen, 1997; Hogstrom et.al., 1999) as cited by (Hamrin, 2014). Efficient communication between the leaders and team ensures greater productivity, less absenteeism and greater engagement. Improved communication ensures transparency among the leaders and his / her team which improves employee commitment to the leader's proposition. The process of goal-setting, clarity of purposes, involvement in decision-making, creation of synergy and commitment from the employees towards the goals, knowledge sharing, performance appraisal and feedback would

yield appropriate results to the organization when a leader steers his team towards the higher realms of an organization vision not undermining individual goals of his team. Researchers have opined that leadership is cocreated, relational and dependent on micro and macro contextual variables (Fairhurst & Connaughton, 2014). Lord Krishna's leadership is contextual in Bhagavad Gita.

Lord Krishna starts exhorting Arjuna who is overwhelmed by emotions on the battle field – a place where flawless action is the norm by establishing a platform for open dialogue. This holds Arjuna in good faith to Krishna's convictions on the need to fight the enemies to instill dharma (righteousness) for the benefit of the dynasty and humanity. Effective communication ensures that goal of the organization is clearly understood by the team and increased commitment is associated with efforts of a leader to clearly articulate and communicate individual and organizational goals. Change is the only constant phase in any organization and the role of an effective communicative leader in times of change cannot be ignored by any organization. Yet empirical studies on Communicative leadership as a mode of empowering leadership communication are scarce (Johansson, 2015) and its impact on transformational style is not studied.

Leadership is the art of convincing and facilitating. It is the establishment of the values in an organization that will drive behavior. A leader who engages in active communication with his team can connect with his team members in a positive manner there by engaging his team efficiently. (Hamrin, 2014) defined a communicative leader, "A communicative leader is one who engages employees in dialogue, actively shares feedback and is receptive to employee/follower feedback, involves participative decision making, and is perceived as approachable and involved". The studies of (Hamrin, 2014) further list the qualities of communicative leaders. The communicative leader create an ambience of positivity, involve team in decision making, practices flexibility, employee development, build networks and maintains a two way feedback system.

Traditionally communication was considered as a simple linear process where feedback was not seen as a major component. It focused only on transmission by the sender and action by the receiver. Communicative leadership on the contrary is defined as "the controlled, purposeful transfer of meaning by which leaders influence a single person, a group, an organization, or a community" (Barrett,2006). In fact feedback is an essential process which facilitates effective communication. The agent of change is the feedback loop in leader-follower communication. Feedback involves two perspectives: Seeking feedback and giving feedback. In the Bhagavad Gita Arjuna is not a passive follower, though overwhelmed by emotions and weak at heart, Arjuna asks questions and Krishna ensures to give him feedback which brings in clarity of thought and purpose. A leader's conversation "make sense" to the follower when a feedback system exists.

Today with highly enabled technology the role and space of communicative leadership has become the life line of organizations as we are moving towards online formats of work than occupying physical space. In a workplace where GEN X and GEN Y are in the productive and functional space, leaders can no longer build islands. Transparency is the norm of this generation of workforce, unlike the baby boomer generation that believed open communication and transparent systems are not necessary. Therefore, the responsibility for developing the organization's communicative capacity lies with the leader.

Trust is another major element of leader – follower relationship. Communication plays a significant role in building trust, a leader who is able to understand his /her subordinates and enable them to push their limits and empower them would be trusted by the followers It becomes very challenging for a leader to stimulate, involve and hold their most brilliant team members if they do not trust his messages (Marion & Uhl-Bien, 2001). Leaders can develop an environment of trust by sharing essential information and building confidence in the capacity of the team to achieve results. A sense of synergy and gratification among employees is build through mutual trust. Trust building activities include communication management, sourcing the right networks, positive conversation about what else to be done and feedback of communication (Luthra & Dahiya,2015).

Empathize, Empower & Build Trust

Krishna exhorts in the Gita, "Ananaya chintayentho mam ye jana paryupasathae, thesham nithyabhi yukthanam yogakshemam vahamyaham" (Sanskrit verse). This verse instills faith in Arjuna as the Lord says that whoever trusts in me without inhibitions and doubts, it is my responsibility to ensure their well being. This is not a statement made by the Lord in the beginning when Arjuna is weeping but after a series of dialogue with Arjuna on the self, selflessness and dharma. The very phrase instills courage which is an important aspect of one's leadership quality. The leader can empower his team with this trust building bond, it should be noted that only after Arjuna is empowered Krishna makes this statement. Otherwise a follower would believe that the responsibility of success and failure is vested only with the leader and could take a passive attitude towards goal accomplishment.

Ideological leadership strengthens the organization's ability to specify its role in the value-creating processes in the network, and the contextual leadership creates sustainability in that position (Hamrefors, 2010). Thus precision and stability creates conditions in the organization where the leader occupies a position of value creation in the hierarchy.

Transformational Leadership

Unlike communicative leadership transformational leadership theories is the most researched among leadership theories (Diaz-Saenz, 2011). Transformational leadership is a process of positive change. The leader and the followers work towards a change in them as well as try to change established systems. The process facilitates development of leaders through a system of motivation and inspiration. Creativity is fostered which enables followers to reach out goals discovering and redefining themselves. According to (Bass, 2008; Burns, 1978) transforming leadership is a process in which "leaders and followers help each other to advance to a higher level of morale and motivation". The ideals upheld by the leader and his/her exceptional and charismatic style of intellectual stimulation instills courage and motivates the followers to work towards those ideals which is intended not only for team benefit but for societal benefit at a macro level. It is the ideals upheld and the charisma of the leader that builds the morale of the team. Inspirational motivation creates confidence in the team to reach the unreachable (Thomson, 2007). This process of transformation creates a dual effect (Wittington et.al, 2004) the team not only scales up its performance level but there is also a behavioral change in the followers.

The four Is of transformational leadership are: Idealized influence, inspirational, motivation, intellectual stimulation, and individual consideration (Bass,1995). In fact, transformational leadership is the ability of the leader to get people to aspire for change, and inspire them to improve and materialize the change by leading them. The process involves assessing associates' motives, satisfying their needs, and valuing them (Northhouse, 2016).

Emotional intelligence is associated to three aspects of transformational leadership (Barling, 2000) namely idealized influence, inspirational motivation and individualized consideration. Subordinates find that individuals who are high on emotional intelligence display high leadership behavior. In fact in the battle field of Kurukshetra (place in India) Krishna's role was of a charioteer, though Krishna has been a friend and guide to the Pandavas, primarily Arjuna. Arjuna always held Krishna in high esteem and considered him as a person with absolute emotional balance and high spiritual quotient.

Gen Z at Work Place

Gen Z or the generation born between 1996-2005 is going to be the next biggest disruptor, disrupting every aspect of how the world thinks and works today. Gen Z would constitute 24 percent of the workforce by 2020.

Gen Y would make 46% of the workforce by 2020. The Gen Y is definitely going to be the ones who would be at the helm of things managing the GEN Z. This generation is ambitious, restless and open to taking risks due to the options available to them (ET, 2018). They look for learning opportunities and engagement hence many opt to work in startups, they look for stability unlike Gen Y as most have lived the great recession of 2008 (Tabaka, 2019). The world of open source and internet is paving way for more challenges for leaders.

Mangers have a huge task of understanding and inspiring this generation at the workplace. Gen Z is all set to enter the workforce; they are different from the GEN X & GEN Y. They belong to the Google generation and are connected to diverse patterns of people and life through digital technology-Smart phone is the smartest way to live according them. Workplace today is build around the earlier generations who are unlike Gen Z a generation which can work on ambiguity and can tolerate technical snags. Ryan Marshall, regional manager of human resources at Convergent Technologies said that its not anymore about compensation packages but about day-to-day experiences at the work place that would be the key to employee retention.

Gen Z will comprise 32% of global population of 7.7 billion in 2019, nudging ahead of millennial, who will account for a 31.5% share, based on *Bloomberg* analysis of UN data, and using 2000/2001 as the generational split. India, which has about 1.3 billion people versus China's 1.4 billion, will see its Gen Z population rise to 472 million next year(Live Mint,aug 20,2018). With the youngest workforce India has a huge potential for innovation and breakthrough changes Yet, the challenges of engaging and retaining the Gen Z workforce can be more challenging than ever. In this context the convergence of transformational leadership proposed by Bass, 1995 and the age old scripture of Bhagavad Gita hold relevance in managing the upcoming workforce.

Analysis & Discussion

The Convergence of the Leadership Styles – Analogy from the Bhagavad Gita

The celestial song – The Bhagavad Gita is a journey through the communication between Arjuna and Krishna on the battle field and Arjuna's transformation. Krishna narrates the ideals beyond ego, the essence of selflessness a state where an individual transcends beyond emotions, the senses and the body and dwells in Supreme consciousness. State where doer ship is beyond the name, the titles and positions and is rooted in a mission rooted in ethics and societal well being. The Krishna – Arjuna dialogue is driven by trust, admiration, loyalty and respect for the Lord,

the conversation is rather a communication where Arjuna is encouraged by Krishna to criticize and ask questions on Krishna's delivery, through this very process the creativity and upper consciousness of Arjuna is invoked and his mind is slowly and steadily transformed through intellectually driven dialogue. These outcomes occur because the transformational leader offers followers something more than just working for self gain; they provide followers with an inspiring mission and vision and give them an identity. The need to challenge the status quo is once again driven into Arjuna's mind through a series of deliberations and in the 9th chapter of the Gita, Krishna tells him to understand the real essence of doer ship, the fact that everything lies in the supreme reality though the path each one chooses in life is driven by desire or 'Moha'. This takes him in his/ her chosen path of life and death cycle, in fact every individual's life is determined by the choices he makes, ideals he upholds. The need to go beyond the sheer 'I' ness for a greater goal is emphasized. The corporate world also has leaders who have been transformational. In fact Steve jobs is a great leader who not only had a transformational style but someone who could work beyond the titles and brand Apple. He came back to His home grown brand Apple from where he was banished at one point of time; he selflessly turned around the company to world's No.1 brand. He was a leader who believed innovation drives the world and encouraged his team to come up with new and unique ways to challenge the established process and systems which makes us feel life is comfortable and to alter the environment to produce path breaking products for the future.

Krishna transforms Arjuna through the four Is which are drivers of transformational style which was mentioned earlier: Idealized influence, inspirational motivation, intellectual stimulation, and individual consideration (Bass,2008).

Idealized influence: Idealized influence is a phenomenon where the leader is seen as a role model. He or she is idealized by the team for their ability, intelligence or skill in terms of team and projects management. Influence of Krishna on Arjuna is way beyond their friendship; they share a mentor-mentee relationship. Krishna's ideals on Dharma and Karma narrated over eight chapters in the Bhagavad Gita gives clarity of purpose to Arjuna. Emulating a leader who mentors an individual to rise above crisis helps Arjuna is see the purpose of war which is beyond personal gain and glory. He perceives Krishna as his role model which is driven by trust, respect and logical assertions on the ideals Krishna upholds. Leaders share risks with their team and hence can be counted on to uphold high standards of ethical conduct and the capacity to go beyond the status quo to achieve greater organizational goals and personal gain. In fact leaders can lead their team effectively through idealized influence than imposed influence. It is

important to invest time and build a mentor-mentee relationship to take leadership forward in our times where technology is the biggest mediator.

Inspirational motivation: Transformational leadership differs from transactional leadership as the inspirational aspect which drives the follower/team's motivation. Inspiration is the key to developing intrinsic motivation. It is a age old debate as to whether extrinsic or intrinsic motivation yield better results. Extrinsic motivation are bound to be driven by time, need and micro and macro environmental factors while intrinsic motivation driven by inspiration is rooted in eternal values and in this context, Krishna inspires and motivates Arjuna to fight for the cause of Dharma and not for the titles or ownership which is the result or outcome of the battle. Those outcomes only associated with winning or losing at the moment. Arjuna derives intrinsic motivation through his association with Krishna. This helps him push himself to higher states of achievement and self actualization than the mere goal of winning the war.

Intellectual stimulation: Krishna challenges the emotional beliefs and arguments of Arjuna on the benefits of war through intellectually stimulating conversation and criticism on the need to go beyond the belief in ownership and doer ship to self actualization which transforms Arjuna. Leadership should necessitate this process of constant evolution from a 'state of Being to a state of Beyond'. This process of ideation develops various perspectives of problem solving. It is cutting beyond traditional and conservative ways of thinking, and looking at better possibilities that the new methods would facilitate. Intellectual stimulation should also be supported by dialogue and encouragement from the leader. Clarity about the way forward can be derived through constant dialogue and association between the leader and the follower as in the case of the context of Krisna and Arjuna's dialogue.

Individual consideration: Krishna does not overlook Arjuna the individual and the warrior, He effectively conveys the results of Karma and its value in people. The logic in the war with the Kauravas as an inevitable means to ensure growth and well being of the society and world at large is conveyed and instilled in Arjuna. This motivates Arjuna to look at himself in a novel dimension and perform beyond established benchmarks and standards in the battle field.

The state of 'being' and 'doing' marks the difference between transformational leaders and others. Today's leadership strategies though, talks of meaningful purpose to all stake holders often ends up in short terms success. In fact it is not the inability of the board or the strategists which is to be blamed, rather the lack of righteousness and higher purpose. Organizational leaders are talking and investing big on ethical practices and sustainability but when it comes to surviving in a highly competitive market sustainable efforts remain on paper or are confined to few isolated community initiatives. The good of the whole should be put before personal gains and rewards. Living in a world fuelled by scams and unethical propositions at the leadership levels at the economic, political or social front it is difficult to differentiate between means and goals. The leader's motives are equally important in driving his style of leadership.

Conclusion

It is important that leaders build capacities both at individual level and organizational level which can push performance standards to higher levels of efficiency and empowerment for betterment of employees, organization and the world at large. Transformational style is entrepreneurial, creating value to self and the society.

Effective leadership ensures performance levels which benefits both organization and society. Today, we have corporate wars for market share which has often resulted in criticism of exploitation, poor performance, unethical practices and manipulation than empowerment and transformation. The Bhagavad Gita holds life lessons of strategy, tact, values, empowerment and truth which can be practiced in the paddy fields or the board room. Mahatma Gandhi is a living example of the timeliness of the Bhagavad Gita. He led a nation to freedom with great lessons he imbibed from the Bhagavad Gita.

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ISSN 2249-9040 Volume 10, No 1, January-June 2020 pp. 101-115

A Review on Organizational Support and Knowledge Sharing Behaviour under the Mediating Effects of Organizational Identification

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Abstract

Nowadays, social exchange is becoming a matter of concern for every organization, because it could be worthwhile to inspire shared outcomes that will encourage collaborative behaviours at workplace like knowledge sharing behaviour. In this study organizational support has been envisaged to exhibit the relationship with knowledge sharing behaviour in which it is expected to be interceded through organizational identification. Exemplification of various literatures unveiling a decisive outcome regarding the intended objectives of this study; in consideration of which it has been found that organizational support positively influences knowledge sharing behaviour and evincing strong impact over organizational identification, along with knowledge sharing behaviour also showing relationship with organizational identification. In this manner, it has been concluded that there is a direct as well as indirect association between organizational support and knowledge sharing behaviour through the mediating effects of organizational identification. The study contributes to the existing literatures along with it also furnishes the various implications of this phenomena in distinct forms of organization of different sectors, which shows the relevance of valuing and caring of employees in stimulating the knowledge sharing behaviour in the organization by the way of creating sense of identification among the employees with the organization.

Keywords: Collaborative Behaviour, Knowledge Sharing Behaviour, Organizational Identification, Organizational Support, Shared Outcomes, Social Exchange

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Statement of the Problem

There has been increasing concern about social exchange, supporting to this view it has been stated that employees' commitment to the organization depends on organization's commitment to its employees (Eisenberger et al., 1986) and Employees may decode the support gave by their employer as a showing of commitment towards them (Rhoades and Eisenberger, 2002; Shore and Shore, 1995; Eisenberger et al., 1986). Supportive organizations are viewed as to be proud of their employees, repaying them sanely, and taking care of their essentials(Randall et al., 1999). Some organizations are seen as being worried about the welfare of their employees, this condition could be considered as one portrayed by organizational support (Randall et al., 1999; Shore and Shore, 1995; Fasolo, 1995; George et al., 1993). Organizational Support refers to the extent to which an organization values the contribution of their employees and cares for their wellbeing (Eisenberger et al., 1997; Shore & Shore, 1995; Eisenberger et al., 1986) and such organizational support would depend on the equivalent attributional forms that individuals use for the most part to interpret the commitment by others to social connections (Eisenberger et al., 1986). Underlying to the issue, Organization support theory advocates that where it is deemed by the employees that they are being appreciated, cared and supported by the organization, it will encourage a great psychological bond with the organization (Edwards & Peccei, 2010; Rhoades et al., 2001). In accord to the aforesaid statement, social identity theory emanates the part of individuals' self-idea which gets from his insight into his membership of a social group/s together with the worth and emotional attachment joined to that membership (Ouwerkerk et al., 1999; Abrams et al., 1998; Benkhoff, 1997; Tajfel, 1978). The propensity of the individuals to identify themselves and their groups or organizations as interlaced with the common goals, attributes, qualities, successes and failures. This evident state has been concerned to "Identification with a psychological group" (Turner, 1984; Tajfel, 1982) or Organizational Identification (Katz and Kahn, 1978; Kelman, 1961; Tolman, 1943). Organizational Identification is an important phenomenon which entails a sense of belongingness and satisfaction of the employees and which leads to effectiveness of the organizations (Patchen, 1970; Brown, 1969). Different conceptualizations of Organizational Identification are; the perception of oneness with the organization (Ashforth & Mael, 1989), a self-definitional concept under which individuals perceive oneself as a member of the organization (Dutton et al., 1994; Rousseau, 1998; Elsbach, 1999), it is a cognitive phenomenon as it is the consonance between individual and organizational values (Hall et al., 1970; Pratt, 1998). To share one's individual knowledge is not just easy to conveyed out to anyone, as people felt their knowledge is

valuable to hold oneself which is a natural tendency (Davenport & Prusak, 1998). Knowledge sharing is the diffusion of one's gained knowledge with different individuals inside one's organization (S. Ryu et al., 2003). The way toward distinguishing, sharing, and utilizing knowledge and practices inside one's own organization is one of the palpable reflexional of knowledge management (Choi & Lee, 2002; O'Dell & Grayson, 1998). Knowledge sharing is characterized as the sharing of information, ideas, suggestions and ability among people having common interests (T.-K. Yu et al., 2010). Knowledge sharing implies for employees to exchange and discourse knowledge with in-groups and out-groups by means of a wide range of channels (e.g., discussion, conference, both formal and informal, best practices, and database), expecting to extend the value of knowledge use during the reciprocation of knowledge and to synthesize it (T.-C. Lin et al., 2012). Knowledge sharing is a process by which an individual can acquire experience from others that is why it is also called Knowledge transfer (Darr and Kurtzberg, 2000).

Objectives of the Review

In this review paper the relationship between Organizational Support and Knowledge Sharing Behaviour in the presence of a mediating variable i.e., Organizational Identification will be found and which will furnish some of the predominant objectives that are:

- To elucidate the significance of Organizational Support in fostering Knowledge Sharing Behaviour through Organizational Identification;
- To enquire about the direct relationship between Organizational Support and Knowledge Sharing Behaviour;
- To explore the mediating effects of Organizational Identification in bringing an indirect relationship between Organizational Support and Knowledge Sharing Behaviour.

Methodology

This study is a kind of theoretical review which synthesizes extant and extensive literatures in the investigation and authentication of the above stated problem with the help of specified objectives. It also provides a conceptual foundation for this study, substantiate the presence of research problem, identify the gap as one that contributes something new to the cumulated knowledge and validate the methods or approaches used in the study.

Antecedents of Organizational Support

Going through various literatures several factors have been found that determines the extent of Organizational Support. Along with the conceptual definition it has been provided that Organizational Support will be determined by rank, pay, job enrichment and organization policies as it expresses organizations' strength and earnestness of positive evaluations on employees (Eisenberger et al., 1986). Organizational Support tells us the extent to which organization value the contributions and cares for the well-being of their employees concerning to which some common antecedents of Organizational Support have been identified which shows that how these factors impact on valuing and caring of employees such as Perceived supervisor support, Distributive, Procedural and Interactional justice, Job training, Career development and growth opportunities (Y. Zhang et al., 2012).

Perceived Supervisor Support: Perceived supervisor support highly influences organizational support as employees believes that those supervisors who are chiefly favoured by the organization are strongly substantiates the organization's basic character. Therefore, employees who perceives the most favoured supervisor of the organization cares for their well-being, affects their view of organizational support (Y. Zhang et al., 2012; Pack, 2005; Eisenberger et al., 2002).

Distributive Justice: Employees feels highly supported with the organization when they get fair rewards as they perceive organization appreciate their contribution and strongly devoted to their well-being. Distributive justice can also be understood as fair rewards and similar to reward- performance expectancy that also predicts organizational support (Y. Zhang et al., 2012; Ambrose and Schminke, 2003; Eisenberger et al., 1999).

Procedural Justice: Procedural justice means when employees felt that formal procedures are especially fair which could make them feel being well treated by the organization and this would act as a determinant of organizational support (Y. Zhang et al., 2012; Ambrose and Schminke, 2003; Moorman et al., 1998).

Interactional Justice: It expresses respect for employees' opinions and the quality of interpersonal treatment by the decision makers, managers and colleagues which shows significant contribution to Organizational Support as it displays caring and valuing of employees (Y. Zhang et al., 2012; Pack, 2005; Ambrose and Schminke, 2003).

Job Training: Training provided by the organization to their employees in developing their skills, product and customer knowledge etc. which will demonstrate value and support given by the organization and thus, job training is strongly associated to predict Organizational Support (Y. Zhang et al., 2012; Johlke et al., 2002).

Career Development and Growth Opportunities: Growth opportunities are the expectations of the employees from their job and organization
could fulfill their expectations through career development experiences which have been found positively related with and act as antecedent of Organizational Support (Y. Zhang et al., 2012; Pack, 2005; Johlke et al., 2002; Wayne et al., 1997).

Organizational Rewards and Job Conditions: The rewards and favourable job conditions such as pay, promotions, job security, recognition and autonomy have significant influence over the Organizational Support as it indicates appreciation to the contribution of the employees and caring for them (Krishnan & Mary, 2012; Eisenberger et al., 1986).

Literature Review

For carrying out the objectives various eastern and western studies have been undertaken to develop an insight to understand and enquire about the relationship between Organizational Support and Knowledge Sharing Behaviour under the mediating effects of Organizational Identification.

Organizational Support and Organizational Identification

Hutchison (1997) explored that perception of employees towards organizational Support conduce to act as a link between actions taken by the organization and actions taken by the employee. According to organizational support theory employees put greater efforts and work harder to accomplish organizational goals in return of perceived high level of support from the organization (Aselage & Eisenberger, 2003). Alper Erturk (2010) pointed out several predictors of organizational identification which includes employees' perception of support from the organization that have a positive impact over organizational identification. Moreover, Edwards & Peccei (2010) investigated a direct and indirect relationship between organizational Support and employee outcomes through organizational Identification and shown a positive relationship between organizational Support and Identification. Despite this, organizational Support partially mediated the relationship between relational Exchange & organizational Identification that shows organizational support influences organizational identification (Sluss et al., 2008). In other side, organizational support fully mediated the relationship between organizational justice and organizational identification which exhibits a strong impact of organizational support on organizational identification (Chueng & Law, 2008). In the words of Zagenczyk et al., (2011), employees tend to less identify and more tend to disidentify with the organization in consequence of breach of psychological contract because it indicates that organization does not value their contribution and due care for them. Additionally, Kurtessis et al., (2017) also assumed that perceived organizational support fulfills socioemotional needs such as affiliation, esteem and emotional support which in

turn identification with the organization through the development of shared values and promotes stronger relational attachments between the employees and organization. In addition to above evidences, it has also been found that there is an increase in the level of organizational identification as a result of having support from the organization which determines a significant and positive relation between organizational support and organization identification (Celik & Findik, 2012; He et al., 2014).

Organizational Identification and Knowledge Sharing Behaviour

Several researches have been found to prove the relationship between organizational identification and knowledge sharing behaviour that illuminates the role of organizational identification as a mediator between organizational support and knowledge sharing behaviour. Van Knippenberg & Van Schie (2000) demonstrated multiple foci of Identification such as membership with the organization as a whole, within department of an organization and within work-group of a department in an organization. According to Henry et al., (1999), A tripartite model of Identification could be viewed as cognitive, affective and behavioural domain of identification. In addition to which Sha & Chang (2010) found that all forms including cognitive, affective, and behavioural identification are strongly associated with Knowledge sharing. Furthermore, Jialin Yi (2009) provided that knowledge sharing behaviour encompasses written contribution, organizational communications, personal interactions and communities of practice. In relation with the above specified dimensions of knowledge sharing behaviour, organizational identification positively influences organizational communications and personal interactions and whereas it does not affect written contribution (Jang et al., 2014). Carmeli et al., (2011) hypothesized that organizational identification positively influences employee knowledge sharing along with a mediation role between relational identification and employee knowledge sharing which have been found and proved in their study. Additionally, in an article of Li & Chen(2015) the impact of supervisor-subordinate guanxi on employees' knowledge sharing behaviour has been found and partially mediated by organizational identification. Bao et al., (2016) revealed that trust is not much sufficient condition for the realization of knowledge sharing and knowledge integration without mediating role of organizational identification. According to Y.Q. Zhu (2016), Identification with the team positively influences the knowledge sharing discrepancy while Identification with the organization decreases the discrepancy in sharing the knowledge as it drives people to the common interest of whole organization. In a further study of Rahimi & Salehi (2018), organizational identification posited a significant and positive effect on knowledge sharing.

A Review on Organizational Support and Knowledge Sharing Behaviour under the Mediating Effects of Organizational Identification

Organizational Support and Knowledge Sharing Behaviour

In order to relate organizational support with knowledge sharing behaviour, Cabrera & Cabrera (2005) discussed about the determinants of knowledge sharing, drawing from which perceived support whether from supervisors or peers encourages knowledge sharing behaviour in the organization as support leads to the creation of such organizational culture which is attributed by trust, respect and caring. Lin (2006) said that, organizational Support indirectly influences the intention to facilitate Knowledge sharing under the effects of relative advantage and compatibility, interpersonal trust which showed positive association with Organizational Support. While, According to Lee et al., (2006), support from the organization enhances the quality and level of Knowledge Sharing under the influence of employees' commitment to knowledge management. Furthermore, the perception of knowledge Sharing and employees' knowledge exchange increases in the response of having Support from co-workers and supervisors who inspires the employees to exchange their knowledge (Cabrera et al., 2006; Kulkarni et al., 2006). Moreover, Amayah (2013) has given that social interactions, organizational support and rewards had a significant impact on knowledge sharing. The result of C.-Y. Tsai et al., (2015) also revealed that the specific attributes of organization's work environment including knowledge sharing, motivation, procedural justice and promotion are positively correlated with organizational support. In a further case, Safa & Solms (2016) specifically showed Organizational Support influences Knowledge sharing behaviour regarding information security. In their empirical findings, (Le & Lei, 2019) explained organizational support as an essential element to induce and inspire the intention to share the knowledge and innovation capabilities. Yang et al., (2018) concluded that the relationship between perceived organizational support and knowledge sharing becomes more positive in case of high interdependent self-construal and becomes neither positive nor negative in case of high independent self-construal.

Discussion and Gap Identification

Some of the previous research have been identified to investigate the direct and indirect relationship between organizational support and knowledge sharing behaviour apart from which a mediating effect of organizational identification has also been considered specifically for the purpose of having a definite and precise view in the study of indirect relationship. Initially several antecedents of organizational support have been studied such as rank, pay, job enrichment and organizational policies (Eisenberger et al., 1986). Along with various other determinants including perceived supervisor support, job training, career development and growth opportunities, procedural, distributive and interactional justice (Y. Zhang et al., 2012) have also been explained as all these factors expresses valuing and caring of employees which eventually contributes to organizational support. Substantially at a later stage the relationship between organizational support and organizational identification have been recognized in the study of various literatures of eastern and western sides where these two found strongly and positively correlated with each other, in respect of which Celik & Findik (2012) explained that organizational support not only increase the feeling of obligations and positive reciprocity but also increases the self enhancement feeling among employees which will encourage the sense of identification as membership with the organization increases selfworth and self- esteem, vis a vis organizational support also proved as a mediator to show the relation with organizational identification in other side (Zagenczyk et al., 2011;Sluss et al., 2008). Putting forward with the studies the influence of organizational identification on knowledge sharing behaviour has also been found, Carmeli et al., (2011) envisaged concerning strong identification with the organization possibly encourage such efforts that benefit the whole organization and these efforts are demonstrated in collaborative behaviours like knowledge sharing. Moreover, Yang et al., (2018) implied that if organization cares about the well-being of their employees, they will exhibit desired workplace behaviour such as knowledge sharing in return of caring by the organization, which then shows that there has an indirect as well as direct relationship been found between organizational support and knowledge sharing behaviour.

Figure-I: Mediating effects of Organizational Identification



In the above diagram Organizational Support intended to pose as an independent variable which are being linked with knowledge Sharing Behaviour i.e., a dependent variable in a direct manner as well as Organizational Identification has been assumed to serve the role of mediation between independent and dependent variable which will help to bring out an indirect relationship between these two specified constructs of the study that ultimately contributes to elucidate the association between Organizational support, Organizational identification and Knowledge sharing behaviour.

Along with the discussion about the relationship conjectured in the study, it has been found that there are various studies available in the eastern background (Yang et al., 2018; C.-Y. Tsai et al., 2015; Jang et al., 2014; Celik & Findik, 2012; Carmeli et al., 2011) but in Indian context rare studies may be accessed. Moreover, few literatures have been found to substantiate the mediating effects of Organizational Identification (Bao et al., 2016; He et al., 2014; Edwards & Peccei, 2010; Sha & Chang, 2010) in comparison to literatures showing direct relationship between Organizational Support and Knowledge Sharing Behaviour (Le & Lei, 2019; Yang et al., 2018; Safa & Solms, 2016; C.-Y. Tsai et al., 2015; Cabrera et al., 2006; Kulkarni et al., 2006; Lee et al., 2006; Cabrera & Cabrera, 2005).

Conclusion and Implications

Consistent with the literatures, it is being concluded that organizational support has an impact over knowledge sharing behaviour confirming a direct relationship as well as it also relates strongly with organizational identification; in addition to which knowledge sharing behaviour is getting influenced through organizational identification positively at successive stage that contributes to serve as an indirect link between organizational support and knowledge sharing behaviour which corroborates the mediating effects of organizational identification on the other side of this study. Accentuate the implications of organizational support in fostering the knowledge sharing behaviour will encourage the organizations to appreciate their employees and caring for their well-being which in turn cooperative behaviours like sharing of knowledge. Particularly, organizational climate encompasses support, employee involvement, reward system in promoting knowledge sharing and knowledge networks that may possibly lubricate frequent social interactions between management and employees which ensouls intent to share knowledge (Lin, 2006). The study of this kind has been implemented in various sectors such as IT organizations (Bao et al., 2016; Carmeli et al., 2011; Sha & Chang, 2010; Cabrera et al., 2006), library and public academic institutions (Rahimi & Salehi, 2018; Amayah, 2013), banking, insurance, e-commerce and education (Safa & Solms, 2016), and financing, real estate &manufacturing sector (Bao et al., 2016), which ushers how to increase knowledge sharing behaviour in different organizations through creating a sense of identification among the employees by valuing and caring of them. Moreover, the phenomenon of organizational identification may be applied in the organization through perception of support which will be very useful to encourage employees'

knowledge sharing behaviour that entails organizational communications and personal interactions.

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The students of IPE have been recruited by various cross section of industries which include Banking Financial Services & Insurance [BFSI] Sector, Consultancy services, IT & ITES, Manufacturing, FMCG, HealthCare, Retail, e-Commerce, Telecommunications, Media and others. The highest salary offered during this year as of now is Rs. 20.84 Lakhs per annum while the average salary offered is Rs. 6.00 lakhs per annum.

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Registered with the Registrar of Newspapers in India under Serial No. APENG/2011/44822



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