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Research Papers

Case Study

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Editorial Information

Aims & objectives: Presidency Journal of Management Thought & Research aims at publishing high quality research findings and management thoughts. It seeks book reviews, case studies and empirical analyses of data to enhance the body of management knowledge. Its aim is also to provide research and information support to corporate companies, policy makers, management students and academicians so as to help them keep abreast of new developments and perspectives in the field of management.

Originality: Manuscripts submitted must be of original work and must not be under consideration for publication elsewhere.

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From the Editor's Desk ...

An outbreak of pandemic COVID-19 has traumatized the world and has almost compelled all governments around the globe to take restrictive measures. Many businesses were temporarily shut down and many employed people confined at their homes. Under such a situation, the clues to the future lie in the past. The Covid-19 has set foot in India and is impacting the country's economy across industries. To mitigate the impacts of the pandemic, this 20th issue of the PJMTR journal brings in a mixed bag of four research papers and one case study. Each paper is unique and discusses measures adopted to support distressed businesses.

The first paper emphasizes the impact of R&D and marketing spending on the ROE of the Indian pharmaceutical industry. This study uses Dupont analysis to decompose ROE. To know about the RAR framework proposed by the author, do read the research paper.

Higher Education is a vital aspect of the economic development of a nation. Though it is gradually rising, the female literacy rate in India is lower than the male literacy rate, leading to gender disparity. The second paper attempts to comprehend the dissimilarity in male and female GER (gross enrollment ratios) and gender inequality in different courses. The study concludes by suggesting measures to narrow the disparity and bring similarity in courses. To know about effective policies implemented by the government for girls, read it.

The third paper is on the agricultural sector and since the sector's share in GDP is reducing, this paper re-looks at some of the challenges and opportunities put forward by the pandemic and tries to highlight measures to be undertaken to reach a new normal. To have more insights into this agricultural sector, do read this paper.

Corporate Social Responsibility is not a new concept in India, however, Section 135 of the Companies Act, 2013 along with CSR rules makes it mandatory (with effect from 1st April 2014) for certain companies to comply with provisions. The fourth paper makes an analysis of CSR expenditure of select IT companies for twelve years. To know more about CSR spending patterns, probe into this paper.

The last paper is a case on Shri Vishwakarma Silver House (SVSH), a national brand with automated processes of sheet making, molding and wire making of silver items. SVSH provides customized solutions to top-notch industrialists, shrines and temples including Indian celebrities. To know more about the Iron man behind SVSH, products and best business practices, read this case to understand the journey of SVSH business.

I hope you enjoy this issue of PJMTR and we look forward to your articles & research papers.

Good luck and happy reading!

Chief Editor

Dr. R. Venkataraman

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Research Papers

Case Study

Do R&D and Marketing Influence Return on Equity in the Indian Pharmaceutical Industry? An Empirical Study Based on DuPont Analysis

Mithun Nandy*

Abstract

Purpose

The main intension of this research paper is to know whether research and development (R&D) and Marketing influence Return on Equity (ROE) or not with respect to Indian pharmaceutical companies.

Design / Methodology / Approach

Secondary Panel dataset type followed by cross-section and time series has been incorporated in the study from 2000 to 2019 i.e. 2 decades (20 years). Multivariate regression analysis technique has been adopted to evaluate the influence of Research and Development Intensity (RDI) and Advertising & Marketing Intensity (AMI) on Return on Equity (ROE). Programming/Coding technique has been used in R Programming for obtaining the statistical result of the study. In this study, the decomposing of financial performance-related variable Return on Equity (ROE) has been performed with the help of DuPont Analysis. Variable reduction techniques have also been adopted in this study to satisfy the research objectives.

Findings

All the coefficients in the empirical model are statistically significant. The probability values (p-values) of independent variables RDI (Research and Development Intensity) and AMI (Advertising and Marketing Intensity) are statistically significant at 1% level. The value of Adjusted R-Square 0.9806 indicates that the proposed empirical model is a good fit and can explain 98.06% variability. The residual standard error is a measure of the variability of the residuals from a linear model. The value of residual error 0.0147 in the proposed model ensures a good fit of the model. The probability value (p-value) of F Statistics is < 0.05. It means that the proposed empirical model is a good fit for the study. Finally, RAR Framework has been proposed as an outcome of the study.

1. Introduction

1.1 Historical Backdrop

Bengal Chemicals & Pharmaceuticals Ltd. (BCPL), formerly known as Bengal Chemical & Pharmaceutical Works Ltd., was established on April 12, 1901, by eminent scientist & entrepreneur Acharya Prafulla Chandra Ray which is the first Chemical & Pharmaceutical Company in India. From a humble beginning with one factory at Maniktala (Kolkata) in 1905, three more factories were established – one at Panihati (North 24 Parganas District of West Bengal, India) in 1920, one in Mumbai

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Mumbai (Maharastra State, India) in 1938 and one in Kanpur (Uttar Pradesh State, India). In 1949 the company had formed its Registered Office at 6, Ganesh Chunder Avenue, Kolkata (previously Calcutta), West Bengal State, India. Besides, the company was having 11 sales outlets and 10 C&F (clearing and forwarding) agencies spread all over India. In the initial stage, the company started manufacturing quality Chemicals, Drugs, Pharmaceuticals and Home Products, employing indigenous research & development (R&D), skill and raw materials. In very recent time with the emergence of Covid-19 in India, Bengal Chemicals is possibly the only company from the eastern part of India having the capacity (10 lacs tablets) to produce hydroxy-chloroquine (HCQ), a drug which has been recommended by the Indian Council of Medical Research (ICMR) for healthcare professionals involved in the care of suspected or confirmed Covid-19 cases and the asymptomatic household contacts of lab-confirmed cases as a preventive treatment measure.

1.2 Research and Development (R&D) Activities: Definition and Concept

The term "research and development (R&D, R+D or Rn'D)" is widely connected to the concept of innovation both in corporate as well as in the government domain. In Europe, R&D is termed as research and technical/technological development (RTD). The important activities that are linked to R&D differ from one company to the next, but the primary model (standard) remains the same. Research and development (R&D) activities constitute the very first (1st) stage of progress of a particular product or service which is innovative in nature. Research and development (R&D) activities also refer to the investigative activities a corporate/business house conducts to improve further existing products followed by contemporary procedures or to lead to the development of innovative products and techniques.

In the context of the pharmaceutical industry, research & development (R&D) can be defined as any project to resolve scientific or technological uncertainty aimed at achieving an advance in science or technology. The professionals who dedicate their lives for searching the answer to the unanswered questions and constantly take part in the different kinds of R&D activities are termed as scientists who hold sharp knowledge and greater responsibilities. R&D activities are linked with the creative work undertaken systematically and scientifically to enhance the stock of knowledge including a search of new molecular entity (NME), synthesis and modification of known molecules or some methods to increase production rate by adopting different techniques. Pharmaceutical companies utilize Research & Development (R&D) to improve its current product portfolio or else bringing a New Chemical Entity (NME) through innovation. In general, pharmaceutical companies tend to spend the most on R&D for providing innovative healthcare solutions for needy patients.

1.3 Marketing Activities in the Indian Pharmaceutical Industry (IPI): An Overview

In India, the activities of the marketing function are being performed in a well-organized manner by the different categories of pharmaceutical companies operating in the Indian pharmaceutical industry (IPI). Different types of marketing activities help the health care providers (HCPs) to obtain the most recent update about new medicine launch, the addition of new feature in particular medicine, coverage of indications, side effects wherever applicable, dosage forms, price to the patients (end-user), safety, effectiveness and techniques of consuming the medicine.

Demand from the export market has been growing rapidly due to the capability of Indian

pharmaceutical companies to produce cost-effective drugs followed by a high degree of efficacy with world-class manufacturing facilities. At the projected scale, this Indian pharmaceutical market (IPM) is comparable to all developed markets and most of the Indian pharmaceutical companies are taking all sorts of proactive measures to provide a world-class healthcare solution to like the other foreign countries such as the US, Japan and China.

The growth in the Indian domestic market will be boosted by rising consumer spending, rapid urbanization and increasing healthcare insurance. Indian pharmaceutical companies have a large portion of their revenues coming from exports. India is emerging as the global hub for contract research and manufacturing services (CRAMS) due to its low-cost advantage and world-class quality and efficacy standards. The introduction of product patent in India has brought some fundamental changes in the marketing strategies of Indian pharmaceutical companies; with the focus shifting more towards innovative medicines backed by research and development (R&D) activities for taking care of the unmet healthcare needs of the patient fraternity. The major revenue to the Indian pharmaceutical industry (IPI) has been gained through exports. India's pharmaceutical products are being exported to more than two hundred (200) countries around the world. Overall the marketing function associated with the Indian pharmaceutical industry (IPI) helps:

a) To have a healthy competition
b) To increase the customer knowledge
c) To have a better customer relationship
d) To reduce the initial development costs
e) To provide an innovative healthcare solution
f) To provide life-saving medicine with an affordable cost
g) To cultivate ethical marketing practices
h) To provide world-class products with unmatched quality and greater efficacy
i) To maintain the proper supply chain
j) To ensure quality healthcare solution to
k) the bottom of the pyramid (BoP)
l) To manage and maintain the value chain
m) both in domestic as well as the international front.

2. Theoretical Framework: DuPont Analysis for Decomposing Return on Equity (ROE)

DuPont Analysis is an expression that breaks ROI (Return on Investment) into three parts. The name comes from the DuPont Corporation that started using this formula in the 1920s. DuPont explosives salesman Donaldson Brown invented this formula in an internal efficiency report in 1912. DuPont analysis is a useful technique used to decompose the different drivers of return on equity (ROE) and the same has been used by eminent academicians worldwide.

In this study, 3 steps DuPont Analysis framework has been incorporated and the step-wise brief discussion is provided in the following.

Return on Equity (ROE)

The attractiveness of Return on Equity (ROE) is that it is an important metric that only requires two numbers to compute: Net Income and Shareholders' Equity.

$$\text{ROE} = \frac{\text{Net Income}}{\text{Shareholder Equity}}$$

If this number moves up towards the upward direction, it is generally a favorable condition as well as a good sign for any company to understand the financial performance or profitability as it is showing that the rate of return on the shareholders' equity is rising.

The problem here is that this number can also increase simply when the company takes on more debt by approaching different financial institutions or money lending agencies, thereby decreasing shareholder equity. This would increase the company's leverage, which could be a good thing, but in the in-ground reality, it will also make the stock in the riskier proposition.

Three (3) Steps DuPont Analysis:

More in-depth knowledge of ROE is necessary to avoid mistaken assumptions. In the 1920s, the DuPont Corporation created an analysis method that fills this need-based gap by breaking down ROE into a more detailed and elaborative equation. DuPont analysis tries to identify the causes of shifts in the number.

There are two variants of DuPont analysis: the original three-step equation, and an extended five-step equation. The three-step equation breaks up ROE into three very important components and the same (three-step equation) has been incorporated in the study for the calculation compatibility purpose.

ROE = NPM x Asset Turnover x Equity Multiplier

Where,

NPM = Net Profit Margin, the measure of operating efficiency

Asset Turnover = Measure of asset use efficiency

Equity Multiplier = Measure of financial leverage

The Three-Step DuPont Calculation

Taking the ROE equation: ROE = net income/shareholder's equity and multiplying the equation by (sales/sales), we get:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Shareholders Equity}}$$

Now ROE has broken into two components: the first is net profit margin and the second is the equity turnover ratio. Now by multiplying in (assets/assets), we end up with the three-step DuPont identity:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholders Equity}}$$

This equation for ROE breaks it into three widely used and studied components:

ROE = NPM (Net Profit Margin) x Asset Turnover x Equity Multiplier

2.1 Significance of decomposing ROE (Return on Equity) in the Study

In this study Return on Equity (ROE) has been broken down into net profit margin (how much profit the pharmaceutical company gets out of its revenues), asset turnover (how effectively the company makes use of its assets) and equity multiplier (a measure of how much the pharmaceutical company has taken as a sample is leveraged).

- If a sample pharmaceutical company (incorporated in the study) ROE goes up due to an increase in the net profit margin or asset turnover, this is a very positive (+ve) sign for the company.

- However, if the equity multiplier is the

source of the rise, and the sample pharmaceutical company was already appropriately leveraged, this is simply making things riskier.

- If the sample pharmaceutical company is getting over-leveraged, the stock might deserve more of a discount despite the rise in Return on Equity (ROE). The pharmaceutical company could be under-leveraged as well. In this case, it could be positive (+ve) and shows that the company is managing itself better.

- Even if a pharmaceutical company's Return on Equity (ROE) has remained unchanged, examination in this way can be very helpful.

Example: Let's a sample pharmaceutical company incorporated in the study releases numbers and ROE is unchanged.

2.2 Steps followed during the decomposing of Return on Equity (ROE) in the study

The steps as mentioned here-under followed one after another to obtain the decomposed

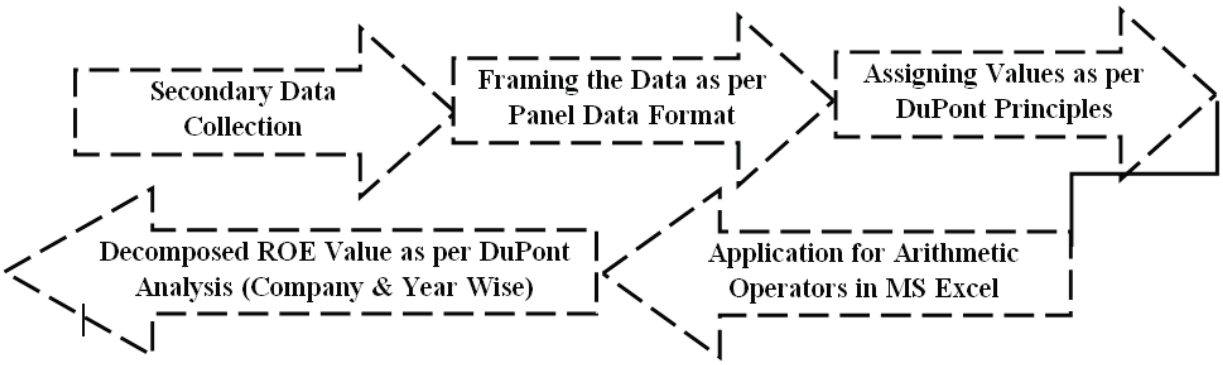
The secondary data has been collected from a reputed corporate database: Capital line, for 20 years (2000-2019) for 37 Indian pharmaceutical companies. All obtained decomposed Return on Equity (ROE) values (company-wise & year wise) as per DuPont Analysis (after following the above steps) have been incorporated in the panel regression model interpreted in R Programming and the same has been discussed in the upcoming section.

3. Review of Literature

Several kinds of literature have been studied to serve the research objective.
In the study performed by Hayes and Abernathy (1980) explains their point of view that to succeed, the firms have an organizational commitment to compete on technological grounds. The firms therefore should offer superior products to earn profits in the long run.

Erickson and Jacobson (1992) in their study confirmed that Innovation plays a significant role to gain an edge over current and potential competitors of the firms. The specific nature of R&D expenses for brining innovation would

Figure 1: Steps Followed During Decomposing ROE as Per DuPont Analysis



[Source: Author's Own]

determine its advantage. Innovation enables the firms to prevent imitation by the rivals and earn adequate or above-average profits which ensure business sustainability.

Bhagwat et al. (2001) in their study experienced that a one percent increase in research and development investment resulted in a one-quarter percent increase in earnings per share (EPS) for publicly traded pharmaceutical companies for the period 1989-98 in the USA.

Peter, Drucker (2002) wrote in his seminal work that the basic function of a business is to bring innovation to earn profits. Thus, to gain a competitive edge, more resources should be spent on the research and development activities for brining innovation which enables the organizations to enjoy business sustainability.

K. Sankaran (2002) in his study made a comparative study between the Indian origin pharmaceutical companies and Multi-National Companies (MNCs). In their study, they have considered Return on Assets (ROA) and Return on Equity (ROE) as explanatory variables. The study shows that Indian companies are becoming more aggressive to be on par with Multinationals (MNCs).

Michael et al. (2008) in their study have shown a significant positive relation between investment in R&D and future returns is seen in accounting literature. Most studies in accounting and finance explained a positive relationship between investment in R&D and future returns towards business sustainability.

Sougata Ray and Raveendra Chittoor (2007) in their study propose a conceptual model of internationalization for emerging economy firms through a combination of exploitation and exploration strategies through new products and new markets in the context of liberalized economies.

Cooper (2008) in his study experienced a positive relation between R&D investments and firm earnings.
The research work conducted by **Ehie and Olibe (2010)** showed that after controlling for firm size, industry concentration and leverage, R&D investment positively affects firm performance.

Chao, Hung Wang (2011) in his study confirmed that the level of performance of a firm will be a function of its resources of R&D activities. The firms which allocate higher R&D expenditures are expected to earn more than those that do not.

The study done by **Ravi Kiran and Sunita Mistra (2011)** focuses on the changed scenario due to the Amended Patent act 2005. The researchers have mentioned that Indian pharmaceutical companies have understood the need for research activity to survive in the market and nowadays most of them are changing from imitation to innovation by increasing R&D activity to sustain in the market place.

In a study conducted by **Christina Sheila, K.Karthikeyan (2012)** found that Cipla pharmaceutical Company's financial performance is high, followed by Dr.Reddy's Laboratories and then Ranbaxy Pharmaceutical. The three companies are significant at their level. In conclusion, the researchers have expressed that ROE (Return on Equity) & ROI (Return on Investment) are the most comprehensive measure of the profitability of a firm.

Mario I. Kafouros and Nicolas Forsans (2012) in their study explain that the knowledge acquisition from foreign countries results in superior performance and assists firms in unlocking their innovation potential.

In the study conducted by **Donelson and Resutek (2012)** have expressed that the level of research and development (R&D) and the changes in it are not related to the profits. From the perspective of an investor, R&D costs are thought of as an expense whereas, in reality, these are the investments that will generate future revenues in the form of profits.

Atalay et al. (2013) in their study have found that technological innovation has a significant and positive impact on firm performance in the Turkish automotive supplier industry.

Jing Rao, Yiqian Yu, and Yu Cao (2013) in their study discuss that nowadays, technique innovation is the precondition that companies, especially technology-intensive companies, can survive and progress further followed by an investment effect analysis with the empirical method and comparative method on the technological innovation in the context of China and Japan.

The study conducted by Shilpi Tyagi, Varun Mahajan and **D.K. Nauriyal (2014)** recommends encouragement to public-private R&D Partnership in the realm of basic and applied research, which could be commercially harnessed by the interested private sector partner (s).

Sar**ika Zambad and B.R. Londhe (2014)** in their study discuss the amended patent act and its effect on Indian pharmaceutical companies concerning innovation.

Hasan Ayaydin and Ibrahim Karaaslan (2014) in their study focused their investigation on the study of the effect of research and development investment on the firm's financial performance. The authors have used Return on Assets (ROA) as a measure of financial performance. Their study has revealed the positive effect of R&D intensity on the firm performance by using GMM system estimators for a sample of 145 manufacturing firms registered BIST from 2008 to 2013 concerning manufacturing firms in Turkey.

Xin, Ying (2015) in his study has found that technologically innovative products have a statistically significant positive effect on operating performance.

A study was done by **Geoffrey A. and Vander Pal (2015)** investigates the R&D impact on the financial value of the company. Their study focuses on the relationships between R&D and earnings, operational performance, revenue growth, and market value. Their study also includes the empirical analysis using a sample of 103 companies that registered high values of R&D, between 1979 and 2013. Overall, the researchers have assumed a positive impact of R&D on the corporate value, using a new variable that includes both decision and outcome features.

Nandy, Mithun, and Pal, Brajaballav (2017) in their study established that research & development (R&D) activities create a significant impact on the financial performance of the multinational (MNCs) pharmaceutical companies operating in India. In their study, they had measured financial performance through Return on Assets (ROA) and had used Research and Development Intensity (RDI) and Advertising & Marketing Intensity (AMI) as independent variables (IV). With the help of panel regression analysis, the authors found the

significant positive impact of Research and Development Intensity (RDI) and Advertising & Marketing Intensity (AMI) on Return on Assets (ROA) and the effect was statistically significant at 5% level and 1% level respectively.

Feng-Jui Hsu et al. (2017) in their study entitled have explored that the firms with a high level of innovative energy have better stock returns and net sales, but such firms do not have an advantage in terms of operating income. The empirical results of their study indicate that higher R&D expenses increase operating costs which, in turn, decreases operating income despite increased net sales.

Abdel Razaq et al. (2017) in their study empirical study have incorporated simple linear regression analyses to discover the effect of R&D on company performance. The authors have used return on assets (ROA), return on equity (ROE) and earnings per share (EPS) as a proxy to measure company performance, and to measure R&D expenditure we considered the following items: research, experiments, studies, and courses. They have found that there is a significant impact of R&D expenditure on company performance as measured by (ROA, ROE and EPS), which is consistent with the results for developed countries.

Pal, Brajaballav and Nandy, Mithun (2019) in their study entitled Innovation and business sustainability (IBS): empirical evidence from the Indian pharmaceutical industry (IPI) established a link between 'Innovation' and 'Business Sustainability' in the context of Indian pharmaceutical companies.

4. Research Gap

All prior studies indicate that the eminent academicians and practitioners have provided immense contribution in measuring financial performance with the help of different financial measurement related variables. But none of the studies so far have been conducted to analyze the impact of research and development (R&D) and Advertising & Marketing Intensity (AMI) on the financialperformance-related variable Return on Equity (ROE) followed by DuPont analysis and machine learning approach (R Programming) from 2000 to 2019 i.e. 20 years concerning Indian pharmaceutical companies listed with National Stock Exchange (NSE) having turnover more than (>) INR ₹ 200 Crores.

5. Objectives of the study

The objective of the study is mentioned in the following.

This study aims to analyze the influence of R&D (research and development) and Marketing on Return on Equity (ROE) of National Stock Exchange (NSE) listed Indian pharmaceutical companies having turnover more than (>) INR ₹ 200 Crores.

6. Research Methodology

A research methodology is the specification of methods and procedures for acquiring the information needed. It is the overall operational framework of a study that stipulates what information is to be collected from which sources and by what procedures. Complete stepwise procedures that we have followed during the study have been discussed in the following as per the systematic order.

Data Source: Multivariate time series secondary dataset has been collected from Capitalline Market Publishers India Pvt. Ltd., a reputed Indian corporate database organization.

Programming: For data-driven analysis, interpretation and visualization; machine learning approach; R programming has been adopted in the study.

R Programming:

R is a programming language and free software environment for statistical computing and graphics supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis.

Period of Study:
From 2000 to 2019 i.e. 20 years

Sample Size & Sampling Technique:
The multistage sampling technique has been incorporated in the study while selecting 37 Indian pharmaceutical companies listed with the National Stock Exchange (NSE) of India.

Theoretical perspectives and Liner & Logical explanation for incorporating Multistage Sampling in the Study:

The multistage sampling technique has been incorporated in the study while selecting 37 Indian pharmaceutical companies incurring on R&D activities during the study period.

The main purpose of the creation and present-day use of multi-stage sampling is to avoid the problems of randomly sampling from a population that is larger than the researcher's resources can handle. Multi-stage sampling gives researchers with limited funds and time a method to sample from such populations. This sampling procedure in essence is a way to reduce the population by cutting it up into smaller groups, which then can be the subject of random sampling. As long as the groups have low between-group variance, this form of sampling is a legitimate way to simplify the population.

Advantage: Flexibility

The multi-stage form of sampling is flexible in many senses. First, it allows researchers to employ random sampling or cluster sampling after the determination of groups. Second, researchers can employ multi-stage sampling indefinitely to break down groups and subgroups into smaller groups until the researcher reaches the desired type or size of groups. Last, there are no restrictions on how researchers divide the population into groups. This allows a large number of possibilities for methods of convenience, the maximization or minimization of variance or interpretability.

7. Data Analysis and Interpretation

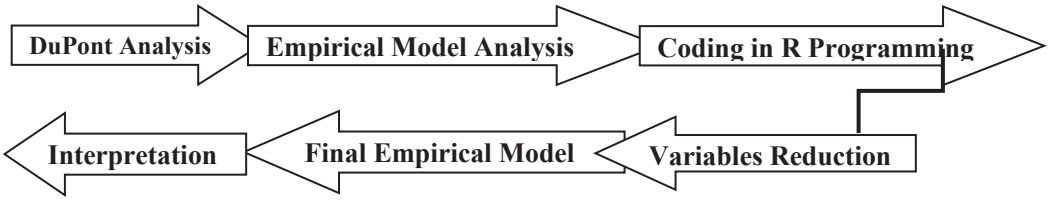
7.1 Statistical Analysis

In this study to develop better insights, the inferential statistical technique has been applied. Panel Dataset followed by cross- section and time series for the period of 20 years (2000 to 2019) has been incorporated for Multivariate Regression Analysis (MRA). In short Multivariate Regression is a method used to measure the degree at which more than one independent variable (predictors) are influencing the dependent variable (responses) and establishing logical and liner links.

7.2 Analytical Approach

Based on the analytical approach the study has been carried forward.

Figure 2: Analytical Approach



[Source: Author's Own]

7.3 Description of Variables incorporated in the study

Based on the review of the literature and after performing an in-depth analysis on the research work of the eminent academicians and practitioners, the independent variables which provided a significant impact and influenced dependent variable (DV) Return on Equity (ROE) have been incorporated in the study and empirical model for the study has been decided in the initial stage.

Empirical Model:

$$ROE_{it} = \alpha + \beta_1 RDI_{it} + \beta_2 AMI_{it} + \beta_3 CI_{it} + \beta_4 LR_{it} + \beta_5 OER_{it} + \epsilon_{it} \text{ ----------(I)}$$

The explanation of the above empirical model is provided herewith.

ROEit = Return on Equity

RDIit = Research & Development Intensity

AMIit = Advertisement & Marketing Intensity

CIit = Capital Intensity

LRit = Leverage Ratio

OERit = Operating Expenditure to Total Assets Ratio

Єit = Error Term

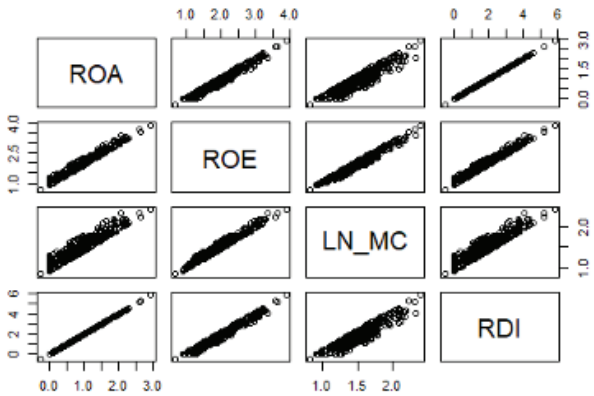
Table 1: Description of variables used in the Regression Model

Variable Code	Variable Description	Variable Notation	Variable Type	Mathematical Expression
Y1	*Return on Equity*	*ROE*	*Dependent (DV)*	*Net Income / Equity*
X1	*Research & Development Intensity*	*RDI*	*Independent (IV)*	*Research & Development Expenditure / Net Sales*
X2	*Advertising & Marketing Intensity*	*AMI*	*Independent (IV)*	*Advertising & Marketing Expenditure / Net Sales*
X3	*Capital Intensity*	*CI*	*Independent (IV)*	*Fixed Assets / Net Sales*
X4	*Leverage Ratio*	*LR*	*Independent (IV)*	*Debt / Equity*
X5	*Operating Expenditure to Total Assets Ratio*	*OER*	*Independent (IV)*	*Operating Expenditure / Total Asset*

[Source: Evidence from the existing literature]

From the above Table 1, we can visualize the different variables incorporated in the empirical model as supported by existing literature.

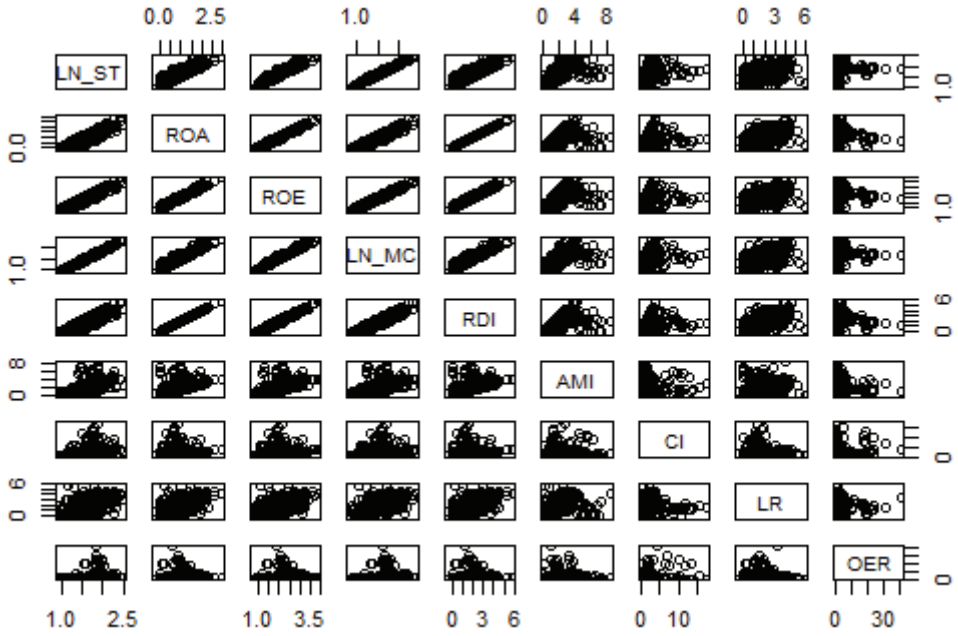
Figure 3: Dependent Variable (DV) Types & Visual Representation



[Source: R Programming Output]

ROA: Return on Assets, Ln_MC: Logarithm of Market Capitalization

Figure 4: Independent Variable (IV) Types & Visual Representation



[Source: R Programming Output]

From Figure 3 and Figure 4 we can visualize the type's different dependent variables (DV) and independent variables (IV) used and incorporated by different academicians and researchers in their respective studies. In this study for the calculation purpose of DuPont Analysis and decomposing Return on Equity (ROE), the help from all the above variables as stated above taken and endeavor had taken to carry forward the study. The independent variables: Capital Intensity (CI), Leverage Ratio (LR), and Operating Expenditure to Total Assets Ratio (OER) showed insignificant impact (>0.10) on financial performance related dependent variable Return on Equity (ROE) and this insignificant reason may be because of the following.

In the case of Capital Intensity (CI_{it})

a) Failure in managing the fixed assets and charging a high level of depreciation on fixed assets by the respective pharmaceutical companies.

b) Underutilization of fixed assets during the study period.

In the case of Capital Intensity (CI_{it})

a) Either creditor having an equal or more stake in the business assets of the different pharmaceutical companies considered for this study.

b) Paying high-interest rate while sourcing of the debt from the financial institutions/money lending agencies.

c) Absence of an efficient fund manager or sourcing capital from wrong sources.

d) Putting more emphasis on debt fund rather than equity.

In the case of Operating Expenditure to Total Assets Ratio (OER_{it})

a) Sudden change in government norms/ regulations/policies.

b) Resignation of fiancé/accounting professionals.

c) Incurring additional expenditure owing to a price increase.

d) Over allocation of operating expenditure for the maintenance of total assets.

e) Absence of controlling mechanism.

Based on the significant positive impact of independent variables Research and Development Intensity (RDI_{it}) and Advertising and Marketing Intensity (AMI_{it}) on financial performance related dependent variable (DV) Return on Equity (ROE) as decomposed as per DuPont Analysis (as discussed in the previous section), following final empirical model has been conceptualized to take forward the study.

$$ROE_{it} = \alpha + \beta_1 RDI_{it} + \beta_2 AMI_{it} + \epsilon_{it} \text{ ----------(I)}$$

The above model has been derived based on applying the reduction of independent variable (IV) technique in the study.

7.4 Coding in R Programming: In the following Table 2 stepwise programming/coding technique in R has been illustrated.

Table 2: Codes in R Programming used in the study

Function Name	Used for
setwd("C:/Users/MITHUN NANDY/Desktop")	Setting the Directory
X1st_Dataset <- read_excel("C:/Users/MITHUN NANDY/Desktop/DATA/1st Dataset.xls")	
View(X1st_Dataset)	
Ctrl+L	For cleaning the window
head(X1st_Dataset)	For having a look at the dataset
Lm	Lm(formula,data,subset,weights,na.action,method = "qr", model =TRUE, x= FALSE, y = FALSE, qr = TRUE, singular.ok = TRUE, contrasts = NULL, offset, …)

The Input Image cannot be displayed. The file may have been moved, renamed, or deleted. Verify that the link points to the correct file and location.

```
_____ > #  Multiple Linear Regression
> Results<      - lm(  ROE~RDI+AMI,X1st_Dataset)
> Results

Call:
lm(formula =         ROE   ~ RDI + AMI, data = X1st_Dataset)

Coefficients:
(Intercept)       RDI        AMI
          1.0409      0.2134      0.0659


> #Multiple Linear Regression
> Results<      - lm(  ROE~RDI+AMI,X1st_Dataset)
> Results
Call:
lm(formula = ROE ~ RDI + AMI, data = X1st_Dataset)

Coefficients:
(Intercept)       RDI        AMI
          1.0409      0.2134      0.0659

> summary (Results)

Call:
lm(formula = ROE ~ RDI + AMI, data = X1st_Dataset)

Residuals:
          Min      1Q   Median      3Q     Max
- 0.17300      - 0.09335      - 0.03010  0.05217  0.47161

Coefficients:
                        Estimate Std. Error t value Pr(>|t|)
(Intercept) 1.040943   0.009163  113.60   <2e                          - 16 ***
RDI       0.213385                      0.005333   40.02   <2e                - 16 ***
AMI       0.065899   0.004884   13.49   <2e                                - 16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.0                    147 on 737 degrees of freedom
Multiple R       - squared:  0.971,             Adjusted R      - squared:          0.98   06
F- sta   tistic:  1949 on 2 and 737 DF,                        p- value: < 2.2e          - 16
```

As a responsible researcher, step-wise R Programming techniques have been incorporated in the study for the convenience of the learned reader fraternities at large.

Inference Drawn:

The following inferences have been drawn after performing the statistical analysis with the help of R Programming.

a) All the coefficients in the empirical model are statistically significant.

b) The probability values (p-values) of independent variables RDI (Research and Development Intensity) and AMI (Advertising and Marketing Intensity) are statistically significant at 1% level.

c) The value of Adjusted R-Square 0.9806 indicates that the proposed empirical

model is a good fit and can explain 98.06% variability.

d) The residual standard error is a measure of the variability of the residuals from a linear model. The value of residual error 0.0147 in the proposed model ensures a good fit of the model.

e) The probability value (p-value) of F Statistics is < 0.05. It means that the proposed empirical model is a good fit for the study

7.5 Conclusion

In this study, it has been found that the **Research and Development Intensity** (RDI) is having a positive significant relationship on the dependent variable (DV) Return on Equity of the sample Indian pharmaceutical companies listed with the National Stock Exchange. The relevant causes of this significance can be for the following reasons.

In the Indian context, research and development (R&D) expenditure of Indian pharmaceutical companies is gaining importance day by day.

- About 12% to 15% of profit after tax (PAT) has been incurred on research and development (R&D) activities by the sample pharmaceutical companies as retrieved after studying financial statements of these Indian pharmaceutical companies considered for the study.

- Research and development (R&D) activities of Indian pharmaceutical companies are linked with infrastructure development and hence initiatives have also been taken for R&D infrastructural development by Indian pharmaceutical companies.

- Some of the initiatives taken by Indian pharmaceutical companies are:

a) Manufacturing facilities for injectable and tablets and also increasing its Active Pharmaceutical Ingredient (API) capabilities.

b) The allocation of spending is used for biologics and developing information technology and automating processes.

c) Performing pharmacokinetic andbioequivalence studies to facilitate the introduction of generic or branded generic drugs into the international market, setting up state of the art clinical trial facility, deploying research scientists in modern in house laboratories.

Like Research and Development Intensity (RDI), Advertising and Marketing Intensity (AMI) has also played a significant positive impact on the financial performance related dependent variable (DV) Return on Equity (ROE) as proposed in the study. The causes of this significance are stated in the following.

In the Indian context, pharmaceutical marketing ensures making doctor fraternity as well as the general public awareness through the doctor fraternity about the innovative and existing pharmaceutical brands and make them completely aware about the unique selling propositions (USPs) of the pharmaceutical brands which are promoted to them for treating different diseases and disorders.

Pharmaceutical marketing activities in India are consisting of the following functional areas which include:

a) Providing free samples to the health care providers (HCPs).

b) Detailing of product literature/story.

c) Conducting continuing medical education (CME) programs.

d) Organizing camp activities and support material to patients (end-user).

e) Brand promotion through seminars and conferences.

f) Clinical support to patient fraternity through telemedicine and video conferencing.

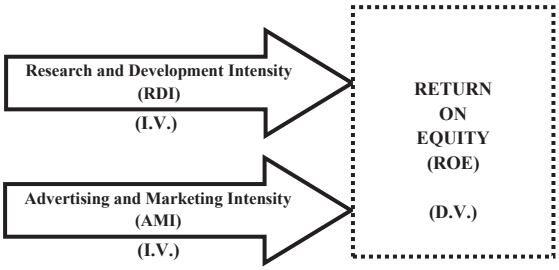
g) Selling a substantial amount of innovative health care solution to other developed as well as

To Indian pharmaceutical marketing companies, advertising and marketing intensity (AMI) acts as a management process that serves to identify and meet patients' healthcare contemporary needs continually by offering quality and innovative healthcare solution by offering innovative healthcare solutions which the outcome of research and development (R&D) activities and this, in turn, provide the answer of different unknown diseases like Covid-19. A successful marketing campaign enables the Indian pharmaceutical companies to enjoy financial returns in the form of Return on Equity (ROE) in the long run.

8. Proposed Framework

After analyzing, interpreting, and visualizing the secondary panel dataset of 37 Indian pharmaceutical companies for 2 decades (20 years); the following framework is being proposed as a contribution to the academic world as an outcome of this original research work.

Figure 5: RAR Framework



[Source: Conceptualized by the author]

In the academic community, the conceptualized framework can be considered as 'Dr. Mithun's RAR Framework'.

Abbreviations in the RAR Framework is mentioned in the following.

1) RAR:

R = Research and Development Intensity (RDI)
A= Advertising and Marketing Intensity (AMI)
R=Return on Equity (ROE)

2) I.V. = Independent Variable (RDI + AMI)

3) D.V. = Dependent Variable (ROE)

4) R.O.E = Return on Equity

From this study based on the DuPont Analysis, the derived RAR framework indicates that both Research and Development Intensity (RDI) and Advertising and Marketing Intensity (AMI) influence and impact on the financial returns of the financial companies which have been measured in the form of Return on Equity (ROE). From the significant test results of this empirical study, it can be stated that there is a linear relationship between RDI and AMI with ROE (ROE ~ RDI + AMI) and this relationship is directly proportional which means that when RDI and AMI increases or decreases, the resulting ROE increases or decreases in conjunction.

9. Limitations

The study is based on secondary data. The entire study has been conducted based on a self-finance basis and no financial assistance was available from any source. The statistical techniques adopted in the study may be having its lacuna or limitations.

10. Social Implications

The continuous efforts rendered by Indian pharmaceutical companies in the area of Research & Development (R&D) activities, innovation, and research breakthrough are constantly taking place and these breakthrough with the help of Innovation will not only impact the financial performance-related variable Return on Equity (ROE) for ensuring business sustainability but also these innovative healthcare solution will certainly improve the quality of living of the needy patient fraternities and will bring a smile in their faces by taking away the pain of sufferings from the different diseases and disorders towards saving human lives. Innovation also ensures quality health-care solutions by taking care of different unmet health care needs of the human being and the same will certainly enhance the life expectancy rate and reduce the mortality rate.

11.Scope of Further Research

Since we have conducted the study pertain to the pharmaceutical industry, the researcher fraternities and academic community can look forward further research work in any of the areas like Fast Moving Consumer Goods (FMCG), Fast Moving Consumer Durables (FMCD), Information Technology (IT), Information Technology Enabled Services (ITes) and Manufacturing & Engineering services to bring the innovation through research & development (R&D) activities for ensuring business sustainability.

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Gender Disparity: A Study of Gross Enrolment Ratio in Higher Education

Komal Rawat*

Abstract

Higher Education is a vital aspect of the economic development of a nation. An educated person has to undergo a learning process that ensures the empathetic environment and social justice in society. Higher Education empowers human beings with skills, knowledge, and awareness. Gross Enrolment Ratio (GER) in Higher Education comprises a variation in different courses. Gender disparity in diverse courses points out the discrepancies in the inclusive progress of women. The main aim of the study is to comprehend the dissimilarity in male and female GER and gender inequality in different courses. The paper concludes with suggestions to formulate various effective policies and guidelines for female empowerment in Higher Education and to bring similarity in courses.

1. Introduction

The significance of Higher Education can be seen in the communal and financial progress of a nation. It brings many opportunities for the benefits of individuals and groups. Because of Higher Education people can enhance their confidence and build their personality. Overall it can be said that Higher Education improves the quality of life.

Higher Education encompasses numerous courses to enable an individual to develop self-reliance, become resourcefulness, and to be a perfect human being. There are several courses in which students can register and pursue Higher Education. India is confronting various critical issues out of which gender disparity is one. Gender disparity is a significant problem in India which affects the sex ratio, education, economic and social development.

Higher Education in India also contains gender disparity. Gender inequality in courses impacts the intellectual level, health, economic condition, and social status. It is a multidimensional matter in India that creates a barrier for national growth and development. Women are a disadvantaged section in several ways even though the constitution of India had given equal rights to men and women after this gender disparities persist.

Gross Enrolment Ratio (GER) in Higher Education is continuously increasing but at a slower pace which needed to rise high to compete globally. Gender inequality may be an obstacle to the overall development of women.

Gross Enrolment Ratio (GER)

It is a ratio that is calculated to identify the number of students enrolled in education at schools, college, and university level. The GER in higher education means the population between the age group of 18-23 years

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registered themselves for higher education. This is the youth population of a country working and aiming for the betterment of a country. In India, the Gross Enrolment Ratio is continuously rising which is a positive sign for the economy.

Programs and Schemes for Girls

There are various programs and schemes were initiated in India to promote girl education and bring gender disparity. Some of them are discussed below:

Government of India Prominent Women and Girls Scholarships: Some government scholarships schemes are as follows:

- ✓ **AICTE Pragati Scholarship Scheme**

The objective of this scheme is to provide technical education to girl students. Under this scheme, girl students enrolled in the AICTE approved technical college/institutions are provided financial support in pursuing the course.

- ✓ **Swami Vivekananda Single Girl Child Scholarship Scheme**

Swami Vivekananda Single Girl Child Scholarship Scheme was started to support the girl higher education who is the single child of her parents. For the research like JRF (Junior Research Fellow)and SRF (Senior Research Fellow), the scholarships are given. They also obtain a contingency grant and some money for reader/escort assistance.

- ✓ **Postdoctoral Fellowship for Women**

It is given to unemployed Ph. D. women. They are encouraged to fulfill their intellectual quest through this fellowship. The total duration of the fellowship is 5 years.

- ✓ **Women Scientist Scheme**

The Department of Science and Technology has initiated the 'Women Scientist Scheme' to encourage the women scientists to pursue their career further and enter into a profession who has suffered a break in their career due to the family and children's responsibilities. This scheme gives scholarships in 3 categories as Women Scientist in ‘Group A’, 'Group B', and 'Group C’.

- ✓ **Kalpana Chawla Memorial Award**

It has been started by the Biyani Girls College in the year 2005. Its objective is to support meritorious girl students who wish to pursue technical education. It is distributed in 4 categories. Each category has 21 winners.

- ✓ **Kiran Girls Scholarship Scheme**

Under this scheme, the girl students who are pursuing B.E/ B. Tech in IT and Computer Science, or ENTC from the engineering colleges in Pune, Nagpur, Goa or Hyderabad, the financial support is given. Those students who are selected for this scholarship get Rs. 40,000 on an annual basis.

Overseas Women Scholarships:

- ✓ **Grace Hopper scholarship**

This scholarship is meant for graduate and undergraduate girl students of Computer Science, IT, MIS, Math, Physics, Human-computer interaction, and Electrical Engineering. Under this scholarship program, students get the opportunity to attend the Conference in Computer Science which is attended by similar students and faculties from all over the world.

✓ **Google Anita Borg Scholarship**

Under this scholarship scheme, girl students are encouraged to participate in computer science and computing program. The objective of this scheme is to bring gender equality into the technology field.

✓ **Adobe India Women in Technology Scholarship**

This scheme is made for promoting the share of women in the engineering and technology domain and also bring gender equality. Candidates are benefitted by these scholarships in form of tuition fees, attending the Grace Hopper conference in India with the entry fee, and obtain training at Adobe India.

✓ **Women Scholarship for Peace – Global South**

It is provided by the UN Office for disarmament in collaboration with the participating countries in the program. Under this, 145 women candidates receive training in disarmament, establishing peace, and solving other development related issues. Candidates get the UPEACE certificate issued by the UN-mandated University of Peace. It is given for tuition-fee, travel charges, accommodation and other miscellaneous charges for the training.

Famous Private Scholarships for Women

✓ **Santoor scholarship**

These scholarships were started by Wipro Cares to girl students from disadvantaged sections of the society. Beneficiaries of this scheme are from Karnataka, Telangana, and Andhra Pradesh to pursue higher education.

✓ **Tata Housing Scholarship for meritorious girls**

The objective of this scheme is to provide financial support to the meritorious girls registered in the Civil Engineering, Architecture, or Construction Management courses.

✓ **Fair and Lovely Foundation for Higher Education for Women scholarship**

It is for encouraging girl students to get registered in the Undergraduate or Postgraduate courses. The financial support is given of amount Rs. 25,000 to Rs. 40,000.

✓ **Prabha Dutt Fellowship**

This fellowship is initiated for women print journalists. Candidates get Rs. 1,00,000 to pursue research in the women related subjects of contemporary relevance.

✓ **L'Oreal Scholarship for Young Women in Science**

It aims to stimulate women for doing higher studies in the Science and Technology field. It was instituted in 2003 and given every year to disadvantaged sections of the society.

II. Review of Literature

U. Pujar (2014) pointed out the Gross Enrolment Ratio in Higher Education in his study. She analyzed the GER in global terms and found that in India during the eleventh five-year plan was 17.9 which has been raised from 12.3 but it is very low as compared to other countries. She suggested having a proper mechanism and planning for fund allocation

which may help to enhance the GER.

Misra, et al. (2014) studied the performance of India concerning the Gross Enrolment of students for Higher Education. He found that caste discrimination like SCs, STs, OBSs, and Other categories.India is performing tremendously in registering for Higher Education in the past years. He stressed the need for uniformity in communal classes. Some attractive schemes and planning can be initiated which may be a great source of raising the enrolment ratio in higher education in India.

Kundal Rahul (2015) asserted that the Gross Enrolment Ratio (GER) in the education sector of India is continuously increasing with good speed at all levels. The objective of the study is to explain the tendency of GER in the higher education sector of India from the year 2001-02 to the year 2012-13. He also analyzed the gender equality in GER in Higher Education. He suggested framing specific policies to raise GER in Higher Education by allocating more funds for Higher Education.

Shah R. Jalpa (2016) discussed the status of Secondary and Higher Secondary schools' Gross Enrolment Ratio (GER)which has increased from 1,26,047 to 2,37,111 in the last 14 years. The study also revealed that Girls' enrolment was increased more as compared to boys' enrolment. The study was around to understand the Gross Enrolment Ratio in Secondary and Higher Secondary schools.

The present study is having a research gap that highlights the increasing trend of female Gross Enrolment Ratio (GER) in the previous 6 years population as compared to male GER. The tendency of registration in different courses raises a question mark due to the high enrolment of male students for higher education. The cost of higher education is rising at a new sphere which somehow may become a barrier for female students to move ahead. The overall situation motivates for new research.

III. Research Objectives

1) To familiarize me with the concept of Gross Enrolment Ratio.

2) To understand the gender disparity in Gross Enrolment Ratio.

3) To unearth the causes of Gender Disparity in different Courses.

4) To give suggestions based on the findings of the study.

Based on the above objectives following hypotheses were framed to arrive at a significant conclusion:

H_0(1): There is no significant increasing trend in the female population (18-23 Years) in the last 6 years.

H_0 (2): There is no significant variation in male and female GER.

H_0(3): There is no significant gender disparity in courses.

IV. Research Methodology

The present study is analytical in nature which is based on secondary data. The secondary data was collected from All India Secondary Higher Education (AISHE) reports of the last six years and analyzed throughout the study to attain a substantial outcome.

Following are Limitations of Study:-

1) The study includes only the students pursuing Higher Education.

2) The present study is limited to only 6 years.

3) It is considered with the result in keeping view only the females.

V. Data Analysis and Interpretation (Testing of Hypothesis)

The following hypotheses were tested by using various statistical tools as:

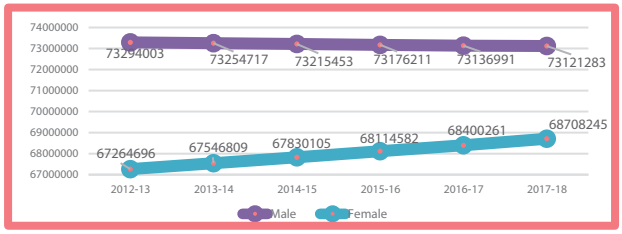
H_0 (1): There is no significant increasing trend in the female population (18-23 Years) in the last 6 years.

Table 1: Population (18-23 Years)

Year	Male	Female	Total
2012-13	73294003	67264696	140558699
2013-14	73254717	67546809	140801526
2014-15	73215453	67830105	141045558
2015-16	73176211	68114582	141290793
2016-17	73136991	68400261	141537252
2017-18	73121283	68708245	141829528
Total	**439198658**	**407864698**	**847063356**

Source: AISHE Reports from 2012-13 to 2017-18

Graph 1: Population (18-23 Years)



Source: AISHE Reports from 2012-13 to 2017-18

The graph above gives details regarding the population of the 18-23 years of people with gender discrimination. The male trend shows the decreasing slope continuously as in the year 2012-13 it was 73294003 decreased to 73121283 in the year 2017-18. But the female trend depicts the increasing slope such as in the year 2012-13 it was 67264696 increased to 68708245 in the year 2017-18. Hence it is concluded that there.

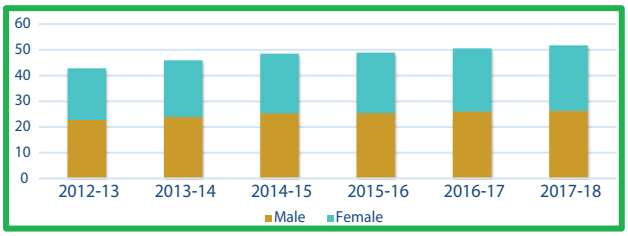
H_0(2): There is no significant variation in male and female GER.

Table 2: GER Gender Wise

Sl. No.	Year	Male (in %)	Female (in %)
1	2012-13	22.7	20.1
2	2013-14	23.9	22.0
3	2014-15	25.3	23.2
4	2015-16	25.4	23.5
5	2016-17	26.0	24.5
6	2017-18	26.3	25.4

Source: AISHE Reports from 2012-13 to 2017-18

Graph 2: Male and Female GER (in %)



Source: AISHE Reports from 2012-13 to 2017-18

Table and graph above present data regarding the male and female Gross Enrolment Ratio (GER). That means how many people who belong to 18-23 years are registering for higher education.

In the year 2012-13, the male GER was 22.7% which increased to 26.3% in 2017-18 whereas Female GER was 20.1% in 2012-13 which raised to 25.4% in 2017-18.

Table 3: Anova: Two-Factor without Replication

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	26.2175	5	5.2435	31.81092	0.000852	5.050329
Columns	9.900833	1	9.900833	60.06572	0.000572	6.607891
Error	0.824167	5	0.164833			
Total	36.9425	11				

For testing the above hypothesis Anova (Two ways) was used. It can be concluded from the above analysis that f calculated value for year wise and gender-wise is greater than f critical value hence it is said that there is significant variation in male and female GER. There may be many causes for this variation.

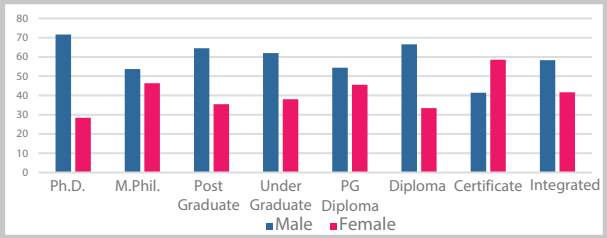
H_0(2): There is no significant gender disparity in courses.

Table4: Gender Disparity in Courses (in %age)

Year	Gender	Ph.D.	M.Phil.	Post Graduate	Under Graduate	PG Diploma	Diploma	Certificate	Integrated
2012-13	Male	73.2	53.9	66.1	60.0	51.2	51.0	52.9	60.0
	Female	26.8	46.1	33.9	40.0	48.8	49.0	47.1	40.0
2013-14	Male	77.3	60.0	71.3	62.1	60.8	60.7	36.7	57.6
	Female	22.7	40.0	28.7	37.9	39.2	39.3	63.3	42.4
2014-15	Male	73.6	51.1	68.4	66.4	56.2	68.3	48.3	58.1
	Female	26.4	48.9	31.6	33.6	43.8	31.7	51.7	41.9
2015-16	Male	73.5	61.8	69.2	67.2	38.8	72.7	38.3	59.7
	Female	26.5	38.2	30.8	32.8	61.2	27.3	61.7	40.3
2016-17	Male	79.8	63.2	68.6	64.3	65.4	78.7	32.4	56.1
	Female	20.2	36.8	31.4	35.7	34.6	21.3	67.6	43.9
2017-18	Male	52.3	32.1	43.4	51.9	54.0	68.0	39.9	58.4
	Female	47.7	67.9	56.6	48.1	46.0	32.0	60.1	41.6

Source: AISHE Reports from 2012-13 to 2017-18

Graph 3: Gender Disparity in Courses (in %)



Source: AISHE Reports from 2012-13 to 2017-18

The above table and graph indicate the trend towards various courses for which students are enrolling themselves for pursuing higher education. Different types of courses were selected for the study and male and female share was analyzed.

Table 4: Contingency Table

Courses	Male	Female	Male (R_1)	Female (R_2)
Ph.D.	71.617	28.383	5	1
M.Phil.	53.683	46.317	9	2
Post Graduate	64.5	35.5	10	3
Under Graduate	61.983	38.017	11	4
PG Diploma	54.4	45.6	13	6
Diploma	66.567	33.433	14	7
Certificate	41.417	58.583	15	8
Integrated	58.317	41.683	16	12
			93	**43**

For testing the above hypothesis [H0(2)] Kruskal-Wallis test was used where H statistics value is 6.893. When its significance level is checked in the chi-square table (c-1) so it is 3.841 which is less than the H value so the null hypothesis is rejected. Hence it is calculated that there is significant gender disparity in courses.

VI. Causes for Gender Disparity in Different Courses

There may be various causes of gender disparity in varied courses. Some of them are discussed below:

1. The trend of Girls' Higher Education- In India people mainly believes in the Higher Education of boys instead of girls. It is assumed that if boys will be educated which will increase the income-earning sources of family and after marriage girls will go to another place. Now this concept is changing.

2. High Cost of Education- The higher education is rising continuously. People are not in a position to afford the costly education. Especially in India, girls Higher Education is not so much popular as compared to some other countries. Indian people don't want to spend so much on girls' Higher Education.

3. Nature of Courses-Various Courses having different dimensions. Like some for placement concern, the male candidates are preferred as compared to female candidates. Such as field jobs, army jobs, remote areas jobs, night jobs, isolated jobs, and other risky jobs where family members don't permit girls for pursuing such courses.

4. Urbanization- In small cities and rural areas there is a lack of good academic institutions that enhances urbanization. Many families do not allow their girls for going out and study due to urbanization which somewhere creates gender disparity in courses.

VII. Conclusion, Findings, and Suggestions

The results and findings of the study indicate that there is a significant increasing trend in the female population (18-23 Years) in the last 6 years. The male population (18-23 years) is decreasing constantly from 2012-13 to the year 2017-18. There may be responsible for many

efforts of the government for girls' higher education so people have much more awareness during the last six years.

It was also found that Gross Enrolment Ratio (GER) for higher education for male and female is containing significantly variation as in the year 2012-13 the male GER was 22.7% which increased to 26.3% in 2017-18 whereas female GER was 20.1% in 2012-13 which raised to 25.4% in 2017-18. It can be concluded from the above analysis that f calculated value for year wise and gender-wise is greater than f critical value hence it is said that there is significant variation in male and female GER.

In terms of gender disparity in courses for which students are registering themselves for higher education, it can be concluded that there is significant gender disparity in courses.

Higher Education is altering with a new paradigm of excellence and skill fineness. Today's education demands quality which is based on the efficacy and proficiency of academic institutions. The study revealed that there is gender disparity in GER for Higher Education. It was suggested that the government and policymakers should come forward and initiate such measures which will help enhance the girls' share in GER. It is mandatory to have a proper mechanism for the allocation of funds at the state level for girls. There is also a need to establish new industries in rural and small cities so that urbanization can be somewhere reduced. It was recommended to institute some good academic institutes (like IIMs, IITs, AIMS) in small cities so girls are not required to leave their home town and their GER for Higher Education will raise.

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Can We Leverage the Strength of Our Agricultural Sector During the Post-COVID 19 Situation?

Subrato Bhadury*

Abstract

The share of the agricultural sector in our total GDP was gradually getting reduced during successive planning era. So the agricultural sector's importance may be also gradually getting reduced while that of the other 2 sectors –manufacturing and services- is steadily increasing. However, if we look at our primary sector, then we find that it remained mostly unaffected even with the onslaught of a pandemic of this magnitude globally. If we look back then historically we find that our agriculture can keep its resilience and bounce back after fighting all odds. It could withstand so many famines and severe constraints like drought, cyclone, locust onslaught &flood. So it is expected that it will overcome this COVID 19 crisis also this time. This article makes a re-look at some of the challenges and opportunities put forward by the pandemic and tries to highlight some measures to reach a new normal. The discussion is qualitative in nature and is based on observations, interactions with different stakeholders in industry and agriculture, Webinars, and anecdotes.

1. Introduction

In our country, the primary sector remained an important sector because of its major contribution to employment, income, and national food security. However, its contribution to national income has gradually declined from 18.2 percent in 2014-15 to 16.5 in 2019-20, reflecting the development process that requires structural transformation.

As it happens with Rostow's 5 stages of economic growth that any developing nation will have a gradual and shrinking volume of its agricultural sector in a phased manner. The basic idea is that with gradual modernization and growth, the importance of agriculture, as well as the primary sector, will fall. Agriculture will be relegated to the back seat while the industry and services sector with high growth potential will occupy the center stage as leading sectors. India is also no exception. The share of the agricultural sector in our total GDP which was 56.5% in 1950-51 was reduced to 34% before the liberalization of the Indian economy(CSO).

Share of agriculture & allied sector's share in our gross value added (is the measure of the value of goods &services produced in a sector of an economy) at current prices is 15.87% in 2018-19 while that of the manufacturing & services sector's contributions are 29.73% and 54.40 % respectively. So it may appear that the agricultural sector's importance is gradually reducing (although it is still higher than the global average of 6.4%) while that of the other 2 sectors is steadily increasing. The recent data

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after the COVID 19 crisis showed that factory output had fallen by 55.5% in April 2020 which is the sharpest ever, still alarming is the fact that the manufacturing sector's output has fallen by 64.3%. If we proceed a bit further then the picture is still more dismal with the capital goods sector output fell by 92% while that of the mining sector fell by 27.4% and the electricity sector contracted by 22.6%.

Incidence of endemic has its roots mostly in cities- Now if we look back about the coronavirus and its spread effect then we find that in most of the cases in our country the virus was carried by the flyers from abroad and in many cases, they were not knowing the impact of this contagious virus at all or with knowledge also they mixed up with people in a social gathering or marketplace leading to higher spread effect. Now India still has a huge rural base mostly from the agrarian community which remained far from the epicenters of the disease which are mostly cities and state capitals. Our village community remained outside the orbit of the epicenters at least for the first 2 months –February and March 2020. Even when the migrant workers came back to their villages from their place of work and there was a growing risk of community spread then also it is to be understood that they all are from either from industries or services sector and only a very negligible percentage are from the agricultural and allied sector. By and large, our rural economy was mostly unaffected.

The diametrically opposite situation in our villages-However if we look at our primary sector, then we find that it remained mostly unaffected even with the onslaught of a pandemic of this magnitude globally. Much of our countryside kept its date with their farm calendar with exact precision this time. In this extraordinary situation when the free ration is almost mandatory the weaker section of the total population, the task for massive procurement of food grains is a priority and FCI has been doing this on an aggressive footing for the last 2 months depending only on the soundness of our agricultural output. During the lockdown, exemption from restrictions in the agricultural sector on movements helped the farmers to harvest and carry the food grains to the agricultural mandis that facilitated the procurement and subsequently its distribution. Food and beverage inflation moderated from May 2020 to 7.4% compared to 8.6% during April 2020. Food inflation based on CFPI or consumer food price index reduced from 10.5% in April to 9.3% in May 2020. This has become possible due to a dip in food & vegetable prices and a steady supply of agricultural produce.

Objectives of the study:

- Re looks at the robustness of our agricultural sector and to highlight its in-built strength to withstand any severe external global shock-like COVID 19 outburst.

- Focus on the strengths of the agricultural sector which can directly or indirectly help our industry & services sector presently recovering at a slow pace.

History of famine during the pre-independence era-famines was a part of life in the Indian sub-continent since the British era. The great Bengal famine 1769-70 affected the greater part of western Bengal & Bihar, the death toll was 10 million. Chalisa famine in 1783-84 in Delhi, Western Oudh, Eastern Punjab, Rajputana &Kashmir were affected, 11 million people expired. Doji Bara famine or Skull famine in 1791-92 in Hyderabad, Maratha country, Gujarat, Deccan, and Marwar caused the death of 11 million people. During the Bengal famine of 1943-44 around 4.5 million people expired in Bengal. However, the nature and severity of famines were reduced to a great extent with the advent of our 5-year

plans and implementation of the green revolution. Gradually India achieved self-sufficiency in food grains production and the main concern became the fair distribution of the same. Interestingly the Indian agricultural sector is on a much higher platform despite problems of land reform, fragmentation of land holdings, and less mechanization even after the green revolution. The main concern has now become food security and equitable distribution of the same.

Is **mechanization very low?** It is argued that agricultural productivity is constrained by a lower level of mechanization which is about 40 % in India, much lower than China (59.5 %) and Brazil (75 %). The Food Processing Industries sector has been growing and constitutes as much as 8.83 % and 10.66 % of GVA in the Manufacturing and Agriculture sector respectively in 2017-18. However, the table below will partly nullify this because in both the major activities-seed bed preparation and harvesting and threshing for most of the crops mechanization is as high as 60% to 70%. However, for millets, pulses, oilseeds, cotton, and sugarcane, the mechanization is low. A point to note here is that agricultural activities conducted mostly in an open environment with no factory shed type of closed environment (except in rice mills) can never achieve the same high level of mechanization as the industrial sector.

Table 1.Mechanization Levels for Major Crops in India in 2018-19

Major crops Mechanization Levels for Field Operations (in percent)

Major crops	Seedbed preparation	Sowing/ planting/ transplanting	Weeding and plant protection	Harvesting and threshing
Rice	70	20	30	60
Wheat	70	60	50	70
Maize	60	40	30	30
Sorghum & millets	50	30	15	10
Pulses	50	40	20	25
Oilseed	50	40	20	25
Cotton	50	30	25	0
Sugarcane	55	10	20	10

Source: Department of Agricultural Research & Education (DARE).

Economic Survey rightly pointed out that "there is tremendous scope for increasing yield levels with technological breakthrough". The National Agriculture Policy July 2000 seeks to "actualize the vast untapped growth potential of Indian agriculture, strengthen rural infrastructure to support faster agricultural development".

Dismal picture in other sectors after COVID 19 outbreak-Now with the lockdown of the entire economy most of our big, medium, and even small industries were forced to close during March end till April 2020. Their proprietors are staring at huge losses. Even after post-COVID 19 when we hope that everything will be normalized (lockdown phase 5

onwards) then also whether they will be able to combat various critical issues (labor supply, availability of raw material, capital shortage, and so on) is a big question mark. Similarly, the services sector with its tremendous growth potential but the high human interface and high contacts are already in a danger zone (whether it is railways, aviation, transport, entertainment, travel & tourism). These sectors are so badly hit that there is a doubt whether they will again be able to run with their earlier speed at all in near future even after adopting harsh measures like downsizing, cost-cutting, and even ultimate closure(except PSUs, for which the government stands as a guarantor).

Prospects ahead-During the first phase of lockdown(21 days from the government announcement of 24th March 2020 onwards) agricultural peak harvesting operations (harvesting, threshing, sowing, transporting the crop, and other farm-related activities) for wheat, mustard, sunflower, and pulses were done smoothly. Interestingly all these activities could be done with safety protocols like social distancing, masking, and hand sanitization in the field related activities. This raised the optimism that the pandemic will have very less effect if any, on our rural economy which supports almost 52% of our population directly or indirectly. Moreover, the total agricultural sector's output comprises of –crops, livestock, forestry, and fishing. These sub-sectors were not affected by the COVID 19 outbreak in the same manner and whatever loss is experienced by a sub-sector due to lock down and transportation problem, it was more than compensated by the other sub-sectors. The entire agricultural sector is not reliant on a single source of output and this is the primary advantage of its total spread effect. If we look back since lockdown phase 1 then we find-

Foodgrains output has not suffered much due to lockdown. Most of the food grains are not quickly perishable and can be stored and distributed later in a staggered manner.

At the initial lockdown phase, most people tried to store a substantial amount of food grains to tide over any food shortage in the future. Hence initially there was moderate price inflation which was much reduced during the subsequent lockdown phase. However, fruits and vegetables with high perishability witnessed a sharp decline in prices due to transportation and marketing. There was a sudden glut in the village and mandis.

In the livestock sub-sector, milk is the largest contributor followed by meat. Both these products witnessed a decline due to the sudden closure of restaurants and eateries but household demand increased during the lockdown period. However, milk had the advantage because whatever is in excess can be converted into milk powder and preserved for future use.

Horticulture and fishing are the worst hit due to lockdown. Since all religious places of worship were suddenly shut so the demand for flowers dipped to a low level and the export possibility also got restricted. Export possibility of fruits also got a hard hit during the lockdown. Fishing was badly affected due to a sudden stop in deep-sea fishing and transportation problem compounded by restrictions on marketing from the catchment areas. However, this fall was arrested largely by the increased household consumption during this lockdown period.

With the 4th phase of lockdown getting over, sowing is now on a full scale in all parts of the country(except severe cyclone Ampan affected areas in West Bengal and Orissa) and for major Aman crops like paddy, pulses, corn, banjara, pulses. It is delighting that the area already sown so far has already higher by around 20%

during the same time last year. Better water management of water resources and pre-monsoon rains followed by the prospect of good and timely arrival of monsoon increased the hope of agriculturists. Enthusiasm is that a normal monsoon would further shield the agrarian rural economy from the recessionary shock to which other sectors are already subjected to.

Table 2: Few agricultural indicators & their projections at the end of the 4th lockdown.

Few agricultural indicators	2018-19	2019-20	2020-21 (targeted)
India's foodgrain production(output in MT)	285	295	298
Wheat procurement	33.58	34.13	34.15
Sowing area coverage of pre-monsoon summer crops(in lakh hector)	50	67	69

Central measures to mitigate risk-We often encounter various remarks about our agriculture-"agriculture depends on the vagaries of monsoon." "Our agriculture is subsistence agriculture". "Even after the green revolution the success is not spread across the country but it is sporadic" and "with small &fragmented land size the success of modern technology is limited in agriculture". Over the planning era for mitigating risk, Pradhan Mantri Fasal Bima Yojana (PMFBY) has been under implementation. It provides overall coverage of risks from pre-sowing to post-harvest against natural and non-preventable risks. The insurance premium is paid on an actuarial/on bidding basis, with a very low share contributed by the farmers. This will also help this sector to become more robust to tackle unforeseen contingencies.

The role of agriculture in our country- Economists often clamor that agriculture should gradually contribute to smaller and and they point towards western Europe and the US for a case to point. Unfortunately, these countries are not so populated like India and a case to note that, we are a country with approximately 135 crores population and a huge amount of agricultural produce is required to feed them. Interestingly the agricultural products are mostly consumed by the country's workforce who constitute the main source of labor in any sector. Moreover, the marketable surplus is carried forward for the urban consumption while the commercial crops try to boost up our export basket.

Safe distancing and safety norms in the agricultural environment easier- Industrial situation is termed as a black box where the danger of contamination is very high in that closed factory work shed. On the other hand, the services sector is generally a high contact environment with human interface and contact related danger for both sides. Agriculture is mostly conducted in an open environment with hardly any close touch and where mostly safe distancing is automatically maintained without even the participants knowing the impact of social distancing. Presuming that the COVID case will continue some more years, this factor stands as the greatest advantage for agriculture. What we require is some guidance and periodic counseling for our agrarian community such that community spread is prevented. We will appreciate the fact that the distribution of ourour population is heavily skewed towards the younger population and incidentally most of the farm people are within the younger age group with high immunity to combat the spread and chances of higher recovery.

Table 3: India's Export of Principal Agri and allied Commodities

(Value in ` '000' Crore & Quantity in Lakh Metric Tonnes)

	2016-17		2017-18		2018-19	
Crop	**Value**	**Qty**	**Value**	**Qty**	**Value**	**Qty**
Rice -Basmati	21.51	39.85	26.87	40.57	32.80	44.15
Spices	19.11	10.14	20.08	10.96	23.22	10.92
Rice (Other than Basmati)	16.93	67.71	23.44	88.19	21.19	76.00
Cotton Raw Including Waste	10.91	9.96	12.20	11.01	14.63	11.43
Oil Meals	5.41	26.32	7.04	35.71	10.58	44.86
Sugar	8.66	25.44	5.23	17.58	9.52	39.88
Castor Oil	4.52	5.99	6.73	6.97	6.17	6.19
Tea	4.91	2.43	5.40	2.73	5.83	2.70
Coffee	5.65	2.89	6.25	3.18	5.72	2.83

Source: DAC&FW

Conclusion:

The present study wants to shift our focus towards our agricultural sector and wants to highlight the fact that the inherent strength which this sector has can be leveraged to arrest the danger of a steady fall in our GDP and other growth indicators. This will be a great face-saving for our economy and especially to the rating agencies.

A spurt in agricultural output especially the commercial crops will help the steady supply of industrial input which has been suffering heavily from the exodus of the migratory labor force and shortage in the supply of industrial credit. This will also give a fillip to our exports of primary commodities. Here India can outcompete its traditional competitors like China, Brazil, Sri Lanka. Moreover, it can mitigate the trade deficit and may have some favorable impact on the balance of trade.

If we look back then historically we find that our agriculture can keep its resilience and bounce back after fighting all odds. It could withstand so many famines and severe constraints like drought, cyclone, locust onslaught &flood. So it is expected that it will overcome this corona crisis also this time. What is ideally required now is a well-planned government measure like minimum support price and procurement assistance.

Few steps of National agriculture policy 2020 are encouraging in this respect such as-aiming over a 4 % annual growth rate aimed for the next 20 years along with Price protection for farmers and the launch of the National agricultural insurance scheme. High priority is accorded to the development of animal husbandry, poultry, dairy, and aquaculture. Moreover adequate and timely supply of quality inputs to farmers and prioritize rural electrification, along with the Creation of more agro-processing units and off-farm

employment to contain rural-urban migration. Now the success of this policy lies in the proper and prompt implementation of its different proposals.

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Corporate Social Responsibility in the Information Technology Sector: A Qualitative Study on CSR in Selected Companies of India

Astha Dewan* & Srijana Singh**

Abstract

Corporate social responsibility (CSR) is simply the company's commitment to managing the social, economic and environmental impacts of its operations on the external environment. The information and technology sector is uniquely positioned in terms of skills, expertise, and facilities that can help benefit the organizations and society in the long run. The companies that have been selected for this study are Infosys, Wipro, HCL Technologies ltd., Tech Mahindra and TCS depending upon their CSR expenditure and the CSR domains of the companies until 2018-19. The objective of this study is to analyze the CSR expenditure and the CSR domains undertaken by these companies and how these vary for twelve (12) years particularly in the post-mandate period (2013-2019) when CSR was made mandatory in 2013 in India as per section 135 of the Companies Act, 2013. The sources and methodology used to include a content analysis of the annual reports of the selected five companies. The findings suggest that Infosys, Wipro and Tech Mahindra are better at fulfilling the CSR requirements as per section 135 of the Companies Act, 2013. On the other hand, CSR domains of HCL Technologies and TCS are quite diverse including the issues that should be addressed in the current scenario like gender equality and women empowerment. A combination of both should be adopted by the companies in the IT sector. The practical implications of this study are that one can analyze the selected five companies based on CSR domains as well as the CSR expenditure.

1. Introduction

Corporate social responsibility is simply the need to manage business operations in such a way to make a positive impact on society. It covers social impact, ethics and various sustainability initiatives practiced by different companies irrespective of the sector (Ganga S. Dhanesh, 2014).

1.1 History and Background

India in one form or the other has been practicing CSR since ancient times dating back to Mauryan history. Various Indian scriptures promote sharing a little part of your earnings to the poorer section of the society. Informal practicing of CSR has always been there in the form of charity given or programs organized by the richer sections of the society to the deprived sections of the society. CSR is somewhat related to the historical development of India. The history and the evolution of CSR can be divided into four categories or phases:

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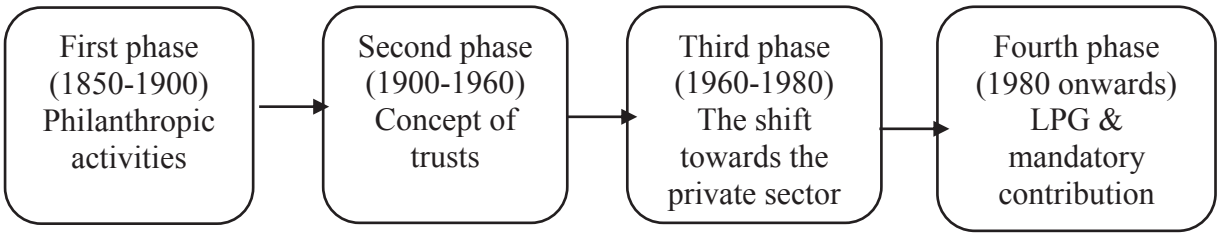


Figure I: Different phases and evolution of CSR
Source: Author's compilation

Note: As far as the current scenario is concerned, the Companies' Act 2013 was amended and a new section was added (section 135) related to the mandatory contribution of companies as 2% of the average of the profits of immediately preceding three years by the companies whose annual turnover is more than INR 1000 crores or whose net worth is INR 500 crores or whose Profit after tax is INR 5 crores. By practicing social responsibility and being a corporate citizen, the business houses and the companies remain conscious about their actions on the external environment in different aspects including social, economic and environmental. Engaging in corporate social responsibility, it means that the companies are contributing positively to society. The successful companies can contribute towards the environment as their business has grown to such an extent where they have enough resources that they can give back to the society so that they can set a leading example for the other companies in the same sector. Over a period, the companies have become quite serious and dedicated towards their CSR activities, ratings are given to them by the rating agencies, their budget allocation to different activities and also the policies related to their disclosure.

1.2 Statement of Problem

The research has surely been done in the context of CSR in the IT sector but not to such an extent that a holistic view (considering all possible aspects related to a particular matter) is considered for this purpose. The existing research in the context of CSR in the IT sector has not covered the intra-company as well as intercompany analysis together to such an extent. The level of CSR activities and monitoring of those activities can be divided into two categories namely; intra-company and inter-company analysis to make the comparison easier and understandable. The focus of this study has been on the CSR domains and expenditure of the companies themselves and how they are different from the other companies that have been selected. The regulatory authority should impose penalties for the non-compliance of section 135 of the Companies Act, 2013. A comparative analysis needs to be done between the pre-mandate period and the post-mandate period to examine how effective the regulations have been as per section 135 of the Companies Act, 2013.

1.3 Research Methodology

There are five companies namely Infosys, Wipro, HCL Technologies ltd., Tech Mahindra and Tata Consultancy Services (TCS) that have been selected based on their CSR expenditure wherein the CSR spend of Infosys, Wipro, and Tech Mahindra during the recent years has been beyond the CSR requirements of 2% and the CSR spend of TCS and HCL technologies ltd. during the recent years has been less than the CSR requirements of 2% of the average net profits of immediately preceding three years until the year 2018-19. The reason why TCS is chosen is that the absolute CSR spending of TCS was better than the other companies in the

IT sector (2016-17). HCL Technologies has been chosen because the contribution towards CSR by HCL Technologies is way more than a contribution towards CSR by Tech Mahindra and the CSR domains of the company are quite diverse as compared to Tech Mahindra.

Table I: CSR expenditure of the selected five companies related to the year 2018-19

Name of the company	Year	AMOUNT TO BE SPENT (in crores)	AMOUNT ACTUALLY SPENT (in crores)
Infosys	2018-19	340	342
Wipro	2018-19	176	185
HCL Technologies Ltd.	2018-19	144	125
Tech Mahindra	2018-19	84	90
Tata Consultancy Services (TCS)	2018-19	542	527

Source: *Annual reports of Infosys, Wipro, HCL Technologies, Tech Mahindra and Tata Consultancy Services (TCS) 2018-19.*

- Observations: As per the above table related to CSR expenditure during the year 2018-19, it can be observed that three out of the five companies namely; Infosys, Wipro and Tech Mahindra have contributed beyond the CSR requirements of 2% and the remaining companies namely; HCL technologies Ltd. and Tata Consultancy Services (TCS) have contributed less than the CSR requirements of 2%.

The sources of data used in this case are mainly secondary in nature. Annual reports considered for this case are for the pre-mandate period (2007-2013) as well as the post-mandate period (2013-19) for each of the selected five companies. Corporate websites, various prestigious journals and newspaper articles have been referred to in the context of CSR in the IT sector.

The period of study taken in this case is twelve (12) years starting from 2007 until 2019. The analysis has been divided into two categories namely; intra-company analysis and inter-company analysis. Intra-company analysis has been done to analyze the changes in CSR activities over the years within each of the selected five companies itself for each of the selected five companies easier and understandable. The inter-company analysis has been done taking into account the CSR expenditure of the selected five companies in the post-mandate period (2013-19) as the expenditure for the pre-mandate period (before 2013) towards CSR was of the negligible amount and the CSR activities and projects of the selected five companies. The similarities and differences between the CSR activities and projects of the selected five companies have also been considered.

1.4 Objectives of the Study

The objectives of the present study are discussed in detail below:

- To understand the concept and background of corporate social responsibility in India.
- A comparative analysis of the level of corporate social responsibility domains undertaken by the selected five companies in the information technology (IT) sector in the Indian context.
- Intra-company analysis of each of the selected five companies in terms of CSR expenditure and CSR domains particularly in the post-mandate period (2013-19).
- To analyze the CSR expenditures of the selected five companies in the post-mandate period (2013-2019).

2. Review of Literature

This section is concerned with the existing research done in the context of CSR in the IT sector.

2.1 Pooja Srivastava (2013): The conclusion states that there should be enough interventions (rural as well) on the part of the business houses when it is related to CSR, improving the relationships between different stakeholders, companies should be rewarded and recognized for their good efforts. Proper mechanisms should be there on the part of the regulatory framework and legislation by the government. The allocation of CSR funds should be done accordingly by the companies.

2.2 Utkarsh Majumdar, Namrata Rana (2015): The conclusion states that the companies need to engage, innovate and be creative in their ventures. If they focus on CSR, their international risk, as well as reputation, will also be maintained. The implementation of CSR not only includes knowledge and skill but also the adaptation and insights on how to apply those parameters to conclude. CSR and company reputation should make a part of strategic intelligence.

2.3 Barnabas, Vikram Philip (2016): The societal expectations are such that they want the private sector as well to contribute towards the needs of the community. The linkages and the relationship between micro and macroeconomic policies should be understood to implement CSR initiatives effectively. To improve CSR at the workplace training, sensitization and awareness programs should be there in the corporate sector to realize the importance of contributing towards the environment.

2.4 M. Menaka (2019): The suggestions presented by the researcher to the IT companies is that the suppliers (the society) and other stakeholders as well should be given due consideration. Employee engagement should be focused upon by providing various incentives, and a proper level of motivation should be given to employees to make them realize that the efforts for uplifting the society are for them as well in the long run. For organizational commitment, it should comply with all the legal provisions. And lastly, economic development should be focused upon by providing employment opportunities for the sustainable growth of the society and the economy to increase the CSR effectiveness.

2.5 Kirti Kapoor (2019): The paper suggests that there is a need for the creation of awareness among the public to make the CSR initiatives more effective on the part of the business houses. Appropriate steps and common strategies should be adopted to bridge the gap between different stakeholders. Penalties should also be imposed in section 135 of the Companies act 2013. A positive approach should be adopted towards this matter.

2.6 Ramya, S.M. et al. (2020): The objective of the paper was to analyze the initiatives taken by the top manufacturing and IT organizations in India. The paper's main aim was to investigate the level of environmental themes and environmental communication and also the technologies used in India. A clear bifurcation has been made based on the seven attributes and also a clear distinction is made between hard and soft accounting disclosure on the part of the companies. The authors have tried to analyze the environmental practices that are prevalent in the manufacturing and IT sector. The sources of data include secondary data including manual content analysis from print and website data including the annual reports of the companies. Sixty companies have been

taken as the sample listed on the Bombay stock exchange (BSE) including the top 30 companies. The implication is that managers should stay aware of the techniques and the methodology available to create a competitive advantage. The need to adapt to the changing environment, the climate analysis should be done properly by the companies to stay updated.

3. Standards for reporting corporate social responsibility in Indian companies based on Companies' Act 2013

When a company is covered under the ambit of CSR, it should comply with the provisions of CSR which was made mandatory in December 2012 in India. Section 135 was added in the Companies' Act 2013 which states that every year a company having a turnover of rupees 1000 crores, or net worth of rupees 500 crores or profit after tax (PAT) of rupees 5 crores has to contribute 2% of the average net profits of immediately preceding three years towards CSR. Average profits should be calculated as per section 198 of the Companies Act 2013. A CSR committee should be formed which should consist of 3 or more directors out of which at least one director should be independent. Rule 8 of the CSR rules laid down by the Companies Act 2013 says that the companies on which these rules are applicable on or after 1st April 2014 should incorporate in its board report an annual report on CSR activities during the year which consists of the following:

- A brief follow up of the CSR activities and projects of the company, and the eligible companies should also provide a link for reference for CSR policies, projects, programs and initiatives.
- Composition of CSR committee formed.
- Average net profits of the immediately preceding three years.
- Amount and details of CSR expenditure.

A study was conducted by Atale, N., Helge, E.J. (2014) where the proposed framework for CSR as mentioned above was analyzed in the context of the IT sector.

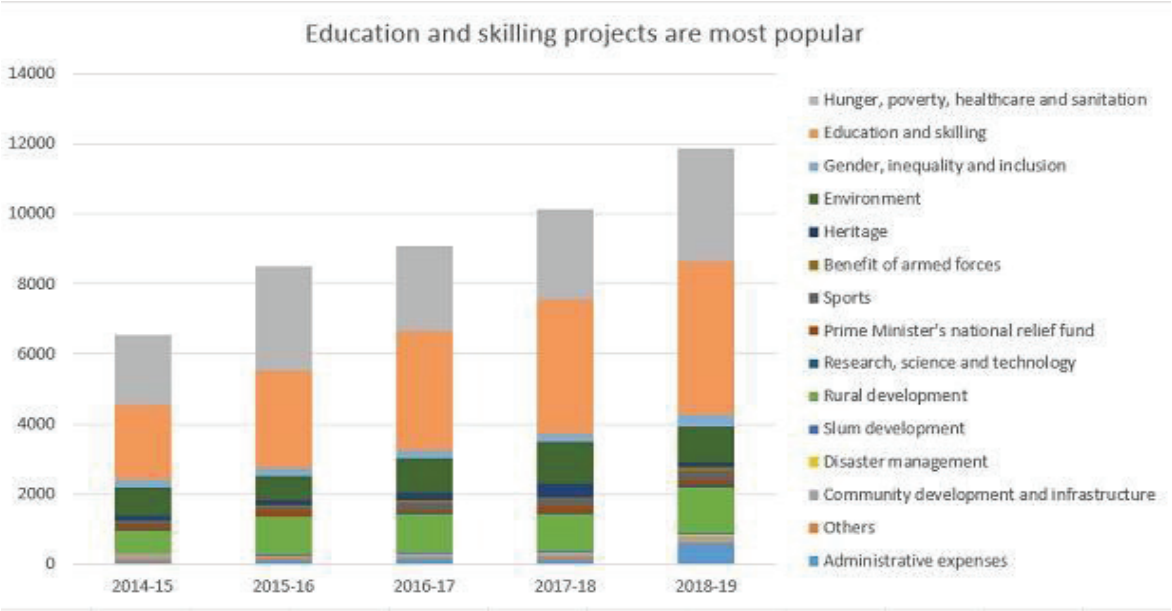
4. IT Sector in India

The IT sector irrespective of the country consists of two major components that are IT services and business process outsourcing (BPO). It also includes hardware, software, websites, servers, databases, telecommunications and anything that is involved in the transmission of a communication or the the systems that help transmit information.

4.1 Growth rate of the IT sector in India: The IT sector in India grew at a rate of 9.1% during the year 2018-19 as per a report of NASSCOM (national association of software and service companies). The IT sector is expected to grow at a rate of 7.7% during the fiscal year 2019-20 as per NASSCOM.

4.2 Benefits of IT sector: Generation of huge employment and promotion of export. Foreign direct investment (FDI). FDI is defined as an investment made by an individual or a company based in one country having business interests across the domestic boundaries.

4.3 Most preferred area for CSR contribution by IT companies in India: Over the years (2014-19) the maximum contribution has been made towards education and skilling projects. This shows the importance that education has in the current scenario. This can be observed from the graph below.



Source: *Business standard, Most preferred area for CSR contribution by IT companies in India*

5. Relationship between CSR and IT Sector

The relationship between CSR and the IT sector can be divided into the following categories:

5.1 CSR impacting IT sector: There has been an adoption of CSR in the IT industry that is quicker as compared to other industries. CSR programs organized by the IT sector can help transform the communities by providing them with the training, techniques and skills related to different areas and help the business itself to grow. Education formed a major part of the CSR initiatives by the top IT sector companies.

5.2 IT sector impacting CSR: As far as the IT sector is concerned, with the help of technology the companies can help bring a shift from the traditional mode of operating to a more transparent, effective and an efficient way in the context of CSR including the way organizations and companies interact, digitization and the processes related to automation in the society. Moreover, it can help the companies to store and analyze data which helps in the decision making of the companies to match the ethical values and actions of the company. The IT sector has made a mark in CSR in the area of waste management that has gained importance over the years. The government has always encouraged IT and other sectors in the context of CSR.

6. Findings and Analysis

For CSR, the selected five companies' content analysis has been done; i.e. annual reports have been analyzed namely: Infosys, Wipro, HCL technologies ltd., Tech Mahindra and Tata Consultancy Services (TCS). The basis of comparison here is the CSR domains undertaken by these companies.

The findings and analysis have been divided into two categories namely; intra-company analysis and inter-company analysis.

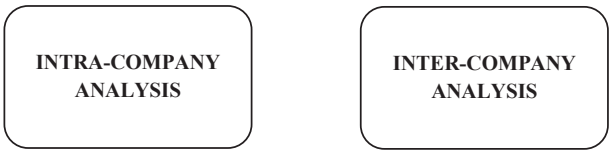


Figure II: Types of Analysis

Source: Author's compilation

6.1 Intra-company analysis: The intra-company analysis has been done year wise starting from 2007 until 2019. For each of the companies concerned, the analysis has been done taking into account the CSR expenditure as well as the CSR domains.

6.1.1 Infosys

- **CSR expenditure :** The Year- Wise expenditure on CSR activities by Infosys is given below :

Table II: CSR expenditure of Infosys for the post-mandate period

YEAR	AMOUNT TO BE SPENT (in crores)	AMOUNT ACTUALLY SPENT (in crores)
2018-19	340	342
2017-18	310	312
2016-17	287	289
2015-16	256	202
2014-15	243	239
2013-14	NA	9
2012-13	NA	10

Source: Annual Reports of Infosys 2012

- **Observations:** As per the table, the company contributed more than 2% towards CSR during the financial years 2016-17, 2017-18 and 2018-19 in the post-mandate period. Infosys did not contribute 2% in 2014-16. The CSR expenditure during the years 2007-12 was of negligible amount because the CSR requirement of investing 2% of the average net profits of the immediately preceding three years was proposed in December 2012.

- **CSR domains:** The CSR domains of Infosys are as follows:

Table III: CSR domains of Infosys

TITLE
Education
Rural development
Healthcare
Sustainability
Hunger eradication and malnutrition
Art & culture
Rehabilitation of homeless & orphans
Protection of national heritage sites

Source: Annual Reports of Infosys 2007-19

- In the years (2007-13) before the post-mandate period, Infosys focused more on education.

- **Post-Mandate Period (2013-19):** Infosys has always tried to add new CSR domains every year in the post-mandate period. The company has always tried to add new projects in each of the CSR domains except hunger eradication and malnutrition until 2018-19.

6.1.2 Wipro

- **CSR expenditure: The year-wise expenditure on CSR activities by Wipro is given below:**

Table IV: CSR expenditure of Wipro for the post-mandate period

YEAR	AMOUNT TO BE SPENT (in crores)	AMOUNT ACTUALLY SPENT (in crores)
2018-19	176.1	185.3
2017-18	183.3	186.6
2016-17	176.4	185.3
2015-16	156	159.8
2014-15	144.1	132.7
2013-14	NA	16
2012-13	NA	16

Source: Annual Reports of Wipro 2012-19

- **Observations:** As it can be observed, the CSR expenditure of Wipro has even gone beyond 2% in the financial years 2015-16, 2016-17, 2017-18 and 2018-19 in the **post-mandate period.** Wipro did not contribute 2% in 2014-16. The CSR expenditure during the years 2007-12 was of negligible amount because the CSR requirement of investing 2% of the average net profits of the immediately preceding three years was proposed in December 2012.

➢ **CSR domains:** The CSR domains of Wipro are as follows:

Table V: CSR domains of Wipro

TITLE
Education
Community healthcare
Environmental sustainability and ecological balance
Rural development projects
Art & culture
Wipro foundation reserve
Protection of national heritage sites and urban public space

Source: Annual Reports of Wipro 2007-19

- In the years (2007-13) before the post-mandate period, until 2012 no data is available on CSR for analysis. In 2012-13, the company's focus was mainly on education, community healthcare and digital inclusion.

- **Post-Mandate Period (2013-19):** Wipro has always tried to add new CSR domains every year in the post-mandate period. The company has always tried to add new projects in each of the CSR domains until 2018-19. The remaining domains were added in the post-mandate period.

6.1.3 HCL Technologies

➢ **CSR expenditure:** The year-wise expenditure on CSR activities by HCL Technologies is given below:

Source: Annual Reports of Wipro 2012-19

YEAR	AMOUNT TO BE SPENT (in crores)	AMOUNT ACTUALLY SPENT (in crores)
2018-19	176.1	185.3
2017-18	183.3	186.6
2016-17	176.4	185.3
2015-16	156	159.8
2014-15	144.1	132.7
2013-14	NA	16
2012-13	NA	16

- **Observations:** As per the above table, it can be observed that the amount spent towards CSR activities and projects is not up to the mark (less than 2%) in the post-mandate period (2013-19). The CSR expenditure during the years 2007-12 was of negligible amount because the CSR requirement of investing 2% of the average net profits of the immediately preceding three years was proposed in December 2012.

➢ **CSR domains:** The CSR domains of HCL Technologies are as follows:

Table VII: CSR domains of HCL Technologies

TITLE	TITLE
Art and culture	Conserve the Nilgiri biosphere reserve
Destitute care and rehabilitation	Educating adolescent girls about reproductive health
Women empowerment	Reformation and rehabilitation
Ensuring animal welfare	Youth development through skilling
Healthcare and preventive healthcare	Early childhood care and development
Livelihood enhancement and education	Care and support for the elderly
Rural development	Ensure women safety and dignity
Hunger and poverty eradication	Afforestation and conservation of trees and forests
Enhancement of vocational skills for women	Water sanitation and hygiene
Screening for grant awardees and scholarships	Environment protection
Disaster preparedness and response	-

Source: Annual Reports of HCL Technologies 2007-19

- In the years (2007-13) before the post-mandate period until 2013, no data is available on CSR for analysis.

- **Post-Mandate Period (2013-19):** CSR domains of HCL Technologies have been quite diverse as compared to the other four companies in the post-mandate period.

- As it can be observed that HCL Technologies has tried to focus upon different segments of the society including young children (adolescent girls), youth, activities related to the betterment of women in the country, scholars contributing to various fields and elderly people which is quite impressive when compared to the other companies that have been selected. The company has tried to contribute to various issues in the current scenario including women's safety.

6.1.4 Tech Mahindra

CSR expenditure: The year-wise expenditure on CSR activities by Tech Mahindra is given below:

Table VIII: CSR expenditure of Tech Mahindra for the post-mandate period

YEAR	AMOUNT TO BE SPENT (in crores)	AMOUNT ACTUALLY SPENT (in crores)
2018-19	84.41	90.36
2017-18	71.55	76.42
2016-17	60.82	62.33
2015-16	41.4	46.91
2014-15	30.88	50.5
2013-14	NA	52.2
2012-13	NA	43

Source: Annual Reports of Tech Mahindra 2012-19

- **Observations:** As per the above table, the CSR expenditure has been beyond 2% starting from the year 2014-15 to the recent year 2018-19 in the **post-mandate period.** The CSR expenditure during the years 2007-12 was of negligible amount because the CSR requirement of investing 2% of the average net profits of the immediately preceding three years was proposed in December 2012.

➢ **CSR domains:** The CSR domains of Tech Mahindra are as follows:

Table IX: CSR domains of Tech Mahindra

TITLE
Employability
School and technical education
Partnerships
Public wealth
Mahindra educational institutions

Source: Annual Reports of Tech Mahindra 2007-19

- In the years (2007-13) before the post-mandate period until 2012, no data is available on CSR for analysis. In 2012-13, the company's focus was on education.
- **Post-Mandate Period (2013-19):** The remaining domains were added in the post-mandate period.
- It can be easily observed that education has been the main focus of Tech Mahindra even during the years (2007-13) and the post-mandate period (2013-19).

6.1.5 TCS

➢ **CSR expenditure:** The year-wise expenditure on CSR activities by TCS is given below:

Table X: CSR expenditure of TCS for the post-mandate period

YEAR	AMOUNT TO BE SPENT (in crores)	AMOUNT ACTUALLY SPENT (in crores)
2018-19	542	527
2017-18	496	400
2016-17	445	379
2015-16	358	294
2014-15	285	219
2013-14	NA	93.6
2012-13	NA	71.60

Source: Annual Reports of TCS 2012-19

- **Observations:** As per the table, the CSR expenditure of TCS has never gone beyond 2% of its average net profits of immediately preceding three years in the post-mandate period. The CSR expenditure during the years 2007-12 was of negligible amount because the CSR requirement of investing 2% of the average net profits of the immediately preceding three years was proposed in December 2012.

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➢ **CSR expenditure:** The year-wise expenditure on CSR activities by TCS is given below:

Table XI: CSR domains of TCS

TITLE
Education
Health
Environmental sustainability
Hunger and poverty eradication
Affirmative action
Contribution towards the PM relief fund
Protection of national heritage sites and urban public space
Contribution towards TCS foundation
Promotion of gender equality and women empowerment (care and support for the elderly)
Flood relief

Source: Annual Reports of TCS 2007-19

- In the years (2007-13) before the post-mandate period until 2012, no data is available on CSR for analysis. In 2012-13, the company has been active in the areas of

education, health, environment and affirmative action programs.

- **Post-Mandate Period (2013-19):** CSR domains of TCS have been quite diverse as compared to the other four companies selected in the post-mandate period (2013-19).

- Flood relief is one of the CSR domains that has been adopted solely by TCS when compared to the other companies that have been selected.

Notes: A separate section on CSR is there in the annual reports of all the selected five companies with effect from 1st April 2014 as per the CSR requirements of the Companies Act 2013 in which a brief follow up of the CSR activities and projects of the company, a link for reference for CSR policies, projects, programs and initiatives, the composition of CSR committee formed, average net profits of the immediately preceding three years, amount of CSR expenditure, details of CSR expenditure are provided.

All kinds of responsibilities have been fulfilled by Infosys, Wipro and Tech Mahindra including philanthropic, ethical, legal and economic responsibilities (discussed in detail in chapter three). The remaining two companies namely; TCS and HCL Technologies Ltd. fulfilled the philanthropic, ethical and economic responsibilities except for the legal responsibility of contributing 2% of the average net profits of immediately preceding three years towards CSR contribution.

Each of the selected five companies has tried to widen its CSR domains after it was made mandatory in 2013 in India (effective from 1st April 2014) as per the Companies Act, 2013. The addition of new projects annually in almost each of the CSR domains by these companies has been consistent as per the annual reports of the selected five companies.

6.2.2 Inter-company analysis: The inter-company analysis has been done taking into account the CSR expenditure of the selected companies that varies. Similarly, the CSR projects and activities are undertaken by these companies also vary, the variations have been given as follows:

- CSR Expenditure: CSR expenditure has been divided into two categories as follows

- Contribution towards CSR (2% and more): Infosys, Wipro and Tech Mahindra fulfill the criteria of spending 2% or beyond of the average net profits of the immediately preceding three years in the following years mentioned.

Infosys :	Wipro :	Tech Mahindra :
2016-2017, 2017-18, 2018-19.	2015-2016, 2016-17, 2017-18. 2018-19	2014-2015, 2015-16 2016-17, 2017-18. 2018-19

Figure III: Contribution towards CSR (2% and more)

Source: Author's compilation

- Tech Mahindra is better than the other two companies in terms of contributing more than 2% towards CSR. The company started investing more than 2% right from the financial year 2014-15 which is earlier than the other two companies.

- **Contribution towards CSR (Less than 2%):** The remaining two companies' namely HCL Technologies ltd and TCS CSR expenditure has been below 2% in the following years mentioned.

HCL Technologies: 2013-2019	**TCS:** 2013-2019

Figure IV: Contribution towards CSR (2% and less)

Source: Author's compilation

- Even though these companies' CSR expenditure is not up to the mark but the domains are quite diverse also including recent issues such as women empowerment. The only reason these companies are lagging behind the other three companies namely; Infosys, Wipro and Tech Mahindra is because of the lower CSR expenditure.

- Penalties should be imposed for non-compliance with section 135 of the Companies' Act, 2013. The amendments that have been made in 2019 in the context of CSR in the Companies' Act, 2013 will help in the CSR contribution for the eligible companies because the managers of the companies are going to consider keeping a required amount of CSR at the beginning of the financial year itself.

➤ **CSR activities and projects were undertaken:** The similarities and differences between the CSR activities and projects of the selected five companies are as follows:

Table XII: Similarities and differences between CSR domains of the selected five companie

Company name/ Domains	Infosys	Wipro	HCL Technologies	Tech Mahindra	TCS
Education	✓	✓	✓	✓	✓
Rural development	✓	✓	✓	✓	✓
Healthcare	✓	✓	✓	✓	✓
Sustainability	✓	✓	✓	✓	✓
Art and culture	✓	✓	✓	✓	✓
Protection of national heritage sites	✓	✓	✓	✓	✓
Hunger and poverty eradication	✓	✓	✓	✓	✓
Rehabilitation of homeless and orphans	✓	✗	✓	✗	✓
Disaster management relief	✓	✗	✓	✗	✓
Gender equality	✗	✗	✓	✗	✓
Women safety and dignity	✗	✗	✓	✗	✓
Enhancement of vocational skills for women	✗	✗	✓	✗	✓
Care and support for the elderly	✗	✗	✓	✗	✓
Educating adolescent girls about reproductive health	✗	✗	✓	✗	✗
Early childhood care and development programs	✗	✗	✓	✗	✗
Livelihood enhancement programs	✗	✗	✓	✗	✗
Projects related to flood relief	✗	✗	✗	✗	✓
Technical education and specific education	✗	✗	✗	✓	✗
Employability	✗	✗	✗	✓	✗

Source: Author's compilation based on annual reports of the selected five companies (2007-19)

- **Observations:** As it can be observed from the above table, the basic domains including education, healthcare, environmental sustainability, art and culture, protection of national heritage sites, hunger eradication and malnutrition, and rural developments have been adopted by each of the selected five companies. Infosys, HCL Technologies and TCS have been quite active in the areas of rehabilitation of homeless and orphans and disaster management relief. HCL Technologies and TCS have been quite active in the areas or the domains that should be addressed in the current scenario including gender equality, women empowerment and betterment. The company's focus has been on various segments of the society including young children, adolescent girls and educating them about reproductive health, youth, enhancing women's safety and dignity and finally care and support for the elderly. It is also the only company out of the companies selected which contributes towards livelihood enhancement programs. Tech Mahindra's main focus has always been on education and various types of education as it can be observed in the table including school, technical and special education and also towards employability. Contribution to educational institutions has also been made by the company. TCS is one of the companies that have active interests especially in the area of flood relief.

  In a nutshell, it can be said that the CSR domains of HCL Technologies and TCS have been quite diverse as compared to the other four companies selected namely; Infosys, Wipro, and Tech Mahindra. The CSR domains HCL Technologies' and TCS are up to the mark, the only reason they are lagging is because of non-compliance of section 135 of the Companies Act, 2013. On the other hand, Infosys, Wipro, and Tech Mahindra need to redefine their CSR domains as per the current scenario. Ideally, a combination of both (compliance of section 135 of the Companies Act, 2013, and diverse CSR domains) should be adopted by these companies and companies, in general, belonging to the IT sector.

7. Conclusion

The good thing about working towards CSR in the IT sector is that the companies can use their technology and expertise to solve the social problems prevailing in the markets as the IT sector is uniquely positioned in terms of the techniques and resources that are used to give back to the society that makes it different from the other industries. The companies that have been selected for this study are Infosys, Wipro, HCL Technologies ltd., Tech Mahindra and TCS depending upon their CSR expenditure and the CSR domains of the companies until 2018-19. The objective of this study is to analyze the CSR expenditure and the CSR domains undertaken by these companies and how both of these vary for twelve (12) years starting from the pre-mandate period (2007-2013) and post-mandate period (2013-2019) when CSR was made mandatory in 2013 in India as per section 135 of the Companies Act, 2013. The sources and methodology used to include a content analysis of the annual reports of the selected five companies. The findings suggest that Infosys, Wipro and Tech Mahindra are better at fulfilling the CSR requirements as per section 135 of the Companies Act, 2013. On the other hand, CSR domains of HCL Technologies and TCS are quite diverse including the issues that should be addressed in the current scenario like gender equality and women empowerment. Infosys, HCL Technologies and TCS have been quite active in the areas of rehabilitation of homeless and orphans and disaster management relief. HCL Technologies and TCS have been quite active in the areas or the domains that should be addressed in the current scenario including gender equality, women

empowerment and betterment. The company's focus has been on various segments of the society including young children, adolescent girls and educating them about reproductive health, youth, enhancing women's safety and dignity and finally care and support for the elderly. It is also the only company out of the companies selected which contributes towards livelihood enhancement programs. Tech Mahindra's main focus has always been on education and various types of education as it can be observed in the table including school, technical and special education and also towards employability. Contribution to educational institutions has also been made by the company. TCS is one of the companies that have active interests especially in the area of flood relief.

Companies including Infosys, Wipro and Tech Mahindra fulfill the CSR requirements as per section 135 of the Companies Act 2013. The reason they are lagging is because of the limited CSR domains covered. For instance, these companies could add domains that are relevant in the current scenario such as women empowerment and dignity, care, and support for the elderly. The remaining companies including HCL technologies ltd. and TCS needs to focus more upon fulfilling the CSR requirements as per section 135 of the Companies Act 2013. The measures for improvements can be to allocate a separate amount for CSR activities right at the beginning of the financial year depending upon the profits of the respective companies for the companies. A combination of both; fulfilling CSR requirements and diverse CSR domains should be adopted by the companies in the IT sector. In the context of future research, reports related to various projects can also be prepared so that they can work as an additional source of data. Balanced use of primary and secondary data so that the perceptions towards CSR can also be analyzed. A study in CSR in the IT sector can be carried on in the international context. A comparative analysis can be done between different sectors in the economy. More companies in the IT sector and trending startups can be added so that a comparative analysis can be done between these two. The practical implication of this study is that one can analyze the selected five companies based on CSR domains as well as the CSR expenditure.

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Iron Man of Silver World – An Enquiry into Alchemy of Shri Vishwakarma Silver House

H. M. Jha Bidyarthi*, A. K. Srivastava**, Mayur A. Dande***,
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Abstract

One hundred and thirty-five years ago, Keshavramji Jangid, one of the three sons of Shoramji Jangid and a native of Ramgad village under Churu district of Rajsthan relocated to a small town Khamgaon in the neighboring State of Maharashtra and resumed with his family business of making silver articles. He was a great artisan and trailblazer who had crafted a pure silver made small moving train attached with bogies carrying edibles kept on the round dining table of the then king of Ramgad. This lasting invaluable legacy was entrusted to his adopted son Jawaharmalji Jangid with unbending stiff directions. "Work with integrity evaporates scarcity. Generations may perish as an aftermath of ill and filthy ways of earning. Customers come willingly and gladly where righteousness resides." The lighthouse suggestions were practiced in letter and spirit by Jawaharmalji and he succeeded in expanding the silver business manifold. In 1937, his son Chiranjilalji Jangid augmented the business and shifted it from the sarafa (jewelry) market to own land and showroom named "Shri Vishwakarma Silver House" (in short SVSH). The fifth generation of the Jangid family under the capable leadership of Jagdish Prasad Jangid who entered the business in his early teens saw enormous diversification of silver articles consisting of thousands of varieties ranging from a few grams to 250 kilograms. Dr. Kamal Jangid who is currently one of the partners of this House represents the sixth generation of the family who despite being himself an M.B.B.S., dedicated to leapfrog the family legacy and associated his son Rahul – the seventh generation of this family – too with this business. SVSH is a national brand today with automated processes of sheet making, molding and wire making to cater customized solutions to fulfill the demands of a huge customer base including Indian celebrities, top-notch industrialists, shrines, and temples. SVSH chose not to register for Hallmark as the purity of silver under Hallmark is 92.50% whereas the purity of silver articles designed by SVSH stands at 99.50%. Based on primary research this case highlights archetypal and vintage business's credibility which is in a position to edify and cultivate the entrepreneurial and innovative mindsets, specifically in the pioneering stage.

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Introduction:

Entrepreneurship emanates from many characters. Honesty, integrity and purity were the three pillars on which rode Jagdish Prasad Jangid, the entrepreneur of Shri Vishwakarma Silver House understudy, which not only brought him immense personal success in silver business but fetched a brand identity for this House and went further to popularize the city he did his business in as the Silver City, Khamgaon (Lokmat, 2012). Such is the impact of these eternal entrepreneurial traits, The present case is a narrative of honesty, integrity and purity characters of a very successful entrepreneur for imbibing lessons in entrepreneurship and innovation management area, and successful succession planning of business of generations.

Family business succession planning:

Succession planning is a forward-looking process that ensures the effective performance and transition of the business by providing coaching for leadership development and replacement while retaining family harmony and goodwill. Succession planning involves working with owners and family members to determine future ownership, employment, and resource allocations for those working in the business and those outside it. This could be a second-generation sibling partnership with one or more third-generation employees. Succession planning is the process of pinpointing key leadership needs and intellectual talent throughout the organization over time and preparing individuals for present and future work responsibilities. (LeCouvie and Pendergast, 2014) Shri Vishwakarma Silver House, the organization under study, is a family business that has seen excellent succession planning over six to seven generations while retaining the family harmony and brand equity.

The methodology of the study:

Shri Vishwakarma Silver House is an offshoot of the old family business. Hence every member of its family is so engrossed in this business that each one of them had a story about it to share. Initially, the data collection started with formal meetings of authors with one of the partners of the firm Dr. Kamal Jangid but very soon it was realized that the members of his family might give invaluable input to complete this case study. Accordingly, the venue of interaction shifted from the Shri Vishwakarma Silver House to the home of Dr. Kamal Jangid. The authors sat with his mother, aunts, maternal uncle, wife, and son in the drawing-room of his home for hours together to hear the stories from their mouths. They had a lot to say and at times it looked like a situation of information overload for authors. But the family members were so affectionate to the authors that they patiently and chronologically shared their stories one after the other. However, some information was also collected from the newspaper cuttings available with Dr, Kamal Jangid and the records of his firm. The primary data was collected over two months including six weekly meetings with Dr. Kamal Jangid, one of the partners of the firm and two meetings with his family members running in three to four hours each.

The objectives of this case study are to capture the unique and eternal entrepreneurial traits of the protagonist and to identify the process of succession planning of the business of Shri Vishwakarma Silver House through its six to seven generations without any disintegration of the original business and through a smooth transition.

Enterprising generations of the Jangid Family:

Seven generations of the Jangid family have

carried on the silver business. It's a huge family as shown in the annexure no. - 1. The chart in the annexure -1 shows the huge banyan tree of the Jangid family indicating its seven generations. What an enterprising family it has been? There are thirty-one members in this family in the seven generations and each one of them could claim the proprietary of the family business. Typically in such type of family, a dispute over hair apparent of the business has been commonly seen leading to segregation of the family business in smaller units and finally to its ultimate death. This family very smoothly transferred the family business from one generation to another generation ensuring that the business grows by leaps and bound and at the same time there is no dissension in other members of the family left out from the main family business. It took the following route to reach the present shape of Shri Vishwakarma Silver House.

Keshavramji Jangid
↓
Jawaharmalji Jangid
↓
Chiranjilalji Jangid
↓
Jagdish Prasad Jangid
↓
Dr. Kamal Jangid
↓
Rahul Jangid

The journey of Shri Vishwakarma Silver House:

Long ago round about the year 1884 there lived a carpenter named Shoramji Jangid in Ramgad village of Churu district of Rajasthan. He had three sons namely Keshavramji, Baluramji and Gulabji. Kesharamji and Baluramji were great artisans who had crafted a pure silver made small moving train attached with bogies carrying edibles kept on the round dining table of the then king of Ramgad. They had also crafted a silver made fountain sprinkling colorful water for being kept in the drawing-room. (Joshi, 2016) Those were British days and somebody came to Kesharamji and confessed that if it came to the knowledge of the British government they would chop off your hands. He got afraid and fled along with his wife from Ramgad. Baluramji also accompanied him along with his family members. They traveled villages after villages on foot and reached Khamgaon in the neighboring State of Maharashtra. Baluramji went back to Rajasthan after some time but Kesharamji finally settled at Khamgaon itself. The wife of Keshavramji had brought some money from Ramgad in her fringe. Keshavramji started his silver artisan work with this small money in the Sarafa (Jewelry) market of Khamgaon. His wife will visit different homes, meet ladies and bring orders and he would manually make those silver articles. Kesharamji did not have an issue. He adopted Jawaharmalji, one of the four sons of Baluramji, as his son. He entrusted the legacy of his family business to Jawaharmalji with unbending stiff directions. "Work with integrity evaporates scarcity. Generations may perish as an aftermath of ill and filthy ways of earning. Customers come willingly and gladly where righteousness resides." The lighthouse suggestions were practiced in letter and spirit by Shri Jawaharmalji and he succeeded in expanding the silver business manifold. Jawaharmalji was blessed with three sons namely Giriwarji, Chiranjilalji and Basantilalji. In the neighborhood of Jawaharmalji shop in the jewelry market was a shop of a goldsmith named Mr. Soni who was a rich person. Mr. Soni would often come to Jawaharmalji asking to do some business. Jawaharmalji did not have money to expand his silver business and so he proposed for the same to Mr. Soni. Thus in the year, 1937 Jawaharmalji entered into a partnership with Mr. Soni who brought in Rs. 39,400 as capital to his business with which Jawaharmalji established a workshop with a few machines and dyes. He named his partnership firm as Shri Vishwakarma Silver

Works. This partnership lasted for seventy years until the year 2007-08 when the two partners amicably decided to dissolve their partnership with mutual consent. Jawaharmalji did not attend to works later on and hence his second son Chiranjilalji took over the family business while his other two brothers settled in separate businesses including the business of a sawmill at Akola some 50 Km. from Khamgaon. Chiranjilalji started expanding the business but he died at an early age of 55 years. During his lifetime only his son, Jagdish Prasad took over the family business in the year 1960 at the age of just 18 years.

Jagdish Prasad Jangid – The Iron Man:

Jagdish Prasad, educated only up to school level, was a visionary man. Though he started gold jewelry works also he concentrated on silver articles mainly. He used craftsmen of different places like Varanasi, Odisha, Rajasthan, West Bengal, etc. for completing big orders. He stressed on purity, integrity, honesty and workmanship. The manufactured articles of Shri Vishwakarma Silver House (SVSH) are pure to the extent of 99.50%. He saw to it that his customers got 100% return of their money invested in a silver article by way of purity. The making charges were also kept flexible and he did not insist much on making charges as well. As a result, SVSH became known for purity in a very short time during the regime of Jagdish Prasad. So much so that he took a very bold decision not to register his firm for Hallmark as Hallmark ensures purity to the extent of 92.50% only as against SVSH purity of 99.50%. Thus SVSH also became a brand for pure silver and the city of Khamgaon became popular as a silver city, Khamgaon. It may be noted that SVSH is the only firm manufacturing silver articles with a purity percentage of 99.50.

Jagdish Prasad Jangid launched a very unique product in the year 1976 which became a hot cake in the market. It was silver-coated plastic boxes of different sizes used for the distribution of dry fruits and nuts etc. amongst the guests. These boxes became so popular that the SVSH used to get three months booking for the supply of plastic boxes to different places like Mumbai, Aurangabad, etc. in Maharashtra and outside. These boxes were purchased in lots by other jewelers to sell it to final customers. Initially, it was manufactured with 34 grams of silver-coated on it but later on, there came many variations of this product in the market which forced SVSH to stop its production to keep its integrity intact.

Another unique character of Jagdish Prasad Jangid came on display when he had business dealings with Mahanubhav Temple of Nagpur. They brought their very old silver articles of the temple for getting new articles manufactured by SVSH. The old silver articles were tested by SVSH for its purity and the corresponding price paid to the Temple representatives and order for making new articles were accepted from them. The old silver was sent to the workshop for melting. On melting it was found that in the center of these old silver articles were golden plates. Jagdish Prasad Jangid immediately called up the representatives of Mahanubhav Temple, Nagpur, informed them about the same, and paid the price of their articles including the price of gold found on the melting of silver articles. This is what motivates the authors to call Jagdish Prasad Jangid as the "Steel Man of Silver World". This is an astute example of business ethics.

There are two sons of Jagdish Prasad namely Dr. Kamal Jangid – the elder son and Mr. Ajay Jangid – the younger son. Dr. Kamal Jangid is an M.B.B.S. and he was pursuing his M.D. course when he decided to quit his studies

midway and join his father's hand in the year 1993 in running Shri Vishwakarma Silver House which was shifted to its present venue in the main market of Khamgaon outside jewelry market in the year 2005. Another firm was established by Jagdish Prasad in the name and style of the Shri Vishwakarma Silver Emporium at Mumbai. His two sons Dr. Kamal and Mr. Ajay are now partners of these firms where Dr. Kamal sits in Khamgaon and looks after Shri Vishwakarma Silver House and Mr. Ajay sits in Mumbai and looks after Shri Vishwakarma Silver Emporium (SVSE). However, the products of SVSE, Mumbai are also consumed by SVSH, Khamgaon. Thus the two sons were settled independently before Jagdish Prasad Jangid died in the year 2018 at the age of 75 years. Dr. Kamal has already associated his eldest son Rahul, who is a graduate in business administration from Poddar International, Mumbai, after the death of his father with SVSH thus introducing the seventh generation of his family in the family business. The huge shape that SVSH, Khamgaon has taken today is creditable to the Iron Man Jagdish Prasad. This credit is well acknowledged through the conferring of several prestigious awards on Jagdish Prasad though in principle he avoided accepting these awards. Some such awards are Vyapar Ratna by Vidarbha Chamber of Commerce, Nagpur, (Lokmat, 2012) Khamgaon Ratna by Khamgaon Club (Deshonnati, 2012), etc.

Working of Shri Vishwakarma Silver House:

Silver is the raw material which is used by SVSH and is imported from African countries and England by banks like State Bank of India and Nova Scotia Bank. Various mediating companies procure this silver from these banks at Mumbai and supply it to SVSH. The raw silver now comes in a slab of 30 Kg. whereas earlier it used to be supplied in 100 grams of biscuits. Approximately 1000 – 1500 Kg. of raw silver is consumed by SVSH per month on an average basis. Customers place orders of the desired silver article(s) in requisite weight to SVSH on their own. The SVSH does not advertise for its sale and its brand equity in the market attracts the customers from all walks of life from a common man to a celebrated dignitary towards it. The customers leave the design and workmanship of the article on the discretion of SVSH which speaks volumes about the trust of customers on it. The articles are then manufactured either through handmade or machine-made depending on the order and also on the nature of the ordered article in the factory/workshop of SVSH by its workers/craftsmen. Meena (enamel) work and oxidation process has also been started in the factory of SVSH. 15-18 workers are working in different sections of SVSH including the packing section where packing of silver articles is done regularly for supplying them to outstation customers through various means of transportation. Pricing of articles is done based on the prevailing price of silver in the market at the time of accepting the order. However, if the prevailing price is Rs. 35000 per Kg. of silver the article is sold to the customer for Rs. 37,000- 38,000 to Rs. 45,000 – 48,000 depending upon the quality of workmanship done on the article. If gold plating of the article is also done then its price further rises. Generally, SVSH charges 10% - 30% on the price of silver as workmanship charges to arrive at the price of the manufactured silver article. There are thousands of varieties of silver articles manufactured today by SVSH which includes a small item of 2.5 gram silver (like silver coins) to 250 kg. of the idol of Goddess Lakshmi of Tekadi Ganesh Temple, Nagpur. It has also made the three doors each of 100 kg. Silver of Naraini Seva Trust, Lonawala besides Ganesh idol of 4 kg. silver for Amitabh Bacchan. The list is endless.

Products of Shri Vishwakarma Silver House:

Shri Vishwakarma Silver House manufactures a wide variety of silver articles weighing a minimum of 2.5 grams to a maximum of 250 Kg. There are thousands of items manufactured under different categories such as home utensils, mementos, gifts, showpieces, furniture, baby items, bar accessories, Pooja items, idols, temples and shrine items and other miscellaneous items etc. as shown in the annexure no. – 2 touching almost all walks of life of human beings.

Distinguished customers of Shri Vishwakarma Silver House:
Shri Vishwakarma Silver house enjoys very high brand equity. As a result of it, many distinguished persons and institutions are its customers which include industrialists, politicians, celebrities, temples, shrines and trusts, associations and charity organizations, jewelers etc. as shown in the following table no. – 2.

Significant practices:

The business of gold and silver is subject to many ups and downs in the market frequently. During the year 2012-13, the silver was rated in the market at Rs. 76,000 per kg. In the year 2015, this price fell to Rs. 37,000 per kg. (Joshi, 2016) This gave a great jolt to the business of SVSH. It had booked an order from the customers when the silver price was low in the market. The market rate of silver increased but SVSH did not apply pressure on its customers and ensured delivery of booked articles at low price absorbing huge losses into the business. This happened during the lifetime of Jagdish Prasad who again showed his mettle by sticking to his commitment to his customers despite huge losses.

It has already been mentioned that SVSH had finalized dealing with Mahanubhav Temple, Nagpur by paying the price of its old silver articles. On the melting of these old silver articles was found a gold plate inside these articles. Jagdish Prasad called the people of Mahanubhav Temple, Nagpur and paid them an additional price for this new-found gold in their silver and thus set an example of honesty and integrity in the silver business.

Once the Raipur residence of one of the customers of SVSH was raided income tax authorities. They found a huge chunk of gold and silver articles in the house. They separated silver articles bearing SVSH stamp and informed the resident of the house that these silver articles shall be valued at 100% as it is pure silver having been manufactured by SVSH. Post-raid this incident was conveyed to Jagdish Prasad. This testifies the extent to which the purity of silver articles made by SVSH enjoys a reputation in the market.

Challenges faced:

The business of Shri Vishwakarma Silver House is not smooth going always and it faces several daunting challenges which it has to overcome tactfully. Some of these challenges are mentioned here.

1) The gold and silver market is a volatile market. Its prices keep on changing now and then. Several factors contribute to this volatility of the market. Whenever there is a stock market crash people divert their funds from the stock market and park them into gold and silver market causing steep price rise of gold and silver. Some international developments also have a direct bearing on the volatility of the gold and silver market like sanctions on Iran and sanctions on trade from China. This is one of the biggest

challenges faced by SVSH to accommodate this volatility into its business.

2) As already mentioned, Khamgaon is a small city at a Taluka place with inadequate civic facilities. To complete customers' orders of specific design and workmanship quality craftsmen from other States are brought by SVSH to Khamgaon. These craftsmen have never shown any inclination to stay long at Khamgaon. They stay for a few days and then leave for their native places midway the job work which hampers work. This is another big challenge being faced by SVSH.

3) Once SVSH got an order from Videocon for supplying two lacs pieces of silver made deer for distribution as a gift. With small manpower, it was not possible for SVSH to comply with this order and hence it gently refused to accept the order. But Videocon people insisted that it wanted the supply from SVSH only. Finally, SVSH accepted the order. It sent its men to some village named Dahiya near Kolkata and distributed two thousand Kg. of silver amongst forty houses for completing the job in the required two months. Thus the non-availability of requisite manpower to engage silver work is another big challenge being faced by SVSH.

Conclusions:

Starting from a very small amount of money brought by the wife of Keshavramji in her fringe from her native and used in the silver business done manually, it saw a miraculous growth over 135 years to setting up a mechanized factory and achieving a turnover of about Rs. 50 crores (half a billion) per annum. The business grew from nowhere to everywhere and has earned its brand nationally. All this was possible, though being located at a small Taluka place of Khamgaon, by sincerely observing some ethical practices of honesty, integrity, purity, righteousness and workmanship. The obvious questions that arise in the mind of the reader of this case, which need to be answered to after its thorough analysis, are as follows:

1) What is unique about the entrepreneur-ship traits of the protagonist – Shri Jagdish Prasad Jangid - in this case?

2) What is the role of business ethics in some of the crucial and challenging decisions taken by the protagonist in this case?

3) What made the family business in this case to remain intact and growing from generations after generations over a large period of 135 years without any signs of disintegration and still going strong?

4) How could it be possible to transmit the entrepreneurial legacy of the family from one generation to another generation up to the seventh generation with a similar or higher level of skills and efficiency?

Times have changed a lot. Businesses, even successful ones, have to adapt to these perennial changes. Alteration in government regulations and tax reforms, retention of the artists, digital marketing, search engine optimization, facing audits, creation of higher visibility, enhanced communication with the customers, dilemma of outsourcing, novel infrastructure leading to customer experiences, professionalism, better positioning, long term branding, marketing research and constructive

use of social media is the inevitable aspects for every business. Will the SVSH emerge equally victorious and remain at the zenith of the appreciations shortly? Will the coming generations be equally inclined towards SVSH? Answers are hidden in the time's embryo.

Notes:

- Pooja-Aarti: Silver Articles used for worshiping God and Goddess
- Umbrella (Chatri): An umbrella-like silver structure over the Idol of God / Deity
- Meena Work: Enamel Work
- Marathi: State language of Maharashtra, India
- Ram Darbar: Court of King Ram
- Taluka: Block in a district
- Gurudwara: Temple of Sikhs
- Pooja Sets: Silver Articles used for worshiping God and Goddess

*The earlier version of this paper was presented at, and published in the proceedings of, International Conference on Management Cases 2019 organized by Birla Institute of Management Technology, Greater Noida, National Capital Region, Delhi, India during December 5-6, 2019.

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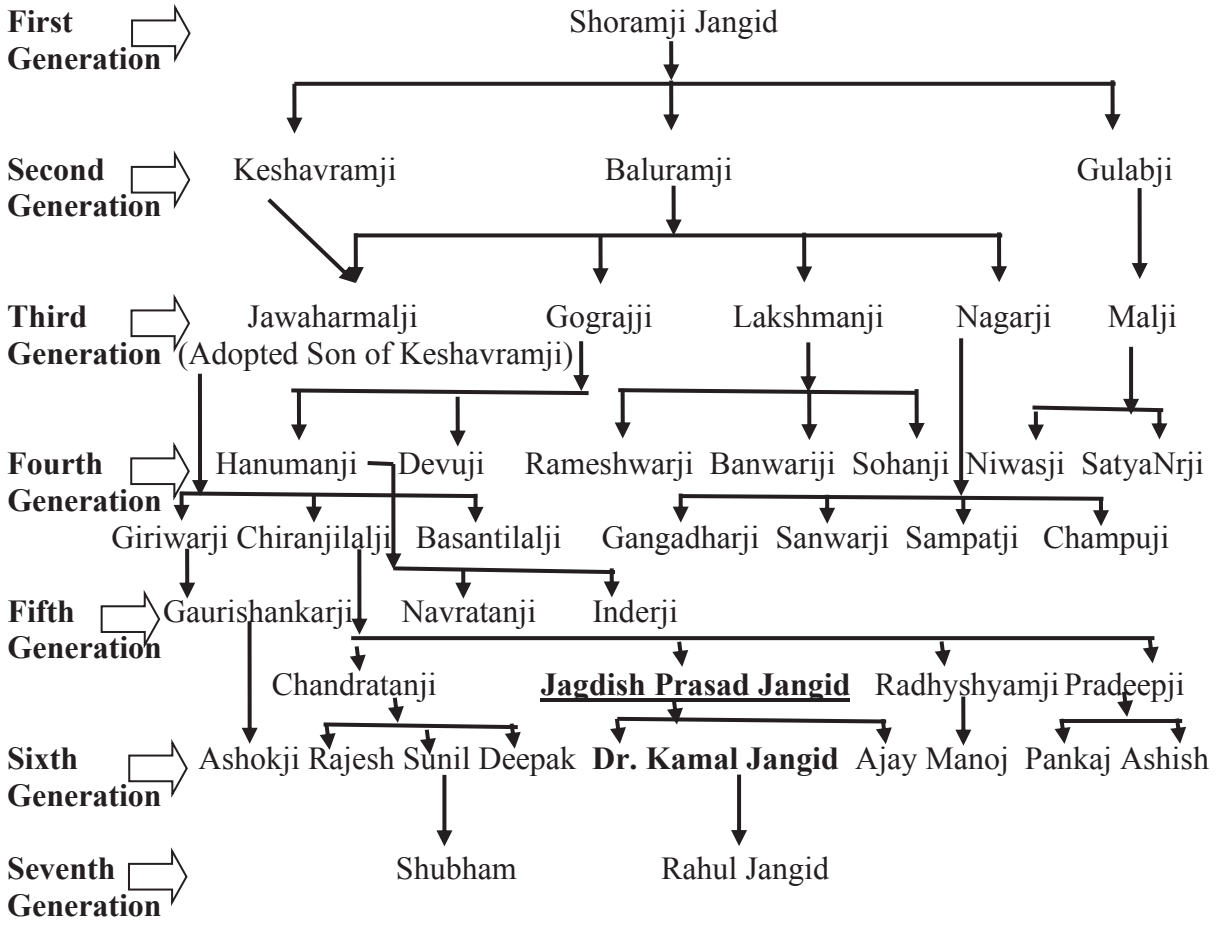
Annexure No. - 1: Showing Banyan Tree of Jangid Family



Annexure No. – 2: Table Showing Varieties of Articles Manufactured by SVSH

S. No.	**Categories of Articles**	**Items manufactured**
1.	Home Utensils	Glass, Bowl, Spoon, Plates of different sizes, kitchen utensils, dinner sets, trays, Jug, Dry Fruit Containers (For Keeping Dry Fruits), etc.
2.	Mementos	Sword, Club (Thick Heavy Stick), Bat-ball, Statues, Mementoes of different institutions as per their specifications and designs, etc.
3.	Gifts	Coins, Silver Coated Plastic Boxes, Vases (Flower Pots), Different gift items as per the choice of customers, etc.
4.	Furniture	Chairs, Tables, Beds, Sofa Set, Dining Table, Drawing Room Furniture, etc.
5.	Show Pieces	Replicas, Car, Planes, Trucks, Trains, Cycles, Oscillators, Elephants, Mousse, Urn Sets, Articles for interior Decoration, Sunglasses, etc.
6.	Baby Items	Rattle, Several Baby Toys, etc.
7.	Bar Accessories	Glass, Cups, etc.
8.	Pooja Items	Pooja Aarti Articles, Small temple, Millet, Pooja Sets, etc.
9.	Idols	Shri Ganesh, Ram Darbar, etc.
10.	Temple and Shrine Items	Palanquin, Umbrella (Chatri), Flags, Throne, Facade, Statutes, Temple Doors, Crown, Arch, etc.
11.	Miscellaneous Items	Photo Frames, Picture Frames, etc.

Annexure No. – 3: Table Showing Distinguished Customers (Indicative List) of SVSH

S. No.	Customers' Class	Individual Distinguished Customers
1.	Industries	Infosys, Videocon, Ajeet Seeds, Ankur Seeds, Penna Cement, Tractor Insecticides, NU21 Veedu Seeds, etc.
2.	Temples, Shrines and Trusts	Shri Gajanan Maharaj Mandir, Shegaon, Ganesh Tekdi Mandir, Nagpur, Mahanubhav Mandir, Nagpur, Narayani Dham, Lonawala, Amba Devi Sansthan, Amravati, Mata Vaishno Devi Temple, Katra, Jammu, Shri Siddhivinayak Temple, Mumbai, Gurudwara, Nanded, Balaji Temple, Khamgaon, etc.
3.	Film Celebrities	Amitabh Bacchan
4.	Politicians	Sunil Mungantiwar – Former Minister, Late Vilasrao Deshmukh – Ex-Chief Minister, P. N. Gadgil – Congress Spokesperson, Ajay Sancheti – Former Minister, Arun Jetly, Former Minister, Rajeshwar Reddy, Former Minister, etc.
5.	Associations	Vidarbha Cricket Association
6.	Jewelers	Leading Jewelries Shops of the country

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