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CSR Score and Financial Performance of Corporates

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ABSTRACT

Corporate Social Responsibility (CSR) involves integrating social and environmentally caring activities with business operations, so that responsible behaviour towards all stakeholders lead to sustainable business success. However, in the absence of any specification (at the time of study, i.e., 2011-15), the voluntary CSR activities varied distinctively in scope and dimension across corporates making comparability and evaluation of CSR activity reporting difficult. In this backdrop the aim of the study is to enable a uniform inter-firm comparison by designing an index and exploring possible linkages between CSR practices and financial performance as also the direction of causality, i.e., what acts as an antecedent and consequent for this relationship. The methodology adopted has been to design an index to measure CSR score and empirically test it with sampled data. The sample for the study includes 100 companies which consistently tops BSE list based on market capitalization for the period 2011 to 2015. The result of this study shows that improved financial performance (reflected in both accounting and market based measures) has a positive impact on CSR score of subsequent period. However, short term results cannot influence the market veluy of equite sharas.

Key words: CSR, Positive Synergy Hypothesis, Environmental Concerns.

I. INTRODUCTION

Corporate Social Responsibility (CSR) is integrating social and environmental concerns with business operations so that responsible behaviour towards all stakeholders lead to sustainable business success. The impact of modern economic activities on the quality of human and social life has led to a growing concern in society about CSR. The concept of CSR has a long and varied history. It is possible to trace evidences of social and environmental concern about effects of business as old as trade and business itself. The code introduced by King Hammurabi in ancient Mesopotamia in around 1700 BC, in which negligence by builders, innkeepers or farmers causing perhaps the earliest legislation relating to social concern of business. However, with industrialisation, the impact of business on society and the environment reached a new level calling for social

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awareness and initiatives of business.

The ongoing debate on changing approach of CSR moving from philanthropic to responsible business practice raises the question: under what conditions will CSR policies and practices enhance firms' social and financial performance? Scholars are trying to examine conditions under which CSR actions might have a greater payoff for firms. An emerging view that CSR can contribute to the financial performance of a company has been described as the 'enlightened shareholder value approach'¹ which suggests that corporate decision-makers must take care of a range of social and environmental affairs in order to maximise long-term financial returns (Brine et al., 2007).

India has been home to multiple religions and philosophical disciplines. One of the overriding characteristics, which run across these disciplines and denominations, is the virtue of giving and doing good. Apart from individual acts of charity, institutional philanthropy began to take shape around the 18th century. Business involvement in social welfare and development has been a tradition in India and could be said to have evolved from individuals' charity to institutionalized philanthropy to Corporate Social Responsibility, Corporate Citizenship and Responsible Business. The concept of parting with a portion of one's surplus wealth for the good of society is an age-old practice and many of India's leading businessmen were influenced by the theory of trusteeship of wealth propounded by Mahatma Gandhi and contributed liberally for removal of untouchability, women's emancipation and rural reconstruction.

Today India is a pioneer in the world market with reference to mandatory CSR regulations. In order to streamline the philanthropic and charitable activities of the Indian corporates and ensure accountability and transparency, the Ministry of Corporate Affairs enacted the Companies Act, 2013 to bring the concept of CSR under its average profit for the past three years on CSR. The various activities that come under the ambit of CSR policy activities have also been specified. Owing to mandatory CSR spending concern for sustainable business action in developing countries, Indian companies entering the global market are influenced to comply with international pressure. It is Indian industry's growing prominence as a social and economic actor in the national purview and mandated for companies with turnover ₹1000 crore or more, net worth ₹500 crore or more or net profit ₹5 crore or more to spend two percent of their qualified and defined profit in a developing country like India is crucial since CSR initiatives are expected to play an important role in meeting developmental objectives of poverty reduction and inclusive growth supplementing and/or substituting governmental endeavours.

II. LITERATURE REVIEW

Howard R. Bowen's (1953) book 'Social Responsibilities of the Businessman' is a literature on CSR. His work proceeded from the belief that the several hundred large responsibilities, viz., conceptual development of CSR, different approaches to measure pioneering work which was said to mark the beginning of

¹Enlightened shareholder value approach was propounded by economist Michael Jensen in 2000 and later on incorporated in the United Kingdom legislation (U.K. Companies Act, 2006). According to this approach fostering better relationships with all stakeholders by focussing on their concerns would ultimately lead to generation of long term shareholder wealth.

the modern period of businesses, were vital centres of power and decision making and that the actions of these firms touched the lives of citizens at many points. He set forth an initial definition of the social responsibilities of businessmen that refers to the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society. In a subsequent period, Davis (1973) put up both the pros and cons of social responsibility. He asserted that some socially responsible business decisions could be justified by a long, complicated process of reasoning as having a good chance of bringing long-run economic gain to the firm, along with enhanced public image and viability of business. Freeman (1984) propounded the stakeholder theory of the firm replacing the notion of managerial capitalism of maximization of stockholders wealth. He argued that the managers bore a fiduciary relationship to the stakeholders, i.e, groups and individuals who were benefited from or were harmed by, and whose rights were violated or respected by, corporate actions and they must participate in determining the future direction of the firm in which they have a stake and thus corporations should be managed in the interests of its stakeholders. It is the duty of the management to balance the multiple claims of conflicting stakeholders weightage giving primacy to one stakeholder group over another while safeguarding the welfare of the corporation.

Academic studies have looked at CSR from the definitional perspective and the interface of academic and business pushed research in the light of measurement and inferential analysis. Considerable attempts have been made to measure the socially and environmentally responsible activities of organizations both by academia and corporates. Maignan and Ferrell (2000) pointed out three main approaches of CSR measurement: expert evaluations, single- and multiple-issue indicators, and surveys of managers. Academicians have used existing reputation indices to derive new scales for measuring corporate social activities. Waddock and Graves (1997) constructed an index of CSP (as proposed by Ullman, 1985), based on the eight corporate social performance attributes rated consistently across the entire Standard and Poors 500 by the firm Kinder, Lydenberg, Domini (KLD). Each attribute in the KLD scheme was implicitly given equal weighting, ranging from major concern, concern, no concern (neutral), and from strength to major strength. Ruf *et al.* (1998) developed a scale to evaluate the relative importance of KLD's eight dimensions by using an analytical hierarchy process. Hillman and Keim (2001) tested the relationship between shareholder value, stakeholder management, and social issue participation (SIP) with data from S&P 500 firms and found evidence that stakeholder management led to improved shareholder value, while social issue participation was negatively associated with shareholder value.

The ongoing debate on changing approach of CSR from philanthropic to responsible business practice raises the issue that under what conditions CSR policies will enhance firms' social and financial performance. Scholars are trying to examine conditions under which CSR actions might have a greater payoff for firms. An emerging view that CSR can contribute to the financial performance of a company has been described as the 'enlightened shareholder approach' which suggests that corporate decision-makers must take care of a range of social and

environmental affairs in order to maximise long-term financial returns (Brine et al., 2007). But the results of empirical work till date indicate an ambiguous relationship. Review of existing literature on relationship between CSR and Corporate Financial Performance (CFP) reveals 48% of such studies showed positive relationship between them, 16% showed no relationship between them, 4% showed mixed relationship with them, and 8% showed negative relationship between them (Raza et al., 2012).

The study conducted by Waddock and Graves (1997) found Corporate Social Performance (CSP) to be positively associated with prior financial performance, supporting the theory that slack resource availability and CSP are positively related. CSP is also found to be positively associated with future financial performance, supporting the theory that good management and CSP are positively related (McGuire et al., 1988, 1990; Preston and O'Bannon, 1997). Bhat (1998) conducted a study to analyze the impact of environmental compliance (as a substitute of CSR) on firms' financial performance. The study covered Standard & Poor's 500 firms to show negative impact of non-compliance of environmental regulations on profit margins by 4% of the companies. McWilliams and Siegel (2000) estimated the impact of corporate social responsibility (CSR) on financial performance by regressing firm performance on corporate social performance, and several control variables including investment in R&D, and found that CSR had a neutral impact on financial performance. The study conducted by Roberts and Dowling (2002) showed that firms with relatively good reputations were better able to sustain superior profit outcomes over time. Brammer and Millington (2005) studied the determinants of corporate reputation within a sample of large UK companies drawn from a diverse range of industries with particular attention to the role that philanthropic expenditures and policies might have played in shaping the perceptions of companies among their stakeholders. Their findings highlighted that companies which made higher levels of philanthropic expenditures had better reputations. Bird et al. (2007) examined the extent to which a conflict actually existed by examining the relationship between a company's positive (strengths) and negative (concerns) corporate social responsibility (CSR) activities and equity performance. Their findings suggested that the market was not only influenced by the independent CSR activities, but also the totality of these activities and that the facets they value did vary over time. Makni et al. (2009)'s study verified the trade-off hypothesis and the negative synergy hypothesis and indicated that increased intervention in corporate social responsibility led to a decrease in profits and shareholder wealth – at least in the short term. The studies conducted by Brammer et al. (2006), Hassel, Nilsson & Nyquist (2011), Lopez et al. (2007), Iqbal et al. (2012) presented similar results as they analyzed CSP and financial performance across the years and found a negative relationship. Philipp Schreck (2011) proposed a statistical analysis to account for bi-directional causality between social and financial performance. The results provided no evidence that there was a generic or universal business case for CSR; however, there was a strong link between single stakeholder-related issues of CSR and financial performance.

Hirigoyen et al. (2015) examined the causal relationships between the various dimensions of CSR (human resources, human rights in the workplace, societal

commitment, respect for the environment, market behavior and governance) and financial performance (return on equity, return on assets, market to book ratio) on a sample of 329 listed companies in three geographical areas (the United States, Europe and the Asia-Pacific region). The results showed that greater social responsibility not only failed to result in better financial performance, but also that financial performance negatively impacted corporate social responsibility. This study seemed to confirm the Managerial Opportunism Hypothesis which postulated that corporate social responsibility had a negative influence on financial performance which called for a shared value approach of CSR i.e, taking the needs of multi-stakeholders seriously.

Quere *et al.* (2018) used CSR ratings issued by a major European CSR ratings agency (Vigeo) to examine in a bi-directional manner the relationships between CSR ratings and financial performance in the European context. From the obtained result of the study, they concluded that market capitalization had a positive impact on CSR rating and the risk of the company, and stock market return had negative impact on CSR rating.

Majority of the researches in India, like other developing economies, focus on the tradition, nature and character of CSR in India, perceptions about CSR, and the practices of CSR in India. In the Indian context, existing literature regarding CSR-CFP relationship is limited. Usually empirical researches are done by questionnaire surveys and content analysis because of dearth of data of CSR indices with dataset of Indian companies. However, there is an increasing trend of research on CSR in banking sector in India.

Kapoor and Sandhu (2010) examined the impact of CSR on corporate financial performance (CFP) in terms of profitability and growth after controlling for the effect of other variables on financial performance. The results indicate significant positive impact of CSR on corporate profitability and insignificant positive impact on corporate growth. Sanan, Rajput and Yadav (2014) empirically examined the interrelated aspects of CSP and CFP among thirty Indian companies listed in the BSE 30 Index for the financial year 2009–2010. CSR dimensions like governance, environment, product, community and employee relations were assessed for the purpose. The measures of corporate financial performance were accounting based indicators namely, Return on Assets, Return on Equity and Growth in Sales. Results of the study pointed out that there was no significant relationship between CSP and CFP by taking CSP as both dependent and independent variables with time lag. Some authors have used the expenditure on CSR activities as a measure of CSR. Bedi (2009) examined the relation between CSR and financial performance and compared the dependency of corporate social expenditure on financial performance. The empirical result revealed that there was a positive relationship between CSR and financial performance and the descriptive and inferential measures showed that corporate social expenditure depends upon the financial performance of the company. Chauhan and Amit (2014)'s study proposed to analyse the impact of firm characteristics toward Corporate Social Responsibility expenditure of BSE 30 index firms during the period 2007-2012. The variables used in this study were size of firm, firm profitability, firm leverage, and sales of the firm. The research found that firm size, firm profitability, firm sales, had an influence toward the CSR expenditure, while firm leverage had no

influence toward the CSR expenditure.

Gautam *et al.* (2016) combined the methodology of content analysis and use of index data to explore the relationship between CSR disclosure and financial performance of India's top 500 Companies that were ranked by Dun and Bradstreet on the criteria of total income, net profit, net worth and market capitalization. Weighted CSR was considered as a variable for CSR disclosure using both content analysis result and Karmayog rating. Both the Hypotheses that 'better financial performance results in improved CSR' and 'improved CSR leads to better financial performance' were accepted as positive relationship was found between indicators of financial performance and CSR disclosure and vice versa though the findings indicated that variables like size and industry sector were insignificant when explaining the aforementioned relationship.

III. RESEARCH OBJECTIVE

The existing literatures emphasise the importance given to CSR by academia and industry. However, in the post Companies Act 2013 scenario, and in the absence of specific regulations and guidelines, corporate reporting on CSR varies distinctively in scope and dimension across corporates making comparability and evaluation of CSR activity reporting difficult.

The academicians have attempted to design indices to make CSR comparable across companies and to enable a comprehensive evaluation of a company with respect to its CSR activity reporting in their Annual Reports. But researchers posit that none of the indices are able to evaluate both the qualitative and quantitative aspects of the CSR disclosure reporting the strengths and concerns that may be relevant to stakeholders.

The survey of existing literature about impact on CSR on social performance and financial performance reveals that majority of the studies are from developed economies and there is lack of evidence about emerging markets like India. Rahman Belal (2001) stated that although extensive research on CSR shaping a firm's performance had been put through in developed countries, there was a paucity of such studies in India. Statistically examined studies on CSP and CFP relationship including other factors based on CSR disclosure were negligible for Indian firms.

Considering this gap in the existing literature, the **objectives** of this study are:

- (i) To understand CSR practices of Indian companies as reported in corporate documents by examining their Annual Reports using a common scoring technique, which would allow uniform inter-firm comparison, and
- (ii) To explore possible existing or potential linkages between CSR practices and financial performance of the firms.

The remainder of the paper is organised as follows. Section IV deals with research methodology followed by operationalisation and scope of the study in Section V. Conclusion is drawn in Section VI.

IV. RESEARCH METHODOLOGY

The Annual Reports of sample companies have been considered from which we have pulled out relevant corporate performance indicators and assigned score on their CSR reporting. The sample consists of 100 companies which consistently top BSE list of companies based on market capitalization for the 5-year period (2010-2011 to 2014-2015). The top 100 companies based on their market capitalisation were chosen because usually these companies are expected to make big efforts to report on the actions they took in terms of CSR (Ullmann, 1985 and Roberts, 1992). For the sample of 100 companies, Annual Reports for the years 2010-11 to 2014-15 were downloaded from the company websites. Archival or secondary source is used for assessment of financial performance of the selected firms. This study uses financial performance data from the CMIE Prowess database for the years 2010-11 through 2014-15.

This study uses content analysis of corporate communication for arriving at a measure of CSR score which may allow inter-firm comparison. Considering literature, seven categories of CSR activities have been identified and keywords representing strengths and concerns corresponding to each of the categories have been shortlisted. So every Annual Report is thoroughly sieved using the software Atlas.ti to identify the existence of keywords related to the categories (strength and concern perspectives both in qualitative and quantitative terms) and CSR score of each company is arrived at. To relate CSR reporting of selected companies in their Annual Reports to their financial performance, this study has explored the relationship between CSR score and financial performance in multivariate regression models using data for the selected companies. The collected data have been analyzed by using Stata 14.

V. OPERATIONALISATION AND SCOPE OF THE STUDY

To address the challenge of heterogeneity of CSR disclosure, this study uses academic literature and indices of reputed agencies to design an index to measure CSR performance/activities which may allow inter-firm comparison. Considering literature, a CSR index has been designed here considering domains used in established CSR rating systems of reputed agencies (Dow Jones Sustainability Index, KLD social ratings, FTSE 4 Good Index, S&P ESG, GRI) and past academic researches. The 7 categories of CSR activities (Corporate Governance, Community, Diversity, Employee Relations, Environment, Human Rights, Product Quality and Responsibility) along with keywords associated with each of the categories have been identified. For the index construction, keywords representing qualitative and quantitative strengths and concerns of the categories have been shortlisted.

Scanning the Annual Reports, keywords relating to each of the categories have been located using content analysis in Atlas.ti. On the basis of presence or absence of keywords relating to qualitative and quantitative strengths and concerns across CSR categories, specific scores are assigned. Following Wiseman (1982) who has examined environmental disclosures and assessed whether the disclosures have been made in a qualitative or quantitative way, this study suggests that the highest score be assigned when the disclosure contains quantitative information. If the disclosure contains specific information in non-

quantitative terms a lower score is to be allocated. No Disclosure relating to any dimension is to be assigned the lowest score.

Thus the score assigned for each of the categories of CSR ranges from 0 (no disclosure), 1 (qualitative disclosure) to 2 (quantitative disclosure). Any qualitative disclosure on any category, be it strength or concern, is given a score of 1. Any quantitative disclosure on any category, be it strength or concern, is given a score of 2.

The qualitative and quantitative strength scores are added and qualitative and quantitative concern scores are subtracted to arrive at a CSR score of each category for specific use in Indian companies. The total score of each category of CSR is thus the difference between strength and concern scores, following Chan, Chou, Lo (2017). CSR score for each company has been arrived at by linear aggregation method assigning equal weight to all categories, following Hillman and Keim (2001). The scores of a category thus may vary between a maximum 3 to a minimum -3 and CSR score of a company may vary between a maximum 21 to a minimum (-) 21.

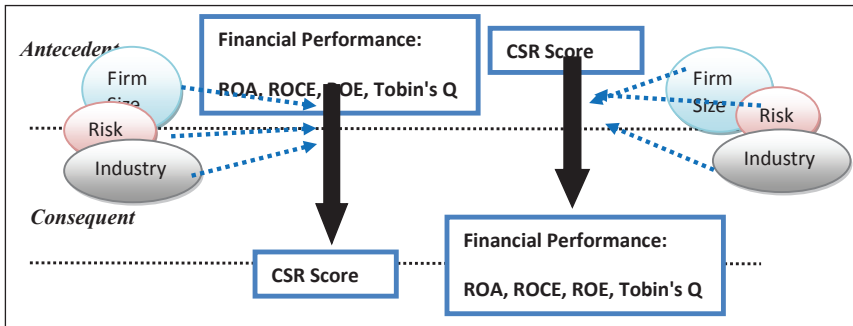
Financial performance indicators have mostly been accounting measures like ROA, ROE and ROCE while exploring CSR-CFP relationship. In recent times, market based measures of profitability are also considered. In the study by Waddock and Graves (1997) which takes time lag into consideration for exploring CSR-CFP relationship, financial performance is denoted by ROA and ROE. Additionally financial performance is considered in terms of ROA, ROE and Tobin's Q by Rodriguez (2016). It is also important to mention that ROCE as an independent variable representing financial performance is culled from Balabanis et al. (1998) and Pradhan (2016). ROA is an indicator of firms' financial performance and managerial efficiency as it shows how the management is competent in generating profits from assets and how efficient they are in managing assets in order to generate revenues. The ratio of return on capital employed (ROCE) measures the relative efficiency of asset utilisation. A major strength of the ROCE ratio is that it is free from the effects of bias that can result from differences in capital structure between firms. Another measure of profitability employed in this study is ROE which reflects a rate return on equity. Additionally, one market based measure is utilized in the form of Tobin's Q, a measurement of market based performance which also has been used by several researchers previously in researching the relationship between CSR and market based performance. Tobin's Q aims to evaluate how effectively a firm exploits its assets and assesses if investments in that firm should be made on that basis. Tobin's Q is calculated as a firm's market value plus liabilities divided by its total assets.

Thus the CSR score has been calculated for selected companies using content analysis of the Annual Reports. Thereafter, this study uses a regression model in order to examine the causal relationship between financial performance and CSR and other related activities for each of the year of observation using the model propounded by Waddock and Graves (1997). We have used Tobin's Q, ROA, ROE and ROCE to measure financial performance. To avoid biased results, size, risk, age and industry are used as control variable based on the findings of previous authors.

The operational framework of the research objective may be represented in the schematic diagrams as shown in Diagram 1:

DIAGRAM 1

Operational Framework of the Research Objective



Analysis and Findings

This study aims in understanding the relation between CSR and financial performance by exploring the direction of causality, i.e., what acts as an antecedent and consequent for this relationship. In exploring the causal relationship between financial performance and CSR activities this study has followed the model propounded by Waddock and Graves (1997). Waddock and Graves pioneered the finding that increases in financial performance may lead companies to engage in more CSR activities, supporting the theory that slack resources availability and CSR are positively related. Their result also indicates that better CSR may lead to improved financial performance, supporting the theory that good management and CSR are positively related. This is based on the rationale that companies which invest in CSR may, in addition to an improved ability to attract capital and skilled employees, have a better public image, and improved relationships with the community in addition to an improved ability to attract capital and skilled employees. These may all lead to better financial performance. But there is likely to be a time lag associated with the implementation of corporate social responsibility and its effect on improved financial performance (Blackburn et al. 1994). On the other hand, companies, which are financially strong, have the resources to invest in community, environment and other social causes provided they are interested in those issues. But there may be a time lag between deploying these resources which are expected to yield better corporate social performance. CFP therefore could lead to CSP in the immediately successive year or later years or vice versa.

In order to be able to extricate the link between CSR and financial performance, the study controls the variables that might impact firm performance. Size (measured by Sales), risk (as reflected in Debt to Equity ratio) and industry are chosen as control variables as they are the most commonly used moderators of the corporate social performance-corporate financial performance relationship (Ullman, 1985, Mahoney and Roberts, 2007). The choice of these control variables is in line with previous study conducted by Waddock and Graves (1997).

Model I is developed using CSR Score as the dependent variable and financial

performance (indicated by ROCE, ROA, Tobin's Q and ROE) of the previous year as independent while natural log of sales, Debt/Equity Ratio and Industry variable of the previous year have been used as the control variables. This model uses one year lag between the CSR Score (t) and the measures of financial performance (t-1) and control variables also relate to prior period.

The functional form of the model (Model I) is as follows:

$$\text{Model I: } \text{CSR Score}_{it} = \beta_0 + \beta_1 \text{FP}_{it-1} + \beta_2 \log_Sales_{it-1} + \beta_3 \text{D/E}_{it-1} + \beta_4 \text{Ind} + \varepsilon_{it}$$

Where

CSR Score_{it} = CSR Score of i-th firm in time period t.

β_0 = constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = regression coefficients

FP_{it-1} = financial performance of i-th firm in prior period (t-1), indicated by ROCE, ROA, ROE and Tobin's Q in Models respectively.

\log_Sales_{it-1} = a proxy of the size of the firm (Log of Sales) of i-th firm in prior period (t-1)

D/E_{it-1} = a proxy for the risk (Debt to equity Ratio) of i-th firm in prior period (t-1)

Ind=Industry Dummy (categorical: manufacturing, service)

ε_{it} = unobserved error component of i-th firm at year t

The Model is tested using the panel data of top 100 BSE listed firms from 2012 to 2015. In relation to the methodology, the selection between a fixed effects and random effects model is based on the Hausman test. As can be seen in the results, the Hausman test rejects the null hypothesis of random effects (since $\text{Prob} > \chi^2 < 0.05$); consequently the fixed effects model is considered as suitable in Models IA and IB. For Models IC and ID, the result of the Hausman Test ($\text{Prob} > \chi^2 > 0.05$) finds that the null hypothesis could not be rejected thereby indicating that Random Effect Model should be preferred over fixed effects in these two models.

TABLE 1

**Estimation results for the relationship between
CSR and CFP (with CSR as dependent variable)**

	I A	I B	I C	I D
y=	CSR t	CSR t	CSR t	CSR t
x1	D/E t-1	D/E t-1	D/E t-1	D/E t-1
x2	Log_Sales t-1	Log_Salest-1	Log_Salest-1	Log_Salest-1
x3	Industry	Industry	Industry	Industry
x4	ROCE t-1	ROAt-1	ROEt-1	Tobin's Qt-1
Sig	ROCE t-1 (+) D/E t-1 (+) Sales t-1 (-) Fixed	ROA t-1 (+) D/E t-1 (+) Sales t-1 (-) Fixed	ROE t-1 (+) Industry (+) Random	Tobin's Q t-1 (+) Industry (+) Random

The result in Table 1 shows that financial performance is a significant indicator of CSR taking both accounting and market based measures in Models I-A, I-B, I-C and I-D with ROCE, ROA, ROE and Tobin's Q as each of the dependent variables respectively, using a 1-year lag between financial performance and CSR measurement. The findings of this study substantiate slack resource theory

(Waddock and Graves, 1997) which argues that better financial performance in prior years potentially results in the availability of excess funds or slack (financial and other) resources that provide the opportunity for companies to invest in social performance domains, such as community relations, employee relations, or environment. If slack resources are available, then better social performance would result from the allocation of these resources into the social domains, and thus better financial performance would be a predictor of better CSR.

The results reveal that the higher use of debt in a firms' capital structure positively affects CSR score (In Models IA and I (B)). This may be due to the managerial practice of highly leveraged firms of disclosing comprehensive information relating to social and environmental impact of business activities for reducing their agency costs and, as a consequence, the cost of capital (Dyduch and Krasodomska, 2017). This also supports signalling theory, i.e, when the capital structure changes, especially when debt increases, firms use CSR disclosure as an image building exercise to influence investors (Riantani and Nurzamzam, 2015).

However, the industry dummy is significant only when ROE and Tobin's Q are taken as the indicators of financial performance. Moreover, the results of the Hausman Test shows that Random Effect Model should be preferred to fixed effects in these two models. This implies that the variation across the industries is random and uncorrelated with the predictor or independent variables included in the models.

In the following phase, in order to explore the impact of CSR score on financial performance, Model II is developed using CSR Score as one of the independent variables and financial performance, indicated by ROCE, ROA, Tobin's Q and ROE as dependent variables while Natural Log of Sales, Debt/Equity Ratio and Industry variable have been used as the control variables. There is a one year lag between the measures of financial performance (t) and (t-1) and CSR Score control variables.

The functional form of Model II is as follows:

$$\text{Model II: } FP_{it} = \beta_0 + \beta_1 \text{ CSR Score}_{it-1} + \beta_2 \log_Sales_{it-1} + \beta_3 D/E_{it-1} + \beta_4 \text{Ind} + \varepsilon_{it}$$

Where

FP_{it} = financial performance of i-th firm in time period t, indicated by ROCE, ROA, ROE and Tobin's Q in Models IIA-IIID respectively.

β_0 = constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = regression coefficients

CSR Score_{it-1} = CSR Score of i-th firm in prior period (t-1)

\log_Sales_{it-1} = a proxy of the size of the firm (Log of Sales) of i-th firm in prior period (t-1)

D/E_{it-1} = a proxy for the risk (Debt to Equity Ratio) of i-th firm in prior period (t-1)

Ind = Industry Dummy (categorical: manufacturing, service)

ε_{it} = unobserved error component of i-th firm at year t

The Model is tested using the panel data of top 100 BSE listed firms from 2012 to 2015. In relation to the methodology, the selection between a fixed effects and random effects model is based on the Hausman Test. As can be seen in the results, the Hausman Test could not reject the null hypothesis of random effects

(since $\text{Prob} > \chi^2 > 0.05$); consequently the random effects model is considered as suitable in Models IIA, IIB, IIC. For Model IID, the result of the Hausman Test ($\text{Prob} > \chi^2 = 0.0000$) finds that the null hypothesis is rejected thereby indicating that Fixed Effect Model is preferred to random effects in the present model.

TABLE 2
Estimation results for the relationship between CSR and CFP
(with CFP as dependent variable)

	IIA	IIB	IIC	IID
y=	ROCE _t	ROA _t	ROE _t	Tobin's Q _t
Constant	42.62614** (3.43)	26.88557*** (4.43)	32.9476** (2.90)	51.67428** (2.33)
x1= CSR _{t-1}	.8535716** (1.95)	.5741209** (2.11)	.5175947 * (1.76)	.0082913 (0.08)
x2= Log_Sales _{t-1}	-5.35595** (-2.31)	-3.191706** (-3.02)	-2.695393 (-1.23)	-9.871394** (-2.18)
x3= D/E _{t-1}	-5.570193*** (-3.72)	-3.280993*** (-4.30)	-2.332003* (-1.77)	1.008705 (1.52)
x4= Industry	4.00166 (1.14)	-4.589969 (4.43)	4.965273 (1.17)	Omitted
R ²				
within =	0.0451	0.0516	0.0089	0.2326
between =	0.1687	0.2410	0.0847	0.0198
overall =	0.1559	0.2031	0.0799	0.0264
Wald chi2	21.18**	28.22***	9.30**	8.08***(F-value)
Hausman	1.86	0.84	3.78	43.88
Prob>chi2	0.6020	0.8393	0.2863	0.0000

Note: 1. The numbers in parentheses are the z values; 2. The asterisks ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively.

The results of Model II as depicted in Table-2 reinforce the accumulated body of literature that provide empirical support for the positive impact of CSR score on financial performance of the firm. Investment in CSR activities which have been reported in the Annual Report, boost the corporate image/reputation thereby increasing the returns reflected in ROA in Model II A, ROE in Model II B and ROCE in Model II C.

Increasing CSR score is reflection of increased or enriched CSR activities as reported in Annual Reports. This impacts the Return on Assets. Hence we suggest that increase in firms' efforts towards its social, community and environmental responsibility may lead to additional PBIT. At the same time the similar situation of increased PBIT is seen in higher ROCE (as in Model II C). Though shown separately in Model II B, ROE has been influenced by increased CSR score for the same reasons cited above. Because, given the accounting understanding, the difference between ROE, ROA and ROCE is not related to CSR expenses in any way. CSR expenses by way of accounting treatment are apportioned from Gross Profit.

Some proponents of the positive CFP-CSR link (Solomon & Hanson, 1985; Pava & Krausz, 1996; Preston & O'Bannon, 1997; Griffin & Mahon, 1997)

find that investment in CSR has a big return in terms of image and overall financial result; the related benefits, in fact, are bigger than the related costs. This supports our findings that CSR positively influences accounting measures of CFP. Literature reveals the existence of many positive externalities that are linked to CSR in its bid to respond to stakeholders' requirements. Clarkson (1995) and Waddock & Graves (1997) believe that satisfying the interest of stakeholders (shareholders, employees, suppliers, community, environment and so on) and being accountable to them, may actually have a positive impact on all firm dimensions, particularly financial performance. According to McGuire et al. (1988), lack of social responsibility may expose a firm to significant additional risk from lawsuits and fines and may limit its strategic options. So the phenomenon of increased profitability from socially responsible actions, may be seen as a managerial effort of reducing risk by engaging into socially responsible activities for improving operational performance.

Management theorists argue that there is a high correlation between good management practice and CSR, simply because attention to CSR domains improves relationships with key stakeholder groups (e.g. Freeman, 1984) resulting in better overall performance. Good employee relations, pro-active community related actions, environmental awareness, positive customer perceptions about the quality of products are increasingly becoming bases of differentiation and competition (as argued by Hamel and Prahalad, 1994). The dimensions of social performance are treated as good management practice creating positive perceptions about the firm by outside stakeholders that may lead to increased sales or reduced stakeholder management costs.

But the relationship is not significant when Tobin's Q is the dependent variable representing financial performance in Model IID. So it can be inferred that those companies obtaining better CSR score according to their disclosure practice could obtain superior financial results, as measured by ROCE, ROE and ROA. From this we may infer that the CSR score of the preceding year did not in any significant way reflect upon the market value of the companies' equity. Changes in management practices regarding social commitment is expected to be reflected in the market based financial performance measures but that is not reflected in this case. Firms that develop sustainability practices usually introduce differentiating elements into their products, processes and organization as a result of the change in values. However, the transmission of these values to society occurs slowly. Traditional consumers/investors need time to change their consumption/investment patterns and to introduce ethical criteria into their decisions (Alexander, 2002; Ingram et al., 2005; Vitell and Muncy, 1992). Thus, the non-significance of Tobin's Q in Model IID may be explained by the fact that market value of equity may not be affected in the short-term, despite the changes introduced by the firm. The effects of these changes might become evident only over long run (Ogrizek, 2002) with changes in awareness levels and mindsets of external stakeholders. Since this model takes only one year time lag, it is possible that the findings of Ogrizek (2002) may hold good.

These findings are also supported by the results of the previous studies by Orlitzky et al. (2003) and Rodriguez (2016) that accounting based measures are more strongly correlated with CSR than market based financial measures.

Further, because the results indicate that the relationship between CSR and Tobin's Q is not significant, this model is substantiated by the fact that CSR is not an influential factor when it comes to the potential rise or fall in Tobin's Q value (Johansson et al., 2015).

Firm size, as measured by sales revenue, has a negative impact on ROA and ROCE and this may be due to the organisational inefficiency called x-inefficiency (Leibenstein, 1976) which leads to loss of profit, a likely situation in larger firms. The reasons for negative relationship between firm size and profitability (ROA and ROCE in this case) can also be attributed to the increased coordination requirements, which in turn, make the managerial task more difficult leading to organizational inefficiencies and lower profit rates (Downs, 1967). Inflexible organization structure and dated technology may also provide some additional explanations of a negative relation between firm size as denoted by sales and financial performance (ROA and ROCE). This theoretical explanation for a negative impact of firm size on firm performance is advocated by Pervan and Visic (2012) and is consistent with previous studies by Amato and Burson (2007), Becker et al. (2010) and Amato and Amato (2007).

The negative impact of leverage (Debt/Equity ratio) on firm performance (as in Model II A, II B and II C) is consistent with the results of the previous studies (Mule and Mukras, 2015; Kodongo et al., 2014 and San and Heng, 2011) who report negative relationship between financial leverage and firm performance. Jensen and Meckling (1976) argue that in the decisions about a firm capital structure, the agency conflict between shareholders and managers is affected by the level of leverage, as it encourages or constrains managers to take decisions in the interest of shareholders and their operating decisions and behaviors affect the firm performance (Khan, 2012). Due to agency conflicts between various stakeholders, listed firms seem to have employed financial leverage levels which have negatively affected the performance of these firms (Mule and Mukras, 2015). This is in line with the results of the study by Gleason *et al.* (2000), which supports that agency conflicts may be a determining factor in companies becoming overleveraged, thus negatively influencing performance.

VI. CONCLUSION

This study has attempted to address what has become a perennial question: whether CSR practices may be linked to financial performance and, if so, in what direction the causation runs. The results of this study suggest that CSR score differently affects the two dimensions of financial performance measures: accounting-based measures and market-based measures and hence partially supports the bi-directional causal relationship between CSR and CFP. Connecting with our inferences on Models I and II, we may infer that all the financial performance measures (including Tobin's Q) have significant positive impact on CSR score of the subsequent period. But in the reverse model, one-year lagged CSR score does not influence Tobin's Q but influences other accounting based financial performance measures (ROCE, ROE and ROA).

This enables the authors to substantiate the findings of Haniffa and Cooke (2005): Better firm performance leads to disclosure of more CSR related

information by firms to legitimize their existence. In addition to channelising available slack resources generating out of better financial performance of prior years in investment in social performance domains, higher social constraints and public exposure faced by better performing firms result in improved CSR performance and reporting (Bewley and Li, 2000).

But the reverse causality holds good only for accounting based measures of financial performance in this study, i.e., corporate attention to the reporting of CSR activities improves only accounting based measures of firm performance but not immediate market based measure (Tobin's Q). The transmission of the impact of social and environmental commitment and performance of firms on market based financial performance measures depends on awareness and sensitivity of investors, which might become evident only over long run (Ogrizek, 2002). This may be explained by the fact that the stakeholders understanding of CSR reporting and their reflection on market value of shares may require a longer gestation period. But an immediate effect (next year) on accounting measures of financial performance (ROCE, ROE and ROA) probably has resulted, as established in this paper, from increase in business performance.

This paradox of improved CSR reflecting in the accounting based financial performance measures only but not adequately in market reflection is rationalised by the authors. The company's social performance with regard to its employees and their surroundings aims to continuously improve employee satisfaction. Having a good reputation for maintaining a positive relationship with employees is therefore expected to help a company recruit skilled people, retain them and reduce employee turnover which in turn is expected to have positive effects on the organisation's operational efficiency which may be reflected in positive terms on profitability, albeit in the long run. If a company takes into consideration product and customer related responsible interventions, this is likely to influence customer satisfaction and reputation which may ultimately be expected to have a positive impact on financial performance. Product and process innovation may often enable a company to enter new markets where it is possible to charge premium prices. This applies especially to those features of environmentally friendly and ethical products that lead to differentiation in the market.

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Sustainable Water Management Reporting Practices: A Study on Selected Indian Companies¹

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ABSTRACT

Accounting and reporting of sustainable water management practices of Indian corporate sector has become more important in view of GRI based sustainability reporting becoming mandatory from 2022-23. The study aims to capture the nature and pattern of water management reporting practices of top five CSR ranked Indian companies (*Infosys Ltd., Mahindra and Mahindra Ltd., Tata Chemicals Ltd., ITC Ltd. and Vedanta Ltd.*) during voluntary disclosure regime (2015-16 to 2020-21). It revealed absence of common format for disclosure of qualitative and quantitative information along with absence of proper authentication mechanism (water audit, etc.) to lend credible support against the tall claims made by the companies. It also laid down a structured sustainable water management framework to improve the quality of accounting and reporting relating to water stewardship for corporate.

Key words: Sustainable Development Goals (SDGs), Global Reporting Initiative (GRI), Environmental Social and Governance (ESG) Reporting

I. INTRODUCTION

There would be no life without water. Unless we think of sustainable use of available water in all spheres of life, we risk failing to attain many of the other Sustainable Development Goals (SDGs)², including those related to economic growth, poverty reduction, food security, human health, gender equality, energy, sustainable cities and the environment, etc. Therefore, sustainable water use and management has become an essential precondition to achieve sustainable development. Besides, effective management of fresh water is the need of the hour because of its declining availability and ever increasing demand all over the world.

Sustainable water management means using water in such a way that meets present ecological, social and economic needs without compromising the ability

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to meet those needs in the days to come. It also means effective and holistic management of water resources. It is true that there is enough water for all provided we use it efficiently and judiciously. But humans use water as if it was limitless: an estimated 80% of all industrial and municipal wastewater, for example, is released into the environment without prior treatment.

Industry occupied second place in terms of use of water after agriculture. Water use by industry, which accounts for roughly 20% of global withdrawals, is dominated by energy production, which is responsible for approximately 75%, with the remaining 25% of industrial water withdrawals being used for manufacturing (WWAP, 2014). According to OECD (2012), water demand for manufacturing is projected to increase by 400% over the period 2000–2050. So, doing business without hampering water resources has been emerging as a major thrust area for the corporate world. ‘Sustainable Development Goal 6’ (SDG-6)³ of United Nations calls for many counter initiatives by the corporate entities for sustainable water management, such as, watershed management⁴, recycling of waste water, rain water harvesting, water conservation and restoration of ground water, water use rationing, water use monitoring system, etc. As a result, issues, like vision, mission, initiatives, spending, utilization and reporting of water management practices are demanded especially in emerging economies like ours where water security is compromised more often for the sake of development.

The way things are moving, sooner or later, environmental sustainability consisting of bio diversity protection, waste management, energy conservation and water security will control the sustainability of business. According to *Amitabh Kant*, CEO of *NITI Ayog*, “Water will determine India’s ability to achieve high economic growth, ensure environmental sustainability and improve quality of life for citizen”. But in reality, there is a sharp confrontation between development and water security. India is the world’s largest groundwater extractor, pumping out nearly 25% of the global ground water annually (Kant, 2019). Time has come for the Indian corporate sector to give special attention to environmental sustainability issues relating to water use keeping in view their long term interest. Therefore, accounting and reporting of water management practices by Indian corporate sector has become more important than even before.

II. LITERATURE REVIEW

A good number of research works has been done both at international and national level on the topic of sustainable water management. An essence of review of the relevant literature is tabulated below in two parts – Part A and Part B:

Part. A: Researches Conducted at International Level

Year	Author(s)	Essence of the study
2011	Lambooy, T	Discussed the specialised water reporting instruments such as the 2007 global water tool and the water footprint calculation method. It also explored the role of the companies in relation to freshwater use.

Year	Author(s)	Essence of the study
2016	Burritt <i>et. al.</i>	It is first large sample study in Japan It concluded that size, water sensitivity and ownership concentration were found to be significant predictors of water-related disclosures of the sample companies.
2016	Kadi, M	Found that water management is the most neglected issue and concluded that the success of SDG is highly dependent on conceptual thinking on water management.
2017	Christ and Burritt	Identified relevant water accounting information for decision making and advocated for external reporting of initiatives on water management.
2017	Hu. X	Studied water demand management (WDM) in Singapore hotel industries and explored the roles and contribution of stakeholders in policymaking with regard to WDM.
2019	Northey <i>et. al.</i>	Established a database structure for systematic compilation of public water use by the mining industry in Australia. It also analysed compiled data to understand trends in reporting and the variability of mine site water balances.

Part B: Researches Conducted at National Level

Year	Author(s)	Essence of the study
2004	Rao and Mamatha	Assessed the treatment of fluoride-contaminated groundwater and also proposed new method to treat fluoride-contaminated water using magnesium oxide.
2012	Sharma <i>et. al.</i>	It found that a majority of the corporate' water-related reporting has been qualitative, with companies providing descriptions of various water stewardship initiatives, principles, policies and programs, with a goal to reducing their internal water usage.
2017	Geetanjali <i>et. al.</i>	Analysed the extent of adoption of GRI framework and the pattern of reporting of Indian companies. It suggested strategies for larger and more rigorous adoption of the GRI framework.
2020	Chouhan <i>et. al.</i>	Analyzed the current sustainability of Accounting Practices in Indian Cement Companies. The study came into conclusion that the selected corporations should follow the best standards of environmental sustainable activities and also make proper documentation of these activities.

Year	Author(s)	Essence of the study
2020	Goel	Evaluated the sustainability reporting of Jubilant Organosys Ltd. and concluded that in spite of having a separate sustainable report, 60% of the indicators match with global sustainability reporting standards.
2021	Basak and Das	The study concluded that Indian Automobile Industry would be able to attain the UN stated SDGs regarding environmental protection and up gradation by 2030 if they will continuously perform their duties and report them as well with the help of appropriate environmental disclosures.

The above review demonstrates that very little research work has been conducted on the topic of sustainable water management practices and their reporting especially in the context of Indian corporate sector. From Indian context, most of the studies basically captured the overall sustainability reporting practices of the corporate entities or sustainable water management at the Government level. It is also found that water management practices and their reporting are not given due importance by the Indian corporate sector. On this background, the present paper attempts to understand the pattern of sustainable water management practices followed by the top CSR rank companies.

III. OBJECTIVES OF THE STUDY

The prime objective of the study is to make a comprehensive evaluation of water management practices and their reporting pattern of selected CSR ranked Indian companies. The specific objectives of the study are to:

- review the evolution of sustainability reporting framework in India;
- review, briefly, the global reporting requirements on water management with reference to the Global Reporting Initiative (GRI) 303;
- develop proper sustainable water management framework in terms of accounting, auditing, budgeting and reporting perspectives;
- present the initiatives undertaken by the selected companies for sustainable water management along with their outcomes, and
- analyse the reporting of water consumption of selected companies.

The remainder of the paper is organised as follows. Section IV and V deal with methodology and evolution of reporting framework in India respectively it is followed by global reporting initiative in section VI. We deal on sustainable water management framework in Section VII and reporting practices in Section VIII. The last section gives summary and conclusion.

IV. METHODOLOGY

The study is both explorative and analytical in nature. It explores the conceptual issues relating to sustainable water management practices of

corporate sector by observing the reporting practices of companies. Top five Indian companies (*Infosys Ltd., Mahindra and Mahindra Ltd., Tata Chemicals Ltd., ITC Ltd. and Vedanta Ltd.*) based on *Responsible Business Ranking*⁵ 2020 for sustainability and CSR practices are purposively chosen for analysis of water management reporting practices. The logic behind choosing five top companies is that any voluntary, innovative and value adding reporting practices (like the case of water management practices) are generally first endorsed, patroned and adopted by top CSR ranked companies.

The study is based on secondary data, which were collected from the annual reports of the selected companies and from different websites. The data are both qualitative and quantitative in nature. Content analysis is primarily used to identify the means and ways of water management initiatives and nature of their reporting. The data are analysed by using descriptive statistics. The period of the study is 2016 to 2020. Year 2016 is chosen on the pretext that in 2014 Corporate Social Responsibility (CSR) rule has come into force, and in 2015 SEBI mandated filing of Business Responsibility Report (BRR) for the top 500 listed Indian companies by market capitalisation. Therefore, 2016 marked the beginning of Business Responsibility Reporting for Indian corporate to a large extent. Whereas 2021 marked the introduction of Business Responsibility & Sustainability Reporting (BRSR) on the line of GRI. Therefore, it is expected that the chosen period would capture the reporting behaviour of Indian corporate prior to GRI based sustainability reporting become mandatory for them from the financial year 2022 – 2023.

V. EVOLUTION OF SUSTAINABLE REPORTING FRAMEWORK IN INDIA

As reporting of water management is an essential part of overall sustainable reporting, one should have clear idea as to how sustainable reporting framework has evolved in India. The journey of sustainable reporting started with 'Environmental Social and Governance (ESG) reporting in 2009 when the Ministry of Corporate Affairs (MCA) issued Voluntary Guidelines on Corporate Social Responsibility which can be considered as the first step towards mainstreaming the concept of business responsibility. Since then, the reporting landscape has come a long way with the introduction of Business Responsibility Reporting (BRR), Corporate Social Responsibility (CSR), and Integrated Reporting, National Guidelines on Responsible Business Conduct (NGRBC) and now the Business Responsibility and Sustainability Report (BRSR) – introduced through a SEBI circular dated 10 May 2021. The process of evolution of Sustainable Reporting is given in Table 1

TABLE 1

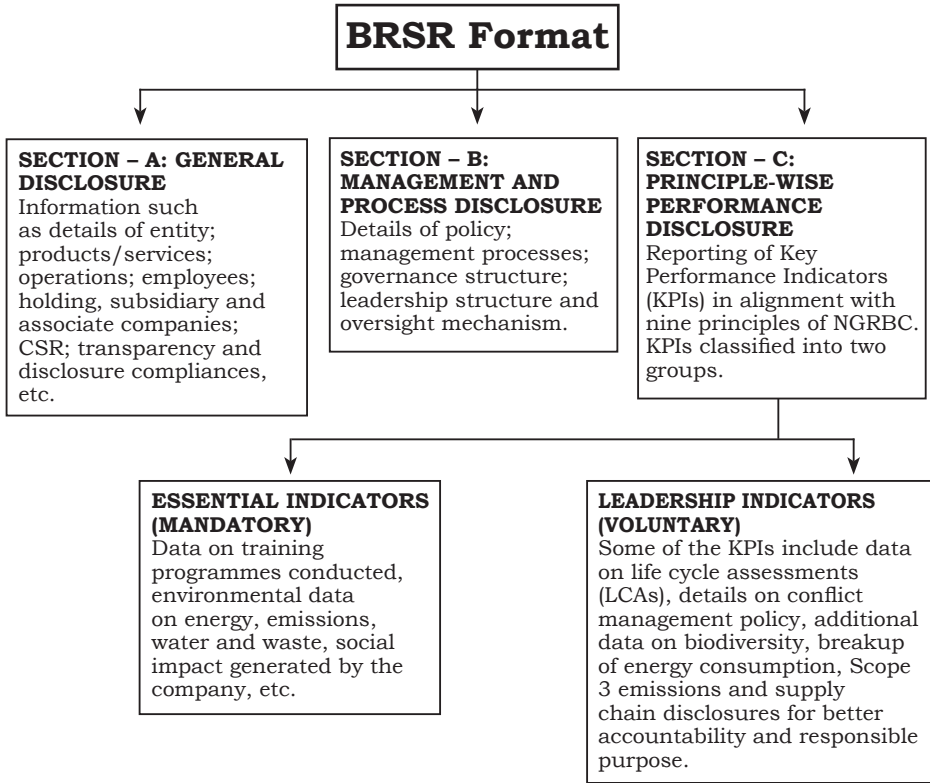
Process of Evolution of Sustainable Reporting in India

Year	Significant Development
2009	MCA issued National Voluntary Guidelines (NVGs) on Corporate Social Responsibility.
2012	SEBI mandated that the top 100 listed companies (by market capitalisation) to file BRR based on NVGs along with their annual reports.
2014	CSR is mandated and CSR Rules come into force.
2015	Requirement for filing BRR was extended to the top 500 listed companies by market capitalisation.
2017	SEBI circular advised that Integrated Reporting may be adopted on a voluntary basis from financial year 2017-18 by the top 500 companies which are required to prepare BRR.
2018	The MCA constituted a committee on Business Responsibility Reporting to finalise business responsibility reporting formats for listed and unlisted companies, based on the framework of the NGRBC.
2019	SEBI extended the BRR requirement to the top 1000 listed companies by market capitalisation from financial year 2019-20.
2020	The <i>Gyaneshwar Kumar Singh</i> Committee of MCA highlighted the need to revise the existing framework and incorporate a new reporting standard called the Business Responsibility & Sustainability Reporting (BRSR).
2021	SEBI made filing of BRSR for 1000 listed entities (by market capitalization) on voluntary basis for the FY 2021 – 22 and on mandatory basis from the FY 2022 – 23.

Source: Price Water House Coopers, July 2021.

The BRSR is an initiative towards ensuring that investors have access to standardized disclosures on ESG parameters. This would enable them to identify and assess sustainability related risks and opportunities of companies and make better investment decisions. The structure of BRSR is provided in Chart 1 with brief description of reporting requirements.

CHART 1



The nine principles of National Guidelines on Responsible Business Conduct (NGRBC) on the basis of which the Key Performance Indicators (KPIs) are developed, both under mandatory and voluntary sections, are presented in Table 2. The nine principles of NGRBC are aligned with SDGs which help businesses to demonstrate their performance on SDG targets.

TABLE 2

Nine principles of the NGRBC

Principle 1	Businesses should conduct and govern themselves with integrity, and in a manner that is ethical, transparent and accountable.
Principle 2	Businesses should provide goods and services in a manner that is sustainable and safe.
Principle 3	Business should promote the well-being of all employees.
Principle 4	Businesses should respect the interests of and be responsive to all its stakeholders, especially those who are disadvantaged, vulnerable and marginalised.
Principle 5	Businesses should respect and promote human rights.
Principle 6	Businesses should respect, protect and make efforts to restore the environment.

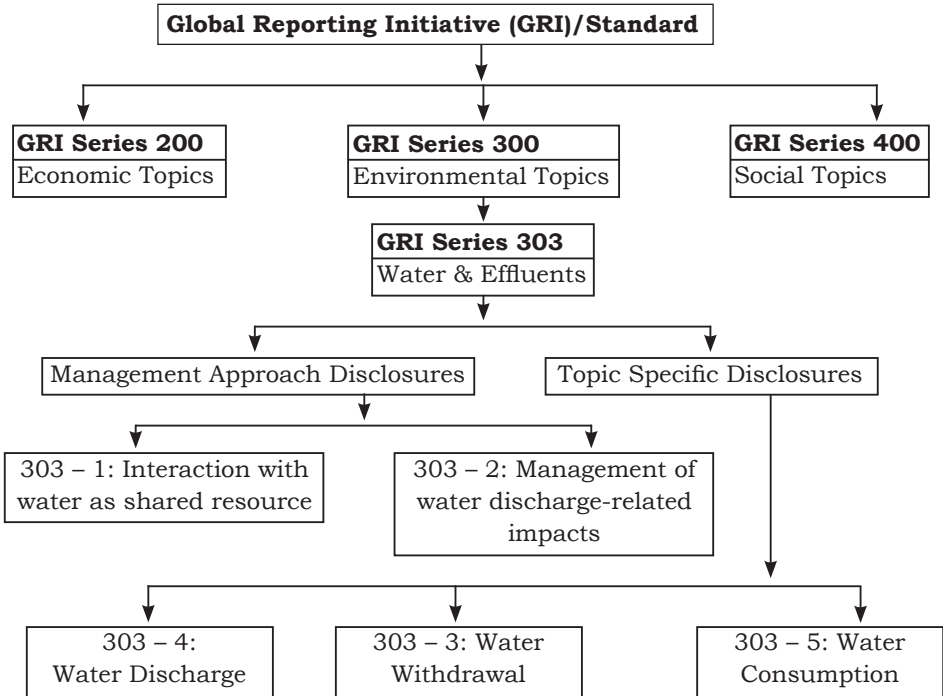
Principle 7	Businesses, when engaged in influencing public and regulatory policy, should do so in a manner that is responsible and transparent.
Principle 8	Businesses should promote inclusive growth and equitable development.
Principle 9	Businesses should engage with and provide value to their consumers in a responsible manner.

Source: Price Water House Coopers, July 2021.

VI. GLOBAL REPORTING INITIATIVE 303 (GRI 303): WATER AND EFFLUENTS

The Global Reporting Initiative (GRI) is an independent international organisation that has pioneered sustainability reporting since 1997. The standards are designed to be used by organisations to report about their impacts on the economy, environment and society. The topic specific GRI standard are organised into three series: 200 (Economic topics), 300 (Environmental topics), and 400 (Social Topics). GRI 303 is a topic specific Standard for Water and Effluents in the GRI 300 series. This can be conveniently presented through Chart 2.

CHART 2



The specific reporting requirements under 303-1 to 303-5 as mentioned in Chart 2 are outlined in Table 3 below.

TABLE 3

GRI 303 Section Specific Reporting Requirements

Section	Specific Reporting Requirement
303-1	<ul style="list-style-type: none"> ■ How and where water is withdrawn, consumed and discharged. ■ Identify water-related impacts, including the scope of assessments, their time frame and methodology used. ■ A description of how water related impacts are addressed. ■ An explanation of the process for setting any water related goals and targets that are part of the organisation’s management approach, and how they relate to public policy and the local context of each area with water stress.
303-2	<ul style="list-style-type: none"> ■ A description of any minimum standard set for the quality of effluents discharge and how these standards were determined.
303-3	<ul style="list-style-type: none"> ■ Total water withdrawal from all areas with water stress (in megaliters) breaking it down by the following sources, if applicable: <ul style="list-style-type: none"> a. Surface water; b. Ground water; c. Sea water and d. Third party water. ■ Breakdown of total water withdrawal from each of the above sources under two categories: <ul style="list-style-type: none"> i. Freshwater and ii. Other water. ■ Any contextual information necessary to understand how the data have been compiled.
303-4	<ul style="list-style-type: none"> ■ Total water discharge (in megaliters) with breakdown by the following types of destination: <ul style="list-style-type: none"> a. Surface water; b. Ground water; c. Sea water and d. Third party water. ■ A breakdown of total water discharge to all areas under two categories: <ul style="list-style-type: none"> i. Freshwater and ii. Other water. ■ Priority substances of concern for which discharges are treated. ■ Any contextual information.

303-5	<ul style="list-style-type: none"> ■ Total water consumption from all areas (in megaliters) ■ Total water consumption from all areas with water stress (in megaliters) ■ Change in water storage where storage has been identified as having a significant water-related impact. ■ Any contextual information
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VII. SUSTAINABLE WATER MANAGEMENT FRAMEWORK

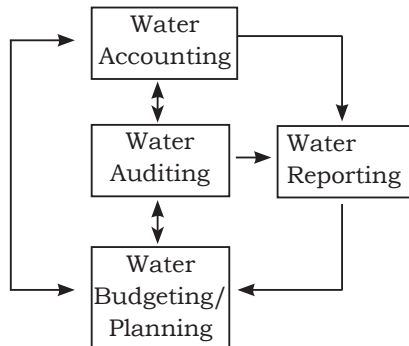
Keeping in view the GRI 303 requirements, sustainable water management framework of any concern should have four basic components - water accounting, water auditing, water reporting and water budgeting. The interrelation between these four components can be presented in Chart 3. From the flow chart, we can say that all the four components of sustainable water management framework are directly or indirectly mutually supportive to each other.

(a) Water Accounting (Systematic Water Use Data Collection)

Water accounting is the systematic study of the current status and trends in water supply, demand, accessibility and use in domains that have been specified. (Source: Batchelor et. al, 2016). With respect to an organisation, the above definition conveys the message that an organisation should build systematic procedure of collecting and summarising water use data, quantitative and qualitative, keeping in view their reporting perspective.

CHART 3

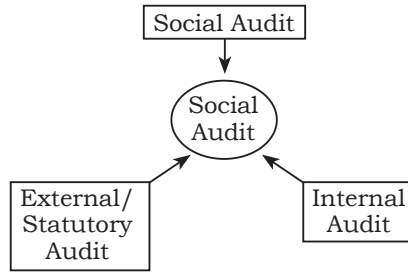
Proposed Sustainable Water Management Framework



(b) Water Auditing

Water auditing is defined as a process that places the findings, outputs and recommendations of water accounting into broader framework comprising governance, institutions, public and private expenditure, legislation, services delivery and the wider political economy of specified domains. (Source: FAO, 2012). From organisational view point water auditing mechanism can be represented in Chart 4.

CHART 4
Water Auditing Mechanism



- **Social auditing:** Here social auditing signifies assessment done by various beneficiaries of the initiatives undertaken by the concern with respect to sustainable water management practices. It is actually bottom up approach of water auditing framework.
- **Internal auditing:** Auditing done by the concern itself to identifying the errors and redundancies in operational and control procedures of various sustainable water management practices.
- **External Audit/ Statutory Audit:** Here external or statutory auditing signifies comprehensive examination of all water related issues by the specified agencies as per the notification of the Central Ground Water Authority of India, dated 24/09/2021. It is a top down approach of water auditing frame work. In the entire auditing process a strong water audit committee should be formulated which will be constituted by the representative of the board of directors, accounting professional, legal expert and environmentalist.

(c) Water Reporting

Water reporting is the systematic and true reflection of water accounting process as well as views of auditors for the various stakeholders situated in the inner and the outer fabrics of the concern. In this context, water reporting should specifically provide information relating to the following:

- Reporting as per the GRI 303.
- Reporting of virtual water trade position⁶ of the concern.
- Reporting of component wise water footprint⁷ position of the concern.

(d) Water Budgeting/ Water Planning.

Water budgeting or planning is the systematic estimation of withdrawal, consumption, discharge, loss and recycle of water in course of production or rendering service. With respect to an organisation, water budgeting should be done in the following manner:

- Step 1:** Fixing up the standard per unit demand/ requirement/ consumption of water for producing any product or rendering any service.
- Step 2:** Calculate expected annual water consumption/ requirement/

demand.

- Step 3:** Estimate annual water withdrawal and breakdown of the withdrawal by the following sources: Surface Water, Ground Water, Sea Water, Produced Water and Third Party Water.
- Step 4:** Estimate annual normal loss of water due to leakage.
- Step 5:** Estimate annual discharge of waste water in due course of production and rendering any service.
- Step 6:** Estimate annual recycle of waste water after discharge.
- Step 7:** Estimate annual restore of recycled water.
- Step 8:** Estimate annual reuse of recycled water.

VIII. REPORTING OF SUSTAINABLE WATER MANAGEMENT PRACTICES OF SELECTED COMPANIES: QUALITATIVE & QUANTITATIVE ANALYSIS

Reporting on management of natural capital like water should be split into two categories: firstly, narrative reporting on strategy and management policy, and secondly, performance reporting. The former provides stakeholders with a qualitative understanding of an organisation’s commitments with the use of water and the processes used to manage/mitigate the various risks and opportunities associated with water use. Performance reporting, on the other hand, provides stakeholders with quantitative information in the form of relevant indicators/ achievements. The narrative reporting on management policy and strategy with respect to water use management of selected five companies have been summarised in Table 4 under two broad headings – Initiatives undertaken and their impact in qualitative terms.

TABLE 4

Analysis of Water Management Policy and Strategy of Selected Companies (Qualitative)

INFOSYS LIMITED	
Initiatives	Outcomes
<ul style="list-style-type: none"> ■ Follow 3R strategy- Reduce, Recycle and Reuse- for water conservation. ■ Fixing water consumption peremployee at 40 litres. ■ Zero wastewater discharge from the campuses by 100% wastewater treatment. 	<p>Reduction in per capita freshwater consumption between fiscals 2008 and 2020.</p>

MAHINDRA AND MAHINDRA LIMITED	
<ul style="list-style-type: none"> ■ 'Alternativism' policy to counter against growing demand for water. ■ Applying 360° water management programme. ■ Flow the 3R strategy for water conservation, rainwater harvesting, drip and micro irrigation, water recharging initiatives. ■ 'Water security and water neutrality' through deep aquifer charging at AD Kandivali. ■ Safe wastewater management practices to protect the ecosystem. 	<ul style="list-style-type: none"> ■ Improved ground water level at the various project sites. ■ <i>Igatpuri</i> Plant achieved 243 days of operations without any supply from external sources.
TATA CHEMICALS LIMITED	
<ul style="list-style-type: none"> ■ Detailed water footprint and sustainability assessment as per Water Footprint Network. ■ <i>Mithapur plant</i> sustained zero dependence on groundwater by adopting in house water conservation measures. ■ Managing rain-fed lakes and innovative seawater desalination technology. 	<ul style="list-style-type: none"> ■ In fiscal 2020, almost 100% consumed water will be recycled and reused.
VEDANTA LIMITED	
<ul style="list-style-type: none"> ■ Water policy administered by an expert group to improve water management practices. ■ Water screening assessment to identify sensitive water resources, aquatic habitats and any known or suspected water resource constraints in proximity to each operation. ■ Condensing vent steam to conserve water. ■ Increase in the frequency of water audit. ■ Educating the workforce to report water leakages. ■ Water saving campaigns by the utility team throughout the plant raising awareness. ■ Programs to eliminate water wastages in every step. 	<ul style="list-style-type: none"> ■ A combination of engineering and behaviour-based approaches has made <i>Jharsuguda</i> one of the most water-efficient operations in the Vedanta Group.

ITC LIMITED	
<ul style="list-style-type: none"> ■ Expert assessment of the hydrology and a host of water stewardship initiatives in association with WWW India ■ Rainwater harvesting capability through extensive investments in integrated watershed development projects. ■ Conducting training/workshop on water saving practices. ■ Awareness campaigns by creating water user group, SHGs, etc 	<ul style="list-style-type: none"> ■ In 2019-20, the paperboards and speciality papers units at <i>Kovai</i> earned the unique distinction of being only the second facility in the world and the first in India to be awarded the <i>Alliance for Water Stewardship (AWS)</i> Platinum – level certification – the highest recognition for water stewardship in the world. ■ ITC’s <i>Malur</i> unit is also in the process of implementing the International Water Stewardship Standard by AWS.

Source: Extracted and Compiled from Sustainability Reports of selected companies, 2016 to 2020

Cursory glance to Table 4 revealed not only the level of preparedness on the part of the five companies, but also demonstrate their commitment towards achieving the broad water management policy. The 3R strategy (which signify reduce, reuse and recycle for water conservation) is found to be the most common policy that almost all the five companies adopted in one way or other along with some innovative approaches like expert group assessment, reduction in dependency of ground water, 360 degree water management programmes, awareness training and programme for water savings, etc.

Naturally, the management policy and strategy as presented in Table 4 need to be ultimately translated into different action plans to achieve the goal/mission set out by the respective companies. An effort to summarise such specific action plans implemented with respect to sustainable water use management by the five selected companies over the years under consideration is presented through Table 5 along with the results mostly in quantitative terms.

TABLE 5
**Analysis of Actions and Achievement of Selected Companies
 (Quantitative Disclosure)**

INFOSYS LIMITED	
Specific Action Plans	Achievements
<ul style="list-style-type: none"> ■ Rainwater harvesting is done across the campuses. ■ 35 lakhs ponds are built across campuses with a holding capacity of 330 million litres. ■ 370 injection wells, constructed with a potential to recharge more than 18.5 million litres of groundwater a day. 	<ul style="list-style-type: none"> ■ In fiscal 2020, recycled water account for 94.7% of freshwater consumption. ■ Reduce fresh water consumption by 9.45% by using low flow fixtures, sensor based taps, aerators, smart metering and fixing leaks in the network.
MAHINDRA AND MAHINDRA LIMITED	
Fixed target of reducing 3% net fresh water consumption year on year for the next 3 years.	<ul style="list-style-type: none"> ■ Water recharge increased from 0.12 million m³ to 0.64 million m³. ■ 40% of the total water consumption was recycled and reused.
TATA CHEMICALS LIMITED	
Installation of 40 rainwater storage structures of 12000 litres each in new housing development township at Mithapur.	84% of the water that was lost to the evaporation ponds as part of tailing disposal is now recovered.
VEDANTA LIMITED	
Set target for water saving of 2.5mm ³ in fiscal year 2020.	<ul style="list-style-type: none"> ■ Condensing vent steam leads to a recovery of more than 200 m³ / day against the target of 130 m³ / day. ■ Achieved water saving of 2.99 mm³ in fiscal year 2020.
ITC LIMITED	
<ul style="list-style-type: none"> ■ Commitment to achieve 40% reduction in specific water consumption over 2014-15 baseline. ■ Mission SunehraKal will create a total rain water harvesting potential of 60 million kl by 2030. 	<ul style="list-style-type: none"> ■ In 2019-20, the total water intake for ITC Ltd. and its associates taken together was 19969 kl., a decrease of 17% over the previous year (24121 kl. in 2018). ■ As on March 31, 2020, the integrated watershed development projects covering over 1.13 million acres of land have created a total rainwater harvesting potential of 39 million kl. i.e. over 3 times the net water consumed by ITC's operation in 2019-20.

Source: Extracted and Compiled from Sustainability Reports of selected companies, 2016 to 2020

From the table, it is quite evident that among the selected companies, the performance of ITC Ltd. with respect to reduction in water consumption, rainwater harvesting, watershed development has been commendable and recognised with the *Alliance for Water Stewardship* (AWS) Platinum-level certification which is considered to be the highest recognition for water stewardship in the world.

Let us now analyse the trend of water consumption of selected companies over the years one by one. Table 6 showed that the Infosys Ltd. uses fresh water from municipality, private providers, ground water and rainwater. From 2015-16 to 2020-21 use of municipality supplied water, water from private providers and use of ground water decreased progressively year on year basis. Simultaneously, use of rain water increased tremendously, especially in 2017, when it went for a giant leap by 667.06% over the previous year i.e. 2015-16. Overall speaking, a declining trend in total water consumption is noticed over the period under consideration.

TABLE 6

Trend of Water Consumption of Infosys Ltd. [kilolitre (kl)]

Fresh Water Sources	Fiscal 2020	% Change from 2019	Fiscal 2019	% Change from 2018	Fiscal 2018	% Change from 2017	Fiscal 2017	%Change from 2016	Fiscal 2016
Municipal Water	1886524	-6.79	2024056	18.50	1708007	-15.54	2022197	-4.54	2118351
Private Provider	614530	-14.21	716353	27.40	562270	-36.22	881528	1.23	870806
Ground Water	123077	-69.48	403323	-12.03	463216	-19.50	575416	-19.02	710577
Rain water	152470	62.97	93559	-36.89	148258	54.99	95652	667.06	12470
Gross Use	2776602	-14.23	3237292	12.34	2881751	-19.38	3574793	-3.70	3712204

Source: Collected & Compiled from the Sustainability Report of Infosys Ltd., 2015-16 – 2019-20.

TABLE 7
Trend of Water Consumption of Mahindra and Mahindra Ltd. (Million M3)

Fresh Water Sources	Fiscal 2020	% Change from 2019	Fiscal 2019	% Change from 2018	Fiscal 2018	% Change from 2017	Fiscal 2017	% Change from 2016	Fiscal 2016
Municipal/ Purchase Water	0.68	-16	0.81	9.46	0.74	5.71	0.7	-68.2	2.2
Surface Water	0.03	-50	0.06	20.00	0.05	66.67	0.03	-96.3	0.82
Ground Water	0.56	-12.5	0.64	3.23	0.62	-1.59	0.63	384.6	0.13
Waste Water	Data Not Available		Data Not Available		Data Not Available		Data Not Available		0.417
Rain Water	Data Not Available		Data Not Available		Data Not Available		Data Not Available		0.114
Gross water use	1.27	-15.89	1.51	7.09	1.41	5.88	1.36	-0.63	3.681
Water Return to Source	0.64	540	0.1	233.33	0.03	0.03	0	0.0	0
Net water use	0.63	-55.32	1.41	2.17	1.38	1.47	1.36	-0.63	3.681

Source: Collected & Compiled from the Sustainability Report of Mahindra and Mahindra Ltd., 2015-16 – 2019-20.

Table 7 revealed that Mahindra and Mahindra Ltd. generally uses municipality supplied water, fresh surface water and ground water for its operation. But only in fiscal year 2016, the use of rain water and waste water from another sources were disclosed separately. It, however, claimed to return of water to source from 2017-18, and in 2019-20 it claimed to return 0.64 Million M³ water to the source by registering 540% increase over the previous year. But neither the gross water use, nor the net water use between fiscal 2016 to fiscal 2020 showed any clear cut trend.

In case of Tata Chemicals Ltd., it is found that it uses water from five sources – purchase water, ground water, sea water, rain water and surface water. The data that are extracted from the published reports of the company, as presented in Table 8, showed a decline only in 2016-17 over the previous year. But trend analysis is impossible to calculate as measurement unit of water consumption is not common. From fiscal year 2016 to fiscal year 2018, water consumption is measured in Million Kilolitre, and in fiscal year 2019 and 2020, water consumption is measured in Million M³ and Mega litre respectively.

TABLE 8

Trend of Water Consumption of Tata Chemicals Ltd.(Million kl.)

Fresh Water Sources	Fiscal 2020 (Mega litre)	Fiscal 2019 (Million M3)	Fiscal 2018	Fiscal 2017	Fiscal 2016
Municipal/ Purchased Water	235	0.16	609.4	1173.246	772.872
Ground Water	64	0.03	5074.6	5900.494	5985.947
Rain water Collected and Stored	216	0.09	82	67.96	5.5
Sea Water	70535	76.44	73710.4	76740.703	85394.363
Surface Water	27213	28.57	25431.8	17389.624	
Total Water consumption	98263	105.29	104908	101272	92158.682

Source: Collected & Compiled from the Sustainability Report of Tata Chemicals Ltd., 2015-16 – 2019-20.

The scanning of sustainability reports of Vedanta Ltd. reflected that the company uses water from two sources – surface water and ground water. The break-up of total water consumption from fiscal year 2016 to fiscal year 2020 is summarised in Table 9. In the fiscal year 2016, the breakup of gross water use is not found.

TABLE 9
Trend of Water Consumption of Vedanta Ltd.(Million M3)

	Fiscal 2020	% Change from 2019	Fiscal 2019	% Change from 2018	Fiscal 2018	% Change from 2017	Fiscal 2017	% Change from 2016	Fiscal 2016
Fresh Water Sources	124.4	-1.5	126.3	-10.4	141.0	-12.0	160.2	Data Not available	Fiscal 2016
Surface Water	19.6	10.7	17.7	-90.2	180.0	2.9	175.0	Data Not available	
Ground Water	144.0	0.0	144.0	-55.1	321.0	-4.2	335.2	42.0	236
Gross Water Use	73.9	9.3	67.6	-9.2	74.4	11.4	66.8	24.6	53.62
Water Recycled	70.1	-8.2	76.4	-69.0	246.6	-8.1	268.4	47.2	182.38
Net Water Use	51.3	4.4	46.9	23.8	23.2	3.2	19.9	-2.8	22.72
Water Recycled (%)									

Source: Collected & Compiled from the Sustainability Report of Vedanta Ltd., 2015-16 – 2019-20.

The above table does not indicate any clear trend either with respect to gross water use and net water use from the fiscal year 2016 to fiscal year 2020. Besides, no clear trend is observed in case of water recycled by the company during the period.

Table 10 shows that ITC Ltd. uses three sources for its operations – municipality water, surface water and ground water. It is very unfortunate that there is an increasing trend in use of municipal water from fiscal year 2018 to fiscal year 2020. On the other hand, use of surface water and ground water are not giving any definite trend from the fiscal year 2016 to fiscal year 2020.

TABLE 10

Trend Analysis of Water Consumption of ITC Ltd. (Million kl.)

Fresh Water Sources	Fiscal 2020	% Change from 2019	Fiscal 2019	% Change from 2018	Fiscal 2018	% Change from 2017	Fiscal 2017	% change from 2016	Fiscal 2016
Municipal	1.58	40.28	1.12	32.24	0.85	8.68	0.78	-3.57	0.81
Surface Water	26.32	1.48	25.93	-2.43	26.58	7.82	24.65	-6.25	26.30
Ground Water	6.32	-1.29	6.40	10.77	5.78	-1.32	5.86	-12.50	6.69
Total	34.21	2.25	33.46	0.75	33.21	6.13	31.29	-7.42	33.80

Source: Collected & Compiled from the Sustainability Report of ITC Ltd., 2015-16 – 2019-20.

IX. SUMMARY OF FINDINGS AND CONCLUSIONS

The above noted discussion and analysis pointed out the following:

- Accounting and reporting of sustainable water management is a very new dimension to be added to Indian corporate reporting w.e.f. the financial year 2022-23. Naturally, the system and procedure has been in transitory phase because of voluntary nature of reporting till date. However, content analysis of five top ranked CSR companies revealed that they are disclosing some relevant qualitative and quantitative information in their Annual Report but the pattern of such disclosure is neither structured nor in common format.
- All the five companies have been disclosing BRR in accordance with the nine principles of National Voluntary Guidelines on Social,

Environmental and Economic Responsibilities of Business (NVG-SEE) as required under SEBI regulation 34(2)(f).

- Sustainability reports are presented separately.
- The nature of sustainable water management reporting for all the selected companies are found to have qualitative overhang with very little quantitative assessment made here and there at random. In some cases (e.g. Mahindra & Mahindra and Vedanta Ltd.), all the year-wise quantitative data of water consumption are not available.
- Lack of uniformity in unit of measurement of water consumption among the companies is observed. For example, Infosys Ltd. and ITC Ltd. are using 'Million Kilolitre' as unit of measurement of water consumption. Whereas, Mahindra and Mahindra Ltd., Vedanta Ltd. and Tata Chemicals Ltd. are using 'Mega litre', 'Million M³' and 'Million Kilolitre' respectively for disclosing their water consumption during the period under consideration. Adoption of common unit of measurement would definitely improve the comparability dimension of water disclosure as has been required under GRI 303.
- Qualitative nature of disclosure in sustainability report is a major drawback. As a result, intra-company or inter-company performance comparison becomes difficult.
- Absence of common format for disclosure of sustainable water management practices along with their impact (both quantitative and qualitative) is noticed for all the five selected companies during the study period.
- Sustainable water management initiatives in terms of claims like 'Mission Sunehra Kal' of ITC Ltd.⁸, 'Water Saving Campaigns' of Vedanta Ltd. etc. are likely to benefit the employees and nearby society. But in the absence of social audit, such claims remain unauthenticated and thereby lose credibility to a great extent. Strong water audit mechanism would ensure the authenticity of any claim made by the corporate entity.
- All the five companies are not disclosing any information regarding water foot print of their product portfolio and virtual water trade position, if any, during the period under consideration.

It is needless to mention that water, particularly fresh water, has become a very crucial resource of late, not only to sustain livelihood of people but also to achieve many Sustainable Development Goals (SDGs) set out by the UN. A number of environmentalists, on one hand, expressed their concern over impending global water crisis, while many argued that we can avoid or mitigate the looming crisis by adjusting the way in which water is managed and governed (e.g. Moriarty *et al*, 2004; FAO, 2012). Corporate being the second largest user group, should, therefore, adopt and implement good water governance policies along with appropriate coping strategies to contribute effectively towards future availability of fresh water for human and environmental demands on an equitable, sustainable and efficient manner. GRI 303: Water and Effluents is an attempt to reorient corporate policies and strategies to align with the SDGs.

No doubt, Indian corporate sector has come a long way in covering various dimensions of ESG reporting and disclose voluntarily some relevant information with regard to economic, social and environmental stewardship in their Sustainability Report/BRR, as the case may be. The study, however, revealed the absence of common format for disclosure of qualitative and quantitative information about sustainable water management practices and their impact. The absence of proper authentication of initiatives and their outcomes of the reporting entity through social/proprietary audit failed to lend credible support against the claims made by the companies.

Last but not least, we must recognize that reporting is the end product of any accounting system. Viewing from that perspective, the reporting of sustainable water management practices of Indian companies especially after the financial year 2022-23 (when GRI based sustainability reporting becomes mandatory) requires a well-thought-out water management accounting and reporting framework. Such a framework has been proposed/ suggested in section VII which would improve the quality of reporting with regard to sustainable water management.

To end, the essence of the matter discussed can be better captured by the following quote of *Ernst Ligteringen*, Chief Executive Officer of GRI, *The future is not a printed report - there is still far too much green wash, too many collections of nice stories, too little of commitments to the future. Materiality cannot be determined only in the eyes of the reporting company.*

Endnotes

1. The paper was presented in the Fifteenth International Accounting Conference – 2022 of IAARF held on 8th& 9th January 2022 at Kolkata and awarded with Namita Banerjee Memorial Award for the Best Paper.
2. Sustainable Development Goals (SDGs) are a collection of 17 interlinked global goals designed by the United Nations General Assembly in 2015 which would act as blueprint to achieve a better and more sustainable future for all by 2030.
3. SDG-6 or Global Goal 6 is about “clean water and sanitation for all”. The official wording is: “Ensure availability and sustainable management of water and sanitation for all”.
4. Watershed management is the study of the relevant characteristics of a watershed aimed at sustainable distribution of its resources and the process of creating and implementing plans, programs and projects to sustain and enhance watershed functions that affect the plant, animal, and human communities within the watershed boundary.
5. Responsible Business Ranking published by the consultancy firm Futurescape. This ranking is based on the companies’ spending patterns on CSR, performance and spending with respect to the responsibility matrix, ESG performance and how companies are incorporating Sustainable Development Goals (SDGs) into their responsible business actions (Fernandez and Thacker, 2020).
6. The virtual water trade (also known as embedded or embodied water) is the hidden flow of water in food or other commodities that are traded from one place to another.
7. The water footprint of an individual, commodity, or business is defined as the total volume of fresh water used to produce the goods and services consumed by the individual or community or produced by the business. Components of water foot print are: blue water food print (surface and ground water), green water food print (rain water) and grey water foot print (water polluted in course of any activity).
8. This is valid even when ‘Mission *Sunehra Kal* of ITC’ was awarded with AWS Platinum level certification because it is verified through the bureaucratic audit process with Water Stewardship Assurance Services (WSAS) and the mission-driven Conformity Assessment Body (CAB) for the Alliance for Water Stewardship System.

Social audit through beneficiaries' group as implemented in case of MGNREGA would be a better tool for authentication. Secondly, external certification does not always act as full proof so far as corporate best practices are concerned. For example, Satyam Computers was awarded with Golden Peacock Global Award for Excellence in Corporate Governance in 2008, the same year in which it was caught for the largest scam in Indian corporate history.

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Performance Analysis of Select Companies in Energy Sector in India: A Composite Score Approach

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ABSTRACT

Over the years, there has been a paradigm shift in the way corporate performance is measured. Traditionally, corporate performance has been measured in terms of fulfilling its financial objective, the focal point of which had been shareholders' wealth maximization. However, in recent times, the concept of corporate performance has broadened. A business enterprise which makes use of the resources of the economy in which it operates is also expected to fulfil its responsibility towards the economy in terms of fulfilment of the economic objectives and priorities. In context of the priorities of the Indian economy, two measures of economic performances are considered in this paper: contribution to the economy's Gross Domestic Product (GDP) and towards employment generation. This paper focuses on contribution to GDP by making use of the concept of value added income which has been recognized internationally in the form of Global Reporting Initiatives (GRI) as a measure of economic performance. It also aims to calculate a composite performance score based on the financial, economic and social performance of companies. The number of sample companies is eight in energy sector selected from NIFTY Energy Index. The required secondary data were collected from CMIE's Prowess IQ database for the years 2014-15 to 2020-21. The composite score was calculated using the methodology adopted in United Nations Human Development Index. From the research work conducted, it is concluded that in the Energy sector, a company in course of achieving its financial objective but may not fulfil the priorities of the Indian economy in terms of contribution to its GDP and employment generation. Further, companies in the energy sector did not show any statistically significant change in the performance scores over the period under study.

Keywords: Composite Performance Score, Economic Performance, Social Performance.

I. INTRODUCTION

Over the years, it has been realized that it is not only the shareholders group to which a business firm is accountable and responsible since there are various other stakeholders who contribute in the process of generating wealth by a business firm. These contributors include the employees, government, debt

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providers and shareholders. Since shareholders are only a part of the various contributors, it is the value added or wealth generated rather than profitability which is considered to be a much broader performance measure (Machado, 2015). The term value added may be defined as the sales value less the cost of bought in goods and services used in producing those sales (Brown and Howard, 1982). Value added represents the monetary economic contribution of an entity to society, which is the wealth generated and distributed by an economic entity (Rutherford, 1978). In today's world, for sustainability of any company, it needs to be responsible not only towards its shareholders and society at large, but also towards the economy in which it operates, thereby making financial, economic and social performance all to be equally important. In course of fulfilling its financial objective of shareholders' wealth maximization, it is the responsibility of a business firm to fulfil the priorities of the economy also. The objective of maximizing shareholders wealth does take care of the optimum utilization of a major economic resource, i.e., capital, but it fails to consider the fulfilment of other priorities of the economy i.e. contribution to the Gross Domestic Product (GDP) and employment generation. A company which adds to the shareholders wealth may not add to the wealth of the economy. However, a company which fulfils its responsibility towards the shareholders is also expected to fulfil its responsibility towards the economy since capital is not the only resource a company makes use of. It also uses the labour resources and infrastructure facilities of the economy in which it operates. Thus, with a view to focus on the economic performance of a business enterprise as a means to assess the economic responsibility fulfilled by a business firm, the existing literature was reviewed in the relevant area both in Indian and International context.

II. LITERATURE REVIEW

The reporting of economic performance of a company came into existence with the introduction of the term 'triple bottom line' coined by Elkington (1997). All the three components of triple bottom line that is economic, social and environmental performance were to be balanced and were considered to be equally important (Hubbard, 2008). A corporate entity contributes to sustainable development when it accommodates the triple bottom line (Ngwakwe, 2008).

The concept of Corporate Sustainability, although does acknowledge the need for profitability, rests on three primary pillars: environmental, social and economic performance of the companies. Various studies have been conducted in the field of social and environmental performance but very little literature discusses about the economic dimension of corporate sustainability separate from its social dimension (Machado, 2015). In the existing literature, economic performance includes social performance and financial performance.

Corporate Social Responsibility (CSR) has been described by Archie Carroll (2016) as pyramid of responsibilities on corporate which include economic responsibilities, legal responsibilities, ethical responsibilities and philanthropic responsibilities.

Moreover, as stated in National Voluntary Guidelines of 2011, the business responsibility report does require corporate to report on the amount paid to

its employees, suppliers, government, capital providers and CSR expenditure made. This implies that this report focuses on the economic responsibility of a business from the social aspect. In fact, in the context of the GRI Standard also, which addresses the topic of economic performance, reporting of economic value distributed amongst suppliers, employees, government, capital providers and community investments is required.

From a review of the existing literature, it was found that economic performance includes financial and social performance. The measures used to evaluate the economic performance of companies included return on capital employed, return on equity and gross profit to sales ratios (Balabanis and et al., 1998), return on assets and Tobin's Q (Belu and Manesc, 2013), net profit, net profit per share, gross profit, equity, return on assets, return on equity and share in the stock market exchange (Golebiewska, 2014; Burhan & Rahmanti, 2012).

However, in this paper, an attempt has been made to focus on the economic performance of companies separate from its financial and social performance by making use of the concept of value added income which has been recognized internationally in the form of Global Reporting Initiatives (GRI) as a measure of economic performance. This paper also aims to calculate a composite performance score based on the financial, economic and social performance of companies.

III. RESEARCH OBJECTIVES

- To evaluate financial and economic performance of select companies in India.
- To find out the association between the financial and economic performance indicators.
- To evaluate the composite performance score for each of the companies and rank the companies based on the scores calculated.

Rest of the paper deals with research methodology (IV), limitations (V), data analysis and interpretation (VI) and Conclusion (VII).

IV. RESEARCH METHODOLOGY

The research design adopted was quantitative in nature. The sector selected was Energy sector and the sample companies were selected from NIFTY Energy Index. Due to inadequacy of required data, eight out of ten companies could be made use of for the purpose of analysis. The research work was conducted on secondary data extracted from CMIE Prowess IQ database. The time period of study selected was seven years i.e. year 2014-15 to 2020-21.

The methodology used for the computation of the performance score was similar to that used for the Human Development Index by United Nations Development Programme. The are showa in the tabular from dimension indices, the parameters, their operational definition and significance:

Dimension Indices	Parameter & Operational Definition	Significance
Financial Performance	Return on Net Worth (RONW): Profit after Tax (hereafter, PAT), net of prior period and extra-ordinary transactions/Net worth	This ratio shows the return generated for each rupee of shareholders' fund in the company
Economic Performance	Value Added Income Generation Ability (VAI-GA): Value Added Income/Capital employed Compensation to employees +Taxes + Interest +PAT Capital employed is the sum total of shareholders' funds (both equity and preference) and total borrowings. This measure was directly extracted from the database.	This ratio shows the amount of wealth generated by a company for each rupee of capital employed by it.
	Employment Generation Ability (EGA): No. of Employees/Capital employed	This ratio shows the amount of employment generated for each rupee of capital employed by a company.
Social Performance	Corporate Social Responsibility (CSR) Expenditure/Net Sales	This ratio shows the amount of expenditure made by a company for each rupee of revenue generated by it.

The data for each of the parameters above were normalized using Min-Max method.

$$X_i (\text{Normalized}) = [X_i - X (\text{min})] / [X(\text{max}) - X(\text{min})] * 100$$

Where, X_i is the value for a particular parameter.

$X (\text{min})$ is the minimum value for a particular parameter across all companies in the sector.

$X (\text{max})$ is the maximum value for a particular parameter across all companies in the sector.

By normalizing the data for each of the parameters, the data was converted into a number between 0 and 100 wherein 0 depicts the worst performer and 100 depicts the best performer. The numbers for each parameter were then aggregated using displaced ideal method. This method was used to calculate the performance score as follows:

$$\text{Performance Score} = 100 - \sqrt{[(100 - \text{FP})^2 + (100 - \text{EP})^2 + (100 - \text{SP})^2]} / \sqrt{3}$$

This method was used instead of averaging the scores on each parameter since in averaging; poor performance in one dimension could compensate good performance in another dimension. Higher the performance score, better was the performance ranked for a company.

To test the statistical difference between the performance scores, Wilcoxon Signed Ranks Test was conducted. For the purpose of understanding the association between financial and economic performance measures, Spearman's Rank correlation was used. Median was used a measure of statistical average in order to rank the companies based on financial and economic performance indicators.

V. LIMITATIONS OF THE STUDY

The analysis was limited to only eight companies, to represent the energy sector, out of the ten companies in NIFTY Energy Index: Adani Green Energy Ltd., Adani Transmission Ltd., Bharat Petroleum Corpn. Ltd., G A I L (India) Ltd., Indian Oil Corpn. Ltd., N T P C Ltd., Oil & Natural Gas Corpn. Ltd., Power Grid Corpn. of India Ltd., Reliance Industries Ltd. and Tata Power Co. Ltd. However, required data was not available in CMIE Prowess database for Adani Green Energy Ltd. and Adani Transmission Limited for few of the years under study. To maintain uniformity the data was not extracted for these two companies from other sources and hence these were eliminated from the sample. Further, other energy sectors like the renewable energy sector, the coal sector, etc., have not been included in the study.

VI. DATA ANALYSIS & INTERPRETATION

The table 1 – 8 and figures 1 – 3 relate to the analysis of RONW, VAI-GA and EGA of the selected companies in the energy sector.

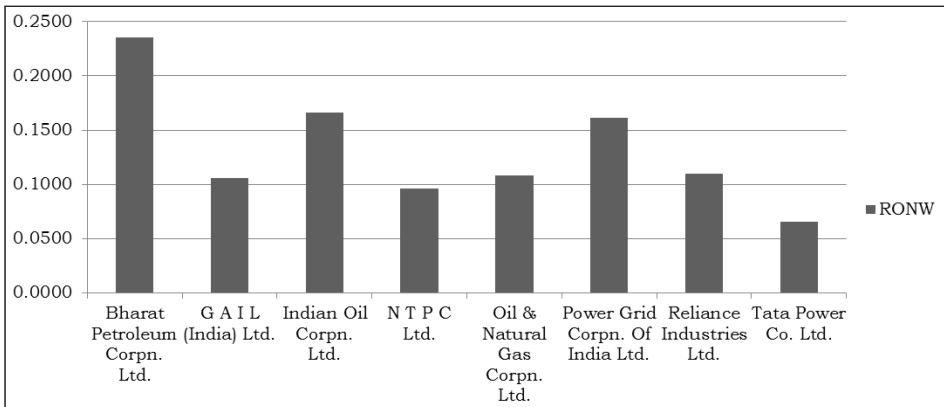
TABLE 1

RONW for the years 2014-15 to 2020-21

Serial No.	Company Name	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Average
1	Bharat Petroleum Corpn. Ltd.	0.2082	0.2852	0.2790	0.2355	0.1974	0.0566	0.2374	0.2355
2	G A I L (India) Ltd.	0.1027	0.0629	0.0964	0.1130	0.1472	0.1682	0.1059	0.1059
3	Indian Oil Corpn. Ltd.	0.0446	0.1351	0.2471	0.2137	0.1664	-0.0127	0.2457	0.1664

Serial No.	Company Name	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Average
4	N T P C Ltd.	0.0876	0.0963	0.0960	0.0895	0.0756	0.1120	0.1056	0.0960
5	Oil & Natural Gas Corpn. Ltd.	0.1189	0.1083	0.0862	0.1092	0.1492	0.1048	0.0560	0.1083
6	Power Grid Corpn. Of India Ltd.	0.1376	0.1452	0.1611	0.1590	0.1756	0.1753	0.1942	0.1611
7	Reliance Industries Ltd.	0.1101	0.1166	0.1161	0.1115	0.0978	0.0887	0.0741	0.1101
8	Tata Power Co. Ltd.	0.0656	0.0816	0.0634	0.0784	0.1296	0.0553	0.0639	0.0656

FIGURE 1

Average RONW of sample companies in Energy Sector

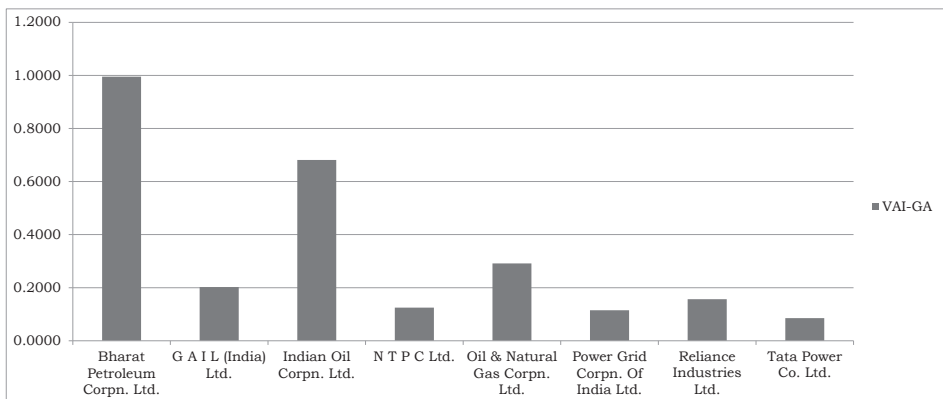
The averages calculated in the table-1 and diagrammatic presentation in figure 1 show that in the energy sector, Bharat Petroleum Corpn. Ltd. and Tata Power Co. Ltd. were the best and worst performing companies in terms of contribution to the shareholders' wealth.

TABLE 2
VAI-GA for the years 2014-15 to 2020-21

Serial No.	Company Name	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Average
1	Bharat Petroleum Corpn. Ltd.	0.7709	1.0173	1.0677	0.9954	0.8547	0.6636	1.1515	0.9954
2	G A I L (India) Ltd.	0.2141	0.1128	0.1778	0.2024	0.2408	0.2495	0.1666	0.2024
3	Indian Oil Corpn. Ltd.	0.4087	0.6816	0.9520	0.8571	0.6659	0.4834	0.9047	0.6816
4	N T P C Ltd.	0.1388	0.1357	0.1287	0.1246	0.1245	0.1205	0.1159	0.1246
5	Oil & Natural Gas Corpn. Ltd.	0.3517	0.2915	0.3026	0.2666	0.3400	0.2280	0.1659	0.2915
6	Power Grid Corpn. Of India Ltd.	0.1026	0.1039	0.1126	0.1150	0.1216	0.1196	0.1176	0.1150
7	Reliance Industries Ltd.	0.1563	0.1787	0.1869	0.1664	0.1386	0.1302	0.1243	0.1563
8	Tata Power Co. Ltd.	0.1128	0.1319	0.0781	-0.0261	0.1256	0.0790	0.0855	0.0855

FIGURE 2

Average VAI-GA of sample companies in Energy Sector

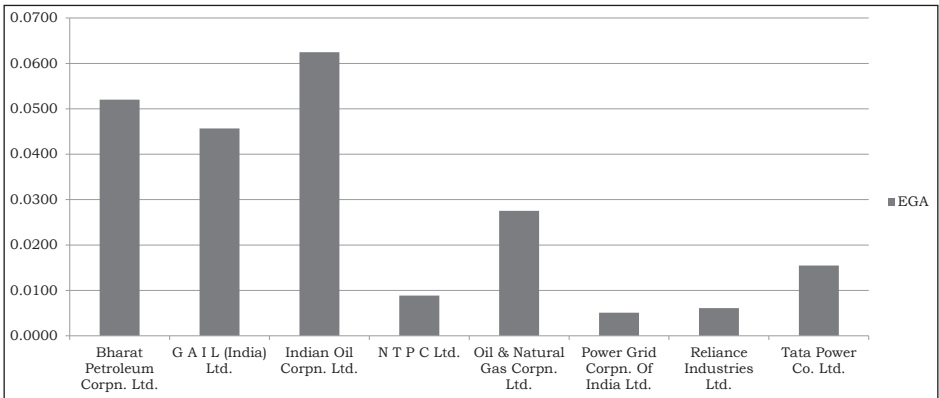


An analysis of the table-2 and diagrammatic presentation (Figure-2) show that Bharat Petroleum Corpn. Ltd. makes the highest value addition of Rs 0.9954 for each rupee of capital employed by it. It is followed by Indian Oil Corpn. Ltd. which contribute Rs 0.6816 to the economy's wealth for each rupee of capital employed by it. However, Tata Power Co. Ltd. was found to contribute the least to the GDP of the Indian economy.

TABLE 3
EGA for the years 2014-15 to 2020-21

Serial No.	Company Name	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21	Average
1	Bharat Petroleum Corpn. Ltd.	0.0358	0.0983	0.0803	0.0545	0.0520	0.0496	0.0369	0.0520
2	G A I L (India) Ltd.	0.0457	0.0522	0.0523	0.0469	0.0421	0.0391	0.0359	0.0457
3	Indian Oil Corpn. Ltd.	0.0709	0.0693	0.0660	0.0625	0.0594	0.0522	0.0157	0.0625
4	N T P C Ltd.	0.0134	0.0117	0.0102	0.0088	0.0073	0.0062	0.0057	0.0088
5	Oil & Natural Gas Corpn. Ltd.	0.0474	0.0341	0.0326	0.0275	0.0259	0.0258	0.0230	0.0275
6	Power Grid Corpn. Of India Ltd.	0.0068	0.0059	0.0056	0.0051	0.0048	0.0044	0.0043	0.0051
7	Reliance Industries Ltd.	0.0079	0.0067	0.0061	0.0068	0.0051	0.0038	0.0034	0.0061
8	Tata Power Co. Ltd.	0.0153	0.0155	0.0137	0.0338	0.0316	0.0095	0.0234	0.0155

FIGURE 3
Average EGA of sample companies in Energy Sector



From table 3 and figure 3, it is seen that from the table-3 and figure-3 is seen that Indian Oil Corpn. Ltd. generates the highest employment in the country as compared to other firms within the sector whereas Power Grid Corpn. Of India Ltd. makes the least contribution in generating employment in the country.

The table 4–8 relates to the ranking of companies based on financial and economic performance indicators.

TABLE 4
Ranking of companies in terms of financial and economic performance indicators

Serial No.	Company Name	RONW	Rank	VAI-GA	Rank	EGA	Rank
1	Bharat Petroleum Corpn. Ltd.	0.2355	1	0.9954	1	0.0520	2
2	GAIL (India) Ltd.	0.1059	6	0.2024	4	0.0457	3
3	Indian Oil Corpn. Ltd.	0.1664	2	0.6816	2	0.0625	1
4	NTPC Ltd.	0.0960	7	0.1246	6	0.0088	6
5	Oil & Natural Gas Corpn. Ltd.	0.1083	5	0.2915	3	0.0275	4
6	Power Grid Corpn. of India Ltd.	0.1611	3	0.1150	7	0.0051	8
7	Reliance Industries Ltd.	0.1101	4	0.1563	5	0.0061	7
8	Tata Power Co. Ltd.	0.0656	8	0.0855	8	0.0155	5
	Average	0.1092		0.1794		0.0215	

The analysis shows (Table - 4) that Bharat Petroleum Corpn. Ltd. and Indian Oil Corpn. Ltd. are amongst the top two companies in the energy sector which contribute the most in terms of addition to shareholders' wealth, economy's wealth and employment generation. It can be observed that Bharat Petroleum

Corpn. Ltd. generates the highest wealth to not only shareholders but for the economy as well. Indian Oil Corpn. Ltd. is found to have the highest employment generation ability as compared to other companies in the sector. Power Grid Corpn. of India Ltd. is found to be least efficient in generating employment whereas Tata Power Co. Ltd. is found to contribute the least in making addition to shareholders' wealth and wealth of the economy.

TABLE 5
Correlations between RONW, VAI-GA and EGA

			RONW	VAIGA	EGA
Spearman's rho	RONW	Correlation Coefficient	1.000	.690	.333
		Sig. (2-tailed)		.058	.420
		N	8	8	8
	VAIGA	Correlation Coefficient	.690	1.000	.786*
		Sig. (2-tailed)	.058		.021
		N	8	8	8
	EGA	Correlation Coefficient	.333	.786*	1.000
		Sig. (2-tailed)	.420	.021	
		N	8	8	8

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

From the above correlation matrix, the economic performance indicators were found to be highly correlated and this correlation was found to be statistically significant at 0.05 level. This implies that a company in the Energy sector which maximizes the wealth of the economy also contributes in terms of generating employment within the economy.

In August 2021, **IAA Research Foundation** published its 6th Research Volume, **My Journey : Down the Memory Lane by Dr. Bhabatosh Banerjee** (pp. 486, price ₹400). It is written in 12 well-written chapters. The Volume was reviewed in superlative terms in *The Management Accountant*, November, 2021 (pp. 72-74). In a three-page in-depth review, the learned reviewer (Dr. D. V. Ramana, Sr. Professor of Xavier Institute of Management, Bhubaneswar, concluded: "There is something for everyone to extract and learn from the journey of Professor Bhabatosh Banerjee: commitment, sincerity, empathy, honesty, excellence, camaraderie and concern for others. The memoir is an inspirational journey of a teacher with a message not to get disheartened with personal failures and professional setbacks."

A second review of the Research Volume by Professor Bruce K. Behn of The University of Tennessee (former President of American Accounting Association), USA, is published in Book Review column (pp.77-85) of IAR June (2022). For further details see also website of the Foundation (www.iaarf.in).

For members, academics, professionals and educational libraries, a 20% discount on the list price of ₹400 will be available. Shipment cost is extra.

Contact persons: Professor Dhrubaranjan Dandapat (dhrubacal@yahoo.co.in) or Dr. Bhabatosh Banerjee (bhabatosh.commerce@gmail.com).

TABLE 6
Ranking of companies based on performance scores

Serial No.	Company Name	Mar-15		Mar-16		Mar-17		Mar-18		Mar-19		Mar-20		Mar-21	
		Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
1	Bharat Petroleum Corpn. Ltd.	40.1397	2	45.5275	1	49.7451	1	41.5851	2	41.4979	3	35.3490	4	42.71496	1
2	G A I L (India) Ltd.	29.7788	3	20.2511	7	25.0773	5	25.6758	5	34.6193	5	42.6394	3	33.0787	4
3	Indian Oil Corpn. Ltd.	17.5372	8	27.6114	4	39.6419	2	41.7282	1	41.8063	2	20.3147	7	41.1248	2
4	N T P C Ltd.	23.5539	6	26.3558	5	20.3144	7	16.5505	7	14.1576	8	28.8574	5	23.18339	6
5	Oil & Natural Gas Corpn. Ltd.	57.3933	1	36.6566	2	32.3964	4	38.4623	3	53.5459	1	54.7079	1	30.53818	5
6	Power Grid Corpn. of India Ltd.	27.8226	4	30.6317	3	33.3694	3	36.4813	4	41.3472	4	44.6422	2	38.78793	3
7	Reliance Industries Ltd.	24.2044	5	20.5190	6	21.0216	6	20.5094	6	15.5789	7	24.9479	6	15.11078	7
8	Tata Power Co. Ltd.	21.4361	7	18.6967	8	15.2758	8	13.6198	8	26.5034	6	12.5523	8	10.37721	8
	Energy Sector	26.0135		26.9836		28.7368		31.0786		37.9833		32.1032		31.80844	

The table-6 clearly shows that the average composite score of the sector increased from the year 2014-15 to 2018-19 but started declining after that.

TABLE 7
Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
Score2016 – Score2015	Negative Ranks	4 ^a	4.75	19.00
	Positive Ranks	4 ^b	4.25	17.00
	Ties	0 ^c		
	Total	8		
Score2017 – Score2016	Negative Ranks	3 ^d	5.00	15.00
	Positive Ranks	5 ^e	4.20	21.00
	Ties	0 ^f		
	Total	8		
Score2018 – Score2017	Negative Ranks	4 ^g	4.50	18.00
	Positive Ranks	4 ^h	4.50	18.00
	Ties	0 ⁱ		
	Total	8		
Score2019 – Score2018	Negative Ranks	3 ^j	3.33	10.00
	Positive Ranks	5 ^k	5.20	26.00
	Ties	0 ^l		
	Total	8		
Score2020 – Score2019	Negative Ranks	3 ^m	5.67	17.00
	Positive Ranks	5 ⁿ	3.80	19.00
	Ties	0 ^o		
	Total	8		
Score2021 – Score2020	Negative Ranks	6 ^p	4.17	25.00
	Positive Ranks	2 ^q	5.50	11.00
	Ties	0 ^r		
	Total	8		
a. Score2016 < Score2015				
b. Score2016 > Score2015				
c. Score2016 = Score2015				
d. Score2017 < Score2016				
e. Score2017 > Score2016				
f. Score2017 = Score2016				
g. Score2018 < Score2017				
h. Score2018 > Score2017				
i. Score2018 = Score2017				
j. Score2019 < Score2018				
k. Score2019 > Score2018				

l. Score2019 = Score2018
m. Score2020 < Score2019
n. Score2020 > Score2019
o. Score2020 = Score2019
p. Score2021 < Score2020
q. Score2021 > Score2020
r. Score2021 = Score2020

TABLE 8

Test Statistics^a

	Score2016 - Score2015	Score2017 - Score2016	Score2018 - core2017	Score2019 - core2018	Score2020 - core2019	Score2021 - core2020
Z	-.140b	-.420c	.000d	-1.120c	-.140c	-.980b
Asymp. Sig. (2-tailed)	.889	.674	1.000	.263	.889	.327
a. Wilcoxon Signed Ranks Test						
b. Based on positive ranks.						
c. Based on negative ranks.						
d. The sum of negative ranks equals the sum of positive ranks.						

A Wilcoxon signed rank test revealed that there is statistically no significant difference in the performance scores achieved by companies over the past five year period under study, $n=8$, $p>0.05$. Table 7 & 8 This implies that companies in the energy sector did not show any statistical change in the performance scores over the period under study.

VII. CONCLUSION

From the result of the study, it can be concluded that Bharat Petroleum Corpn. Ltd., and Indian Oil Corpn. Ltd. are amongst the top two companies in the energy sector which contribute the most in terms of addition to shareholders' wealth, economy's wealth and employment generation. Bharat Petroleum Corpn. Ltd. generates the highest wealth not only to shareholders but for the economy as well. Indian Oil Corpn. Ltd. is found to have the highest employment generation ability as compared to other companies in the Energy sector. Power Grid Corpn. of India Ltd. is the least efficient in generating employment whereas Tata Power Co. Ltd. is contributing the least in making addition to shareholders' wealth and wealth of the economy.

It is further concluded that in the Energy sector, a company in course of achieving its financial objective may not fulfil the priorities of the Indian economy in terms of contribution to its GDP and employment generation. It has also been observed that companies in the energy sector did not show any statistically significant change in the performance scores over the period under study.

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The Financial and Environmental Sustainability Practices Adopted by the Micro-Enterprises - An Empirical Study

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ABSTRACT

The contribution of Micro, Small, and Medium Enterprises towards the generation of employment and India's Gross Domestic Product is admirable and they cater to many employment needs of the rural people. But the concern here is regarding the sustainable business practices adopted by such enterprises as several studies indicate that they neglect the sustainability practices at a concerning rate. With primary data collected from 400 micro-enterprises through a quantitative research design, this study uses the Exploratory Factor Analysis to investigate the sustainability practices and its implementation rate by micro-enterprises of districts in North Bengal. The findings of this study justify a complementary relationship between the two dimensions of sustainability suggesting the micro-enterprises that financial sustainability cannot be attained without being environmentally sustainable.

Key words: Exploratory Factor Analysis, Sustainability, Sustainable Development, Micro-enterprises

I. INTRODUCTION

The pace of economic and business activities in developing nations has a substantial growth rate and the nation will prosper because of higher economic activities, but the stress is on the economy's natural and social properties, and its safeguard is of utmost importance as higher stress will lead to social and environmental deterioration. So, in the year 1987, Brundtland Commission coined the term '*Sustainable Development*' which is defined as the development in the present-day bringing no harm to the available resource for future and upcoming generations.

The protection of the environment and society not only lies in the hand of the government of the nation but is also the responsibility of corporate houses, entrepreneurs, and consumers. Dean and McMullen (2007) state that entrepreneurs must be able to protect the environment and social resources

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along with the achievement of organizational financial viability and this concept is globally recognized as the '*sustainable business initiative*'. Refining the sustainable business initiative, Malek and Desai (2019) clarify that sustainability incorporates three broad dimensions viz., environmental, social, and economic sustainability, and the financial viability is included in the economic sustainability where every entrepreneur should contemplate all the three dimensions of sustainability.

Micro, Small, and Medium Enterprises (MSMEs) have always served the developing economies with several benefits, and particularly in India, MSMEs have created employment opportunities, alleviation of poverty through employment, and enhanced GDP growth as depicted in the annual report of MSME (2021) that the MSMEs share in India's Gross Value Added (GVA) was 34% in which the manufacturing MSMEs contributed 33% towards total GVA and share of MSMEs in Gross Domestic Product (GDP) of India was at 30%. In employment generation capacity, India has around 634 lakh MSMEs creating more than 1110 lakh jobs as per the report of the 73rd National Sample Survey conducted in the year 2015-16. In India, West Bengal holds the second-highest number of MSMEs with a total of 89 lakh MSMEs which accounts for around 14% share of total MSMEs operating in India.

So, the involvement of MSMEs towards the generation of employment and India's GDP is admirable, and having its presence in rural areas MSMEs cater to many employment needs of the rural people. But the concern here is regarding the sustainable business practices adopted by the MSMEs as the recent study by Kamble et al., (2018) clearly stated that the manufacturing enterprises have a significant contribution – (i) towards employment generation and (ii) towards the nation's GDP, but they are neglecting the sustainability practices at a concerning rate. When it comes to the figure for the global pollution, small enterprises have a higher pollution rate than that of the larger enterprises accounting for more than 70% of the global pollution (Smith and Kemp, 1998). Having a very low level of sustainability practices, many of the enterprises are fetching criticism in terms of societal and environmental protection while some enterprises are directly noted as the prime unit of detreating and destroying the available natural and social resources.

It has been recognised in several occasions by different researchers that the contribution of MSMEs toward employment generation and the GDP of India is very significant. The main concern here is about their sustainability practices as several past studies question their contribution towards sustainability. To achieve the sustainable development goal, the involvement of the MSMEs towards the sustainability practices is a matter of concern. The researchers around the globe have raised this issue in their study, especially the environmental sustainability practices were raised by studies like Gopal and Thakkar (2015) and Mani et al., (2016). Considering the recommendations of these past studies, this paper undertakes an empirical investigation of the sustainability practices of MSMEs. The findings of this present study would serve a purpose to the policymakers, environmentalists, and the management of MSMEs as it will provide empirical evidence on the status of the sustainability practices adopted by the micro-enterprises operating in the districts of North Bengal which would clearly depict the gap in the sustainability practices that requires immediate attention.

The remaining of this paper is further organised in the following manner. Section II reviews the related literature on sustainability and its dimensions. The objectives of the study are discussed in Section III and Section IV identifies the research methodology used in the study. Section V presents the results and discussion outlining the findings of the study which is ultimately concluded in section VI.

II. RELATED LITERATURE

John Elkington through the triple bottom line approach considered organizational sustainability to have three dimensions viz., economic, social, and environmental sustainability (Milne and Grey, 2013). These three dimensions are further identified as the objective of the triple bottom line approach where economic sustainability defines the organization's financial viability, social sustainability defines the social benefit provided by the organization to the society and the environmental sustainability defines the responsibility of the organization to protect and preserve the environment, nature and its resources. The study of Hart and Milstein (2003) and Reith and Orova (2015) also discussed the existence of the three dimensions approach to organizational sustainability where one can reach the gain-gain-gain situation in the triple bottom line approach.

The three factors i.e., social, economic, and organizational sustainability, when combined, give the key dimensions of organizational sustainability, and its achievement is virtuously grounded on the organization's strategic viewpoint (Singh et al., 2016).

Vinod and Joy (2012) state that the organization's social sustainability is portrayed in its activities such as philanthropic actions devoted toward society, safety and health protocols for the prevention of any fatal or hazardous issues, workers training, and career development of workers. It is further stated that the operational efficiency of running the business, availability of capital resources, generation of employment in different cycles of production, define the economic sustainability and the environmental sustainability represents efficient energy usage, utilization of renewable resources, prevention of noise pollution, reduce-reuse-recycle of wastages and other related activities adopted by the organization during its operations.

Discussing the sustainability practices of Albanian MSMEs, Icka et al., (2021) in the paper "*Environmental Sustainability Practices of Albanian Micro Enterprises and SMEs*" discovered that the majority of Albanian MSMEs have initiated implementing environmental sustainability practices to achieve the organisational sustainability.

Using Exploratory Factor Analysis (EFA) along with descriptive analysis, a study was conducted by Sarango-Lalangui et al., (2018) with primary data collected through structured questionnaires from 188 SMEs. This study attempted to calculate the implementation rate after justifying the data's reliability and validity and arrived at the findings of a medium-high level of implementation rate of all the three dimensions of organizational sustainability viz., social, economic, and environmental sustainability by the manufacturing SMEs, and a high level of implementation by the services SMEs.

In a study on the MSME sector in Industry 4.0, Jamwal et al., (2021) used a multi-criteria decision-making approach for developing a framework to comprehend the status of sustainable practices in the MSME sector. Using a case study analysis technique, this study used the case of one MSME struggling to assume Industry 4.0 and found social and economic factors as the prime catalyst toward sustainability and also found the existence of the three main restraints towards the achievement of organizational sustainability and they are the environmental issues, IT (Information Technology) and the supply-chain management.

Quantitative analysis by Singh et al., (2016) using the primary data of 262 MSMEs of India collected through a survey method had applied a Structural equation Modelling (SEM) together with other descriptive analyses to justify the affiliation between the organization's sustainability, entrepreneurs' skill and the financial performance of the organization. The study stated that one of the factors which motivate the overall business performance is the organizational sustainability itself which also acts as a mediating factor for an entrepreneur's skill requirement.

Similarly, an attempt was made by Prasetya et al., (2021) to comprehend and analyze the association of the organizational sustainability of MSME with its attributes taking the financial literacy of owners/managers as an intervening role. Through the random sampling method, data from 191 MSMEs were collected using a structured questionnaire which was analyzed with a partial least square analysis. The result depicted that the attributes of MSME are positively related to the financial literacy status of owners/managers which again has a positive impact on the organizational sustainability of the MSME, suggesting that the achievement of the organizational sustainability depends upon the financial literacy status of the owners/managers of the respective organization. Aragón-Correa et al., (2008) also arrived at similar findings where they had earlier stated that the achievement of organizational sustainability depends upon how committed the owners/managers of the organization are towards the adoption of sustainability practices.

For the measurement of sustainability practices adopted by the manufacturing industry, Gopal and Thakkar (2015) used an AHP and Fuzzy theory for constructing a supply chain performance index for the automobile industry and found that the owners/managers have a weak encouragement towards the attainment of organizational sustainability.

Reviewing the existing literature on the sustainability practices it is found that no study has focused to undertake the issue of the sustainability practices adopted by the micro-enterprises of the districts of North Bengal, especially the issue of the financial sustainability practices and environmental sustainability practices. So, this study attempts to fill this gap through the empirical investigation of sustainability practices of micro-enterprises.

III. RESEARCH OBJECTIVES

The research objective of this study is to comprehend the relationship between financial sustainability practices and environmental sustainability practices adopted by the micro-enterprises of the districts of North Bengal. Based on the

objectives, the research questions of this study are:

- i. Do the financial and environmental sustainability practices depend upon the age of the micro-enterprises?
- ii. Do the financial sustainability practices differ significantly from the environmental sustainability practices of such micro-enterprises?

To investigate the answers to the above research questions, the following hypothesis has been developed to be tested in this present study:

H₁: The financial and environmental sustainability practices depend upon the age of the micro-enterprises.

H₂: The financial sustainability practices differ significantly from the environmental sustainability practices of such micro-enterprises.

IV. RESEARCH METHODOLOGY

Research Design

This study uses a quantitative research design through a direct survey method where personal interviews of senior managers and the owners of micro-enterprises are conducted using a structured questionnaire accompanied by a 5-point Likert scale for measuring the pre-established set of responses. The quantitative research design is used for an empirical investigation to comprehend the magnitude of sustainability practices by measuring it through a 5-point Likert Scale for adding an additional measure to a quantitative insight of the study.

Sample Design

The sample frame of the study includes a finite population having a total of 18340 Udyam registered (UAM) MSMEs operating in North Bengal districts as per the *District Industrial Profile of 2017-18* published by the MSME Development Institute of Kolkata under the Government of India. The micro-enterprises are surveyed randomly through a simple random sampling method to reduce the biasedness in the generalisation of the results in the North Bengal regions this region comprises 7 districts which are near about 24% of the State of West Bengal. Cochran's (1977) formula for sample size determination assessed the required sample size of 377 while the study surveyed a total of 400 micro-enterprises higher than the required sample size representing a sample size proportion of 2.18%.

Data

This study uses the primary data of micro-enterprises operating in the 7 districts of North Bengal viz., Alipurduar, Cooch Behar, Dakshin Dinajpur, Darjeeling (including Kalimpong), Jalpaiguri, Malda, and Uttar Dinajpur. Here, a micro-enterprise is defined by the MSME Act of 2006 which recognizes micro-enterprises as any enterprise having an annual turnover of less than Rs. 5 crore or with a capital investment of less than Rs. 1 crore. The population of this study includes the total number of Udyam registered (UAM) MSMEs operating in all the 7 districts of North Bengal. The information of Udyam registered MSME has been collected from the *District Industrial Profile of 2017-18* published by the MSME

Development Institute of Kolkata under the Government of India which is shown below in table 1:

TABLE 1
Sample description

District	Number of Udyam registered MSMEs	Sample Size
Alipurduar	6609	144
Cooch Behar	2551	56
Dakshin Dinajpur	2526	55
Darjeeling (including Kalimpong)	1335	29
Jalpaiguri	2119	46
Malda	2380	52
Uttar Dinajpur	820	18
Total	18340	400

Source: District Industrial Profile (2018)

A total of 400 micro-enterprises were successfully surveyed in proportion to the total number of MSMEs operating in a particular district representing a sample size proportion of 2.18%.

Variables Used in The Study

For measuring the environmental sustainability practices, a total of 13 indicators used by the Confederation of Indian Industry (CII) to title the enterprise as 'Green Company' in India have been used as the variable in the study. Similarly, for measuring the financial sustainability practices, 10 indicators from the past study by Not there in reference list! and Vinod and Joy (2012) have been used as variables that integrate the organizational viability and financial performance of MSMEs. Table 2 depicts the variables used in the study-

TABLE 2
Variable Description

Sustainability	Variable	Source
Financial Sustainability Indicators	Records and maintains revenue growth records	Hubbard (2009) and Vinod and Joy (2012)
	Records and maintains profit growth records	
	All expenses incurred in business operations are traced and tracked	
	All incomes earned from business operations are traced and tracked	
	Income and expense statement is prepared every year	

	Business operation has higher profitability	
	Debt and obligation are cleared within the specified time	
	Reserves and provisions are created to meet business uncertainties	
	Wages/Salaries are paid on time	
	Cash is not kept idle for more than 30 days	
Environmental Sustainability Indicators	Energy-saving tools, equipment, and machinery are used	Confederation of Indian Industry (CII)
	Energy-efficient bulbs are used for lighting	
	Water usage and its consumption rate are monitored	
	Reduce, Reuse and Recycle of Water	
	Pollution certificate is obtained for the business operations	
	Products are not environmentally hazardous	
	Waste minimisation policies are followed	
	Wastages are disposed at proper places	
	Materials are utilised to their greatest possible extent with fewer wastages	
	Products have a minimum effect on the environment	
	Energy usage rate is monitored during the production process	
	Single-use plastics or polystyrene are not used	
	Coal and fossil fuel are not used as a source of energy	

Source: Extracted from Confederation of Indian Industry (CII), Hubbard (2009) and Vinod and Joy (2012).

Tools and Methods

For the collection of the primary data, a structured questionnaire was designed having two sections- the first section for collecting the information related to demographic characteristics of the enterprise while the second section included the questions regarding the environmental sustainability practices and financial sustainability practices adopted by the micro-enterprises.

A pilot study for validating the authenticity of the structured questionnaire was performed and required modification was brought to the questionnaire to make it more effective before collecting the data from the final respondents. By organizing and tabulating the responses of structured questionnaire collected through the Likert scale, a raw data set has been created in Microsoft Excel which is descriptively analyzed for describing the characteristics of the tabulated data

set. Then the mean scores of the responses calculated in the descriptive analysis are used for calculating the implementation rate of environmental sustainability practices and financial sustainability practices. The higher the mean scores of the sustainable practices, the higher will be their implementation rate (Sarango-Lalangui *et al.*, 2018).

Proceeding further, the study then performed an Exploratory Factor Analysis (EFA) for dimension reduction of both environmental sustainability practices and financial sustainability practices to identify the underlying construct and for identifying the latent variables in each sustainability domain. Before performing the Exploratory Factor Analysis, the study has reported the value of Cronbach's Alpha for justifying the reliability and validity of the scale used in the analysis along with KMO MSA as a measure of sampling adequacy and Bartlett's Test of Sphericity for testing the null hypothesis of population correlation matrix being an identity matrix. Malhotra *et al.*, (2006) define an identity matrix as a matrix where each variable has a perfect correlation with itself but has no correlation with other variables of the same set. After the underlying constructs or factors are identified using EFA from both environmental sustainability practices and financial sustainability practices, the study calculated the implementation rate for each factor to understand which factor of each sustainability domain is implemented by the enterprises at a higher rate. This will provide a clear picture of the sustainability practices adopted by micro-enterprises.

Now, using the age of micro-enterprises as a grouping variable where age <4 years as a new enterprise and age ≥4 years as a matured enterprise, the study conducted an independent t-test to identify which sustainability practices depend upon the age of the micro-enterprise by testing the null hypothesis that the mean score for both age group is same ($\mu_1 = \mu_2$). And ultimately, the test for equality of means to test the null hypothesis of having no significant difference in the mean score of environmental sustainability practices and financial sustainability practices ($\mu_1 = \mu_2$) implies that the difference in mean statistics is due to the sample fluctuation.

V. RESULTS AND DISCUSSIONS

Using a total of 23 indicators, out of which 13 items indicate environmental sustainability practices developed by the Confederation of Indian Industry (CII) and the next 10 items indicate financial sustainability practices developed by Vinod and Joy (2012) and Hubbard (2009). The findings of descriptive analysis of environmental sustainability practices and financial sustainability practices have been depicted in table 2 and table 3 respectively.

Referring to the descriptive figures in table 2 we find that fss3 has the highest mean score of 4.54 indicating that it also has a higher implementation rate among other financial sustainability practices, while fss10 has the lowest mean score of 3.20 indicating a lower implementation rate. The combined mean of the financial sustainability practices is 3.991 with an implementation rate of 79.82%. For the reliability and consistency of the scale, the items of financial sustainability practices have a Cronbach's Alpha value of 0.916 higher than the cut-off value of 0.7 (Nunnally and Bernstein, 1994).

TABLE 2

Descriptive statistics of financial sustainability practices.

Cronbach's Alpha (α)= .916; Mean= 3.991; Rate of Implementation*= 79.82%			
Items	N	Mean	Std. Dev.
(fss1) Records and maintains revenue growth records	400	4.46	.499
(fss2) Records and maintains profit growth records	400	4.42	.703
(fss3) All expenses incurred in business operations are traced and tracked	400	4.54	.499
(fss4) All incomes earned from business operations are traced and tracked	400	4.50	.580
(fss5) Income and expense statement is prepared every year	400	4.37	.813
(fss6) Business operation has higher profitability	400	3.38	1.310
(fss7) Debt and obligation are cleared within the specified time	400	3.67	1.027
(fss8) Reserves and provisions are created to meet business uncertainties	400	3.45	1.291
(fss9) Wages/Salaries are paid on time	400	3.92	1.076
(fss10) Cash is not kept idle for more than 30 days	400	3.20	.995
*Rate of implementation is based on 5-Point Likert Scale: 1=Never/Strongly Disagree; 5=Always/Strongly Agree.			

Source: Calculated by Author(s).

Descriptive figures of environmental sustainability practices as depicted in table 3 show that es9 has the highest mean score of 4.01 indicating that it also has a higher implementation rate among other practices while es3 has the lowest mean score of 3.00 indicating a lower implementation rate. The combined mean of the environmental sustainability practices is 3.59 with an implementation rate of 71.80% which is lower than the findings of Sarango-Lalangui et al., (2018) where they had conducted a similar study with the Small and Micro Enterprises (SMEs) of Ecuador. For the reliability and consistency of the scale, the items of environmental sustainability practices have a Cronbach's Alpha value of 0.721 higher than the cut-off value of 0.7 recommended by Nunnally and Bernstein(1994).

TABLE 3

Descriptive statistics of the environmental sustainability practices

Cronbach's Alpha (α)= .721; Mean= 3.59; Rate of Implementation*= 71.80%			
Items	N	Mean	Std. Dev
(es1) Energy-saving tools, equipment, and machinery are used	400	3.46	0.866
(es2) Energy efficient bulbs are used for lighting	400	3.96	0.674
(es3) Water usage and its consumption rate are monitored	400	3.00	0.818
(es4) Reduce, Reuse and Recycle Water	400	3.46	0.863
(es5) Pollution certificate is obtained for the business operations	400	3.58	1.186
(es6) Products are not environmentally hazardous	400	3.08	0.760
(es7) Waste minimisation policies are followed	400	3.18	0.989
(es8) Wastages are disposed at proper places	400	4.00	0.767
(es9) Materials are utilised to their greatest possible extent with fewer wastages	400	4.01	0.867
(es10) Products have a minimum effect on the environment	400	3.58	0.762
(es11) Energy usage rate is monitored during the production process	400	3.54	0.954
(es12) Single-use plastics or polystyrene are not used	400	3.30	1.370
(es13) Coal and fossil fuel are not used as a source of energy	400	4.54	0.499
*Rate of implementation is based on 5-Point Likert Scale: 1=Never/Strongly Disagree; 5=Always/Strongly Agree.			

Source: Calculated by Author(s).

Then the study used an Exploratory Factor Analysis for identifying the latent construct in both the sustainability domains i.e., environmental sustainability practices and financial sustainability practices. Then implementation rate of each factor is calculated to understand which of the factor has a higher rate of implementation by the micro-enterprises. Principal axis factoring is used to identify the underlying constructs by creating a set of variables that are correlated (Malhotra, 2010) and the result is shown in table 4 and table 5 for environmental sustainability practices and financial sustainability practices respectively.

Table 4 shows the result of EFA on financial sustainability practices. Before the use of EFA, the Kaiser-Meyer-Olkin measure of sampling adequacy is used for checking the adequacy of the sample size and has a value of 0.795 higher than the recommended value of 0.5 by Hair *et al.*, (2006), and Malhotra (2010). Cronbach's alpha value of 0.916 discloses the internal consistency and reliability

of the scale and Bartlett's test of sphericity rejects the null hypothesis with Chi-sq. value of 5442.826 stating that the population correlation matrix is not an identity matrix. With varimax rotation, the principal axis factoring has extracted two factors based on the Eigen value of more than 1, and with a factor loading of higher than 0.55 for each item representing a cumulative 76.677% common variance explained after rotation.

TABLE 4**Exploratory factor analysis on financial sustainability practices**

Bartlett's Test of Sphericity: Approx. Chi. Square= 5442.826; df=45; Sig.=0.000 Kaiser-Meyer-Olkin Measure of Sampling Adequacy= 0.795 Variance Explained= 76.677%; Cronbach's alpha (α)= .916; Factor Extracted=2									
Factor 1: Book Keeping Practices									
Items	Item Total Correlation			Factor Loading			Cronbach's alpha (α)= .909 Mean=4.248 Initial Eigen Value: 6.594 Explained Variance= 42.920% Rate of Implementation* 85%		
fss1	0.747			0.681					
fss2	0.897			0.911					
fss3	0.956			0.899					
fss4	0.926			0.927					
fss5	0.695			0.740					
fss10	0.599			0.573					
Factor 2: Financial Viability									
Items	Item Total Correlation			Factor Loading			Cronbach's alpha (α)= .916 Mean=3.605 Initial Eigen Value: 1.465 Explained Variance= 33.757% Rate of Implementation*= 72.15%		
fss6	0.703			0.696					
fss7	0.850			0.854					
fss8	0.823			0.734					
fss9	0.906			0.967					
Total Variance Explained									
Factor	Initial Eigen values			Extraction Sum of Squared Loadings			Rotation Sum of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	6.594	65.939	65.939	6.404	64.039	64.039	4.292	42.920	42.920
2	1.465	14.652	80.591	1.264	12.638	76.677	3.376	33.757	76.677
*Rate of implementation is based on 5-Point Likert Scale: 1=Never/Strongly Disagree; 5=Always/Strongly Agree.									

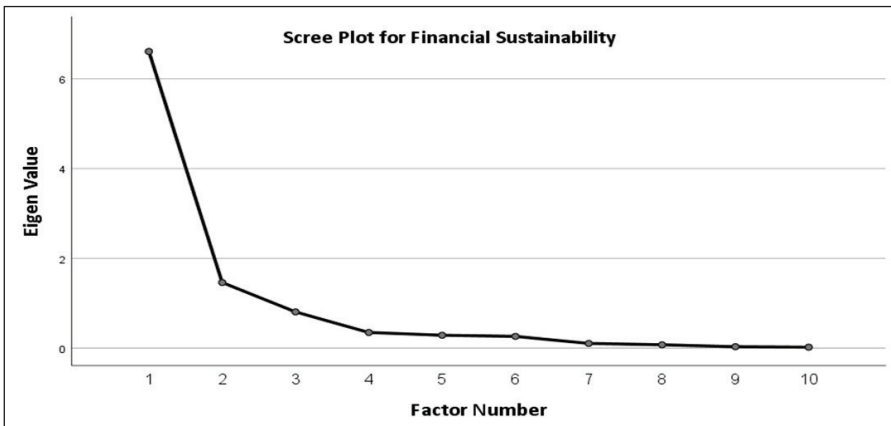
Source: Calculated by Author(s).

Based on the factor loading which reflects the correlation of an individual item with a factor is higher than 0.55 as per the recommendation of Hair et

al., (1998), the first factor is identified as “book-keeping practices’ which has six items viz., fss1, fss2, fss3, fss4, fss5, and fss10 and item-total correlation representing multi-item scale reliability meets the cut-off value of 0.3 for each item as recommended by Nunnally and Bernstein (1994). Factor 1 has an initial Eigen value of 6.594, Cronbach’s alpha value of 0.909 with 42.920% of explained variation after varimax rotation, and a mean score of 4.248 giving an implementation rate of 85% for “book-keeping practices”. Similarly, the second factor is “financial viability” with four items viz., fss6, fss7, fss8, and fss9 with an Eigen value of 1.465, Cronbach’s alpha value of 0.916 with 33.757% of explained variation after varimax rotation and mean score of 3.605 depicting an implementation rate of 72.15%. The items of the second factor also have a factor loading higher than 0.55 and a value of item-total correlation higher than 0.3 which meets the cut-off value recommended by Hair *et al.*, (1998), and Nunnally and Bernstein (1994) respectively. The number of factors extracted based on the Eigen value has also been depicted using the Scree plot in figure 1.

FIGURE 1

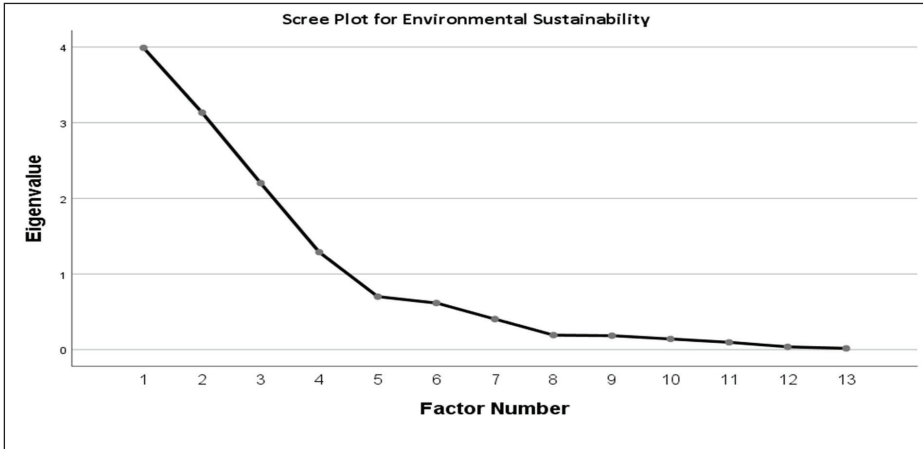
Scree plot for financial sustainability Practices



Source: Author(s) calculation.

Table 5 represents the results of EFA on environmental sustainability practices. With chi-sq. value of 5164.898, Bartlett’s Test of Sphericity rejects its null hypothesis stating that the population correlation matrix is not an identity matrix. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO-MSA) for environmental sustainability practices is 0.501 meeting the value recommended by Hair *et al.*, (2006), and Malhotra (2010). With Cronbach’s alpha value of 0.721, the analysis has extracted 4 factors based on Eigen value higher than 1 explaining a cumulative variance of 74.063%. The number of factors extracted based on the Eigen value has also been depicted using the Scree plot in figure 2:

FIGURE 2

Scree plot for environmental sustainability practices

Source: Calculated by Author(s).

The value of Cronbach's alpha denoting reliability and consistency coefficient of the four factors extracted is 0.827, 0.877, 0.866, and 0.712 respectively explaining a common variance of 26.164%, 18.007%, 15.330%, and 14.562% respectively, after varimax rotation with a cumulative 74.316% of variance explained in common. "Energy efficiency" is the first factor identified from the environmental sustainability practices with a total of five items viz., es1, es2, es5, es11, and es13 having a mean score of 3.81 depicting an implementation rate of 76.29%. The second factor has a total of three items - es7, es8, and es9 identified as "waste efficiency" having a mean score of 3.73 depicting an implementation rate of 74.6%. "Water efficiency" is the third factor having two items viz., es3, and es4 with a mean score of 3.23 and implementation rate of 64.6%. "Product stewardship" is the fourth and the last factor with an Eigen value higher than 1 has three items - es6, es10, and es12 with a mean score of 3.32 and an implementation rate of 66.383%. The item-total correlation of every individual item of all four factors is higher than 0.3 as recommended by Nunnally and Bernstein (1994) and the factor loading of every individual item is higher than 0.5 as recommended by Hair *et al.*, (1998).

TABLE 5
Exploratory Factor Analysis (EFA) on
Environmental Sustainability Practices

Bartlett's Test of Sphericity: Approx. Chi. Square= 5164.898; df=78; Sig.=0.000 Kaiser-Meyer-Olkin Measure of Sampling Adequacy= 0.501 Variance Explained= 74.063%; Cronbach's alpha (α)= .721; Factor Extracted=4									
Factor 1: Energy Efficiency									
Items	Item Total Correlation			Factor Loading			Cronbach's alpha (α)= .827 Mean=3.81 Initial Eigen Value: 3.970 Explained Variance= 26.164% Rate of Implementation* 76.29%		
es1	0.635			.747					
es2	0.578			.629					
es5	0.507			.637					
es11	0.881			.966					
es13	0.764			.832					
Factor 2: Waste Efficiency									
Items	Item Total Correlation			Factor Loading			Cronbach's alpha (α)= .877 Mean=3.73 Initial Eigen Value: 3.122 Explained Variance= 18.007%		
es7	0.831			.939					
es8	0.760			.820					
es9	0.726			.735					
Factor 3: Water Efficiency									
Items	Item Total Correlation			Factor Loading			Cronbach's alpha (α)= .866 Mean=3.23 Initial Eigen Value: 2.202 Explained Variance= 15.330% Rate of Implementation*=64.6%		
es3	.765			.773					
es4	.765			.880					
Factor 4: Product Stewardship									
Items	Item Total Correlation			Factor Loading			Cronbach's alpha (α)= .712 Mean=3.32 Initial Eigen Value: 1.294 Explained Variance= 14.562% Rate of Implementation*=66.383%		
es6	0.741			.769					
es10	0.466			.806					
es12	0.568			.549					
Total Variance Explained									
	Initial Eigen values			Extraction Sum of Squared Loadings			Rotation Sum of Squared Loadings		
Factor	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	3.970	30.536	30.536	3.770	28.999	28.999	3.401	26.164	26.164
2	3.122	24.014	54.550	2.870	22.075	51.075	2.341	18.007	44.171
3	2.202	16.939	71.489	1.967	15.130	66.205	1.993	15.330	59.501

4	1.294	9.956	81.446	1.022	7.859	74.063	1.893	14.562	74.063
5	.711	5.468	86.914						

*Rate of implementation is based on 5-Point Likert Scale: 1=Never/Strongly Disagree; 5=Always/Strongly Agree.

Source: Calculated by Author(s).

With Exploratory Factor Analysis, we extracted two factors from the financial sustainability practices viz., “book-keeping practices” as the first factor and “financial viability” as the second factor. The result indicates that the micro-enterprises have a substantial effort toward book-keeping practices with an 85% of implementation rate but have to give more effort towards their organizational “financial viability” as their implementation rate towards operational viability is only 72.15%.

A total of four factors were extracted from the environmental sustainability practices viz., “energy-efficiency”, “waste-efficiency”, “water-efficiency”, and “product stewardship”. The result of EFA depicted that the sustainable practices related to water efficiency are found to be very low as compared to other factors with only a 64.6% of implementation rate. Similarly, the factor of product stewardship also has a low implementation rate of only 66.383% while the other two factors of “energy-efficiency”, and “waste-efficiency” have an implementation rate of 76.29% and 74.6% indicating a huge scope for further improvement in the sustainable environmental practices.

After EFA, the study then conducted an independent t-test using the “age” of micro-enterprises as a group variable on all the items of sustainable practices to comprehend the dependency of sustainable practices on the age of micro-enterprises and the result has been depicted in table 6. The result indicates that the matured enterprises have higher mean scores for all the items of financial sustainability practices which are statistically significant at a 5% level implying that the matured enterprises are more concerned about the financial sustainability as compared to the newly formed enterprise. When it comes to the environmental sustainability practices, the newly formed enterprise has higher mean scores statistically significant at a 5% level as compared to that of the matured enterprises implying that the new enterprises are more concerned about the protection of the environment which is reflected through the higher mean scores.

TABLE 6

Independent sample test using age as a grouping variable.

Grouping Variable: Age¹ (0=Newly formed enterprise; 1= Matured enterprise)				
Items	Mean of Group 0	Mean of Group 1	t-test	
			t	Sig.
(fss1) Records and maintains revenue growth records	4.34	4.50	-2.90	0.004
(fss2) Records and maintains profit growth records	4.01	4.55	-4.10	0.001

(fss3) All expenses incurred in business operations are traced and tracked	4.34	4.61	-4.87	0.018
(fss4) All incomes earned from business operations are traced and tracked	4.34	4.55	-3.26	0.001
(fss5) Income and expense statement is prepared every year	4.17	4.44	-2.94	0.003
(fss7) Debt and obligation are cleared within the specified time	3.17	3.83	-2.83	0.006
(fss8) Reserves and provisions are created to meet business uncertainties	2.67	3.72	-7.51	0.000
(fss9) Wages/Salaries are paid on time	3.66	4.00	-2.76	0.006
(fss10) Cash is not kept idle for more than 30 days	2.67	3.38	-6.52	0.000
(es1) Energy-saving tools, equipment, and machinery are used	3.66	3.39	2.78	0.006
(es2) Energy efficient bulbs are used for lighting	4.34	3.83	6.85	0.000
(es3) Water usage and its consumption rate are monitored	3.16	2.94	2.29	0.022
(es4) Reduce, Reuse and Recycle Water	3.83	3.33	5.23	0.000
(es5) Pollution certificate is obtained for the business operations	4.16	3.38	5.90	0.000
(es7) Waste minimisation policies are followed	3.84	2.95	8.46	0.000
(es8) Wastages are disposed at proper places	4.34	3.89	5.22	0.000
(es10) Products have a minimum effect on the environment	3.17	3.72	6.61	0.000
(es11) Energy usage rate is monitored during the production process	3.83	3.44	3.63	0.000
(es12) Single-use plastics or polystyrene are not used	4.17	3	7.96	0.000
(es13) Coal and fossil fuel are not used as a source of energy	4.66	4.49	2.95	0.003
Age ¹ Newly formed enterprise represents enterprise less than 4 years of age; Matured Enterprise represents enterprise equal to or more than 4 years of age. (Note: Only significant items are reported.)				

Source: Calculated by Author(s).

The statistics in table 7 represent the result of an independent t-test to test the equality of means of environmental sustainability practices and financial sustainability practices. The null hypothesis of the independent t-test ($\mu_1 = \mu_2$) along with the null hypothesis of Levene's Test for homogeneity of variance (σ_1^2

= σ_2^2) is accepted to refer that there exists no statistical difference between the mean value of two groups i.e., of environmental sustainability practices and financial sustainability practices.

TABLE 7

Independent sample test for equality of means of financial and environmental sustainability

Independent Sample Test							
Grouping Variable: Sustainability* (0=financial sustainability; 1= environmental sustainability)							
Group 0 (Financial Sustainability)		Group 1 (Environmental Sustainability)		Levene's Test		t-test	
N	Mean	N	Mean	F	Sig.	t	Sig.
10	3.991	13	3.590	1.830	.191	2.000	0.059

Source: Calculated by Author(s).

These findings are the evidence that the mean value of both the environmental sustainability practices and financial sustainability practices are equal, justifying a complementary relationship between the two dimensions of sustainability implying that one enterprise cannot attain financial sustainability without sustainable environmental practices which corroborate with the findings of Icka et al (2021) where they suggested that organisational sustainability cannot be achieved without environment sustainability practices.

VI. CONCLUSION

This study was conducted to comprehend the inter-relationship between the two dimensions of sustainability practices viz., environmental sustainability practices and financial sustainability practices. With the data gathered from 400 micro-enterprises operating in the 7 districts of North Bengal, the study found that the financial sustainability practices have a higher implementation rate as compared to that of the environmental sustainability practices. This study then used the Exploratory Factor Analysis (EFA) to identify the latent construct in two of the sustainability domains and extracted two factors from the financial sustainability practices and four factors from environmental sustainability practices. Using the age of the enterprise as a grouping variable, the results depicted that the matured enterprise has higher mean scores for financial sustainability practices while the newly formed enterprise has a higher mean score for environmental sustainability practices. Ultimately, the independent t-test using the mean value of both environmental and financial sustainability practices depicted the complementary relationship between financial and environmental sustainability. The most important finding of this study is the existing gap in the sustainability practices adopted by the micro-enterprises of the North Bengal region as its implementation is at a satisfactory level having a higher scope for improvement.

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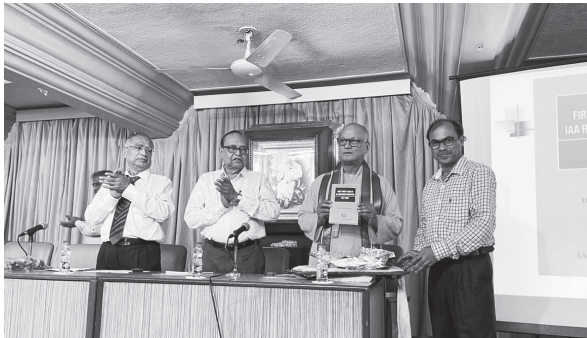
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◆◆◆ Book Release News ◆◆◆

IAA Research Foundation published its 7th Research Volume, **First Thirty Years of IAA Research Foundation by Dr. Bhabatosh Banerjee in June, 2022**. It comprises eight well written and informative chapters in 270 pages (Price ₹400).

In a brief function (11.30 a.m. – 2.00 p.m.) held in the Shivananda Hall of The Ramakrishna Mission Institute of Culture, Kolkata-700019, revered Swami Suparnananda Maharaj, Secretary of the RMIC, released the book and addressed the members present. He also wrote a Foreword to the publication.



Swami Suparnananda Maharaj welcomed the publication of the *First Thirty Years of IAA Research Foundation* and stressed the importance of documenting history of the organisation. The book clarifies the necessity of this publication, its background objects and its members who took up the issue. It also gives an overview of its much too satisfied achievements for the first two and half decades (1991-2020). Dr. Bhabatosh Banerjee has painstakingly conducted the research to come out with a few important suggestions to re-orient some of them to serve better the cause of accounting education and research in India and abroad.

The revered Maharaj explained the doctrine of *Karma* and urged upon the members of the Foundation to follow the philosophy of “sacrifice and service” which are required true national roles of India. We want a better world but one cannot behave in a better way unless he or she is a better person. He also explained the necessity of drawing a Balance Sheet of Life having seriously considering the income and expenditure.

For members, academics, professionals and educational libraries, the research Volume will be available at a 20% discount on the list price of ₹400. Shipment cost is extra. Contact persons: Professor Dhrubaranjan Dandapat (dhrubacal@yahoo.co.in) or Dr. Bhabatosh Banerjee (bhabatosh.commerce@gmail.com).

BOOK REVIEW

My Journey – Down the Memory Lane

Bhabatosh Banerjee, IAA Research Foundation, 2021, Price ₹400.

It is an honor to write this book review for my friend Dr. Bhabatosh Banerjee. I have known Dr. Banerjee for over 20 years and was very interested to read his new book *My Journey Down the Memory Lane*.

As Dr. Banerjee stated in the preface the primary purpose of the book is to present an accurate history of his scholarly activities. The secondary purpose is to potentially motivate individuals to contribute more to accounting education and research in India and abroad. In my humble opinion, Dr. Banerjee has exceeded expectations.

Through my lens, I will present the reader with what I think are the highlights and/or interesting aspects of his book. Thus, you will not see many references to his academic travels and organizational activities, or his outstanding research but rather various themes that emanate from the narrative.

I have outlined the general themes I garnered from reading Dr. Banerjee's book: (1) The Vivid Level of Descriptive Details, (2) Historical Perspectives, (3) Family and Influence on Education and Work Ethic, (4) Father and Elder Brother Dynamics, (5) Poverty, Struggling to get Educated and Supporting His Family, (6) The Human Side, The Struggles, the Highs and Lows (i.e., the struggles Dr. Banerjee went through to get to where he is today), (7) Friends and (8) People Who Had an Influence on Dr. Banerjee, (9) Mentoring Students, (10) Other Interesting Antidotes, and (11) Some of Dr. Banerjee's Shared Insights.

1. The Vivid Level of Descriptive Details

As you read through the book, Dr. Banerjee describes events in incredible detail. From someone that can remember very little details and facts from days gone by, I am very impressed by the level of research, memory, and historical depictions that the book provides.

For example, when he is describing Kumudini Hospital and getting his tonsils operated on (at age 15) and remembering the doctor's name. Then explaining the school buildings (Bhatgram K.R.S. Institution) and the surrounding area (that he attended when he was 8 years old). It sounds like he had just walked through the area yesterday.

Another example is when he started at the University of Calcutta and he went to the staff room (coffee house) and describes the legendary teachers and the Central Library in the Centenary Building.

2. Historical Perspectives

Another significant takeaway from the book is the historical perspective that Dr. Banerjee provides to us that puts his life into context. You get a first-hand account of what it was like growing up in Pakistan and India and how

it shaped Dr. Banerjee's perspective on life and education.

For example, the interesting description of his hometown village cluster/caste-wise classification and how the interdependence between the clusters maintained harmony and good relations in the village. Also, when talking about the village's ceremonies such as the Thread ceremony and the Puja on Bengali New Year's day and how living in this village developed his strong secular foundation.

Other examples include, first Dr. Banerjee talking about culture and that students would keep standing until the professor tells them to take their seats and second due to the political disturbances in Calcutta in the early 1970's, evening classes had to be moved to different times and thus made job promotions at universities a little risky.

3. Family and Influence on Education and Work Ethic

The influence of his mother, father, sisters and older brother are notable throughout his formative years. He really respected his mother and father, and had a great relationship with his sisters. However, the relationship with his older brother came across as being a bit challenging at times.

You can tell Dr. Banerjee was very proud of his parents. They instilled in him a love for education. His story of how teachers and other students used to come to stay at his home made an impact on Dr. Banerjee. One statement made by Dr. Banerjee about his father really stuck with me. There was no public transportation, so his father used to walk two miles each way to attend the office of the Union Board at Mirzapur every day except Friday, which was a weekly holiday in Pakistan. It is hard to see where Dr. Banerjee got his work ethic and motivation from.

Even when Dr. Banerjee's father knew problems could not be solved (whether Hindu or Muslim), he explained his reasoning without becoming rude or argumentative. He was usually called "Goswajji" by the people. When discussing the stress of preparation for the Matriculation Examination, whether it was playing less football, competing for top grades, or moving to boarding school to help improve his chances. Dr. Banerjee's father of course told him to play less football.

His mother, Nanibala Banerjee, was the chief architect of managing everything with the family. As Dr. Banerjee said she was not only caring and affectionate to her children, but she also exhibited the same care and affection to the neighborhood children.

4. Father and Elder Brother Dynamics

This book gives us insight into the influence that his father and elder brother had on him. For example, when Dr. Banerjee was sixteen years old and thrilled for his proposed admission to a college at the entry level, Pre-University Course at Calcutta University. Dr. Banerjee's thrill was short-lived. His brother and father talked among themselves and decided instead that he should be admitted into a commerce course, getting him ready for a suitable job to support the family.

You can also see the support his father and brother gave him when they went and talked with upper administration at the City College of Commerce and Business Administration. Dr. Banerjee was ultimately issued a letter of admittance into the entry level, Pre-University Course at Calcutta University.

His father was very nervous for his son on his first day teaching at the University of Calcutta. He told Dr. Banerjee that he offered 108 Tulsies to Narayan praying for good to come his way. Here was his youngest son fulfilling his father's dream of having an appointment at a major university.

In 1976, his father passed away at the age of 73. It was the greatest shock of Dr. Banerjee's life. He decided the only way to pay respect to his father was to follow his principles – to fight against all odds, including poverty, and to maintain great values in life.

Dr. Banerjee seemed to have an interesting relationship with his brother. There are several examples which I have outlined below.

His brother got him temporary jobs at both Philips India for three months and then at the National Productivity Council. During this time his brother and family moved to Durgapur for a new job. This was an upsetting event for Dr. Banerjee's family, both mentally and economically. This really hurt Dr. Banerjee, as he stated it is no use to record his dissent after a lapse of more than 50 years.

To get ahead of the Institute of Cost and Works Accountants mandate of certain costly increases, he and his classmate wanted to enroll in a Cost Accounting course, but first he needed to get permission from his brother. Dr. Banerjee obtained his permission from his brother and asked him to sign the form which his brother deposited himself.

After the results were published, Dr. Banerjee found that neither Gour (his friend) or him could secure first-class primarily because they had significant deficiencies in the Part 1 results. They were disappointed. Upon hearing the news his eldest brother was also a little upset and told him, "your prospect of becoming an officer of SBI is now closed forever".

This episode was particularly troubling to Dr. Banerjee. Out of the blue, his elder brother, who was then working at the Alloy Steels Plant in Durgapur, sent a postcard to his father to vacate the Banerjee residence at S.N. Banerjee Road. That flat was initially rented out to one of Dr. Banerjee's distant uncles who handed it over to his elder brother with the understanding that in the future any of his brothers coming to Calcutta on transfer would need it. This event was a huge shock because not even his father knew anything about it. With their modest monthly income, it was impossible for the family to have an alternative home in Calcutta. After consulting with one of his friends, Mr. Kamalesh Bhattacharyya, a student of Costing Final and working in the office of Gour and also with Mr. Durgesh Chowdhury, Dr. Banerjee and his family rented a two-room apartment outside the City for a reasonable charge.

His brother tried to motivate Dr. Banerjee to secure his first class in B. Com. (Hons) because the State Bank of India was recruiting first-class graduates directly in the posts of Officer. Until that time, frankly speaking, Dr. Banerjee did not have any goals. The only goal was to work hard to survive in life. Here is where his brother made a significant positive difference in his life.

One last positive moment shared by Dr. Banerjee. Upon receiving his Ph.D.

in 1978, his brother was curious about his research and shared this moment of happiness with the family.

5. Poverty, Struggling to get Educated and Supporting His Family

As Dr. Banerjee stated, his father fought against poverty his entire career but still lived an honorable and straightforward life.

An example of this family struggle was when his brother took him to get admitted to CCBA (City College of Commerce and Business Administration). His brother then advised him to take typing and shorthand courses at The Commercial and Telegraph Training College. Dr. Banerjee would go to the class in the morning from 8-10 a.m., learn short-hand and typing and then attend City College in the evening. Again, this demonstrated his work ethic and his effort in trying to get ready to support the family.

At seventeen Dr. Banerjee obtained his first full time job at the Oriental Fire and General Insurance Company. He had no regrets for his poor results on the Pre-University examination because all his attention had been given to enhancing his typing and shorthand proficiency to help the family. It was a battle for survival rather than concentrating on higher education.

While working for Oriental Fire and General Insurance Company, he found it was challenging to work all day and then go to classes in the evening having no time for studying. Because of this, he looked for a government job where the pressure was less and would help his situation. After two and half months, Dr. Banerjee got a job at the Collector of Customs.

As Dr. Banerjee put it, in his struggles to get educated he lost youthful years at the altar of jobs trying to support his family.

6. The Human Side, The Struggles, the Highs and Lows (the struggles Dr. Banerjee went through to get to where he is today)

Every one of us has a moment that changes our lives. Dr. Banerjee's first moment occurred when he was sitting in class with his classmates and talking about his goal of getting an MA and Ph.D. He was laughed at by the class and humiliated by his teacher. Dr. Banerjee did not say anything but mentally and secretly made a promise to fulfill his dreams.

Another example occurred when he was trying to get a testing spot in another town. He hired a cycle from Mirzapur to cycle to Tangail 32 miles back and forth. As Dr. Banerjee stated that day, he now had a feeling of being a grown-up boy for the first time.

Another one of Dr. Banerjee's big shocks was when his father told him that the entire family would be leaving for Calcutta for good. Dr. Banerjee then realized that the days were numbered so to contemplate the move almost every afternoon he went to the school playground but sadly he did not play his favorite sport football.

Dr. Banerjee applied to City College of Commerce and Business, getting admitted into one of the reputed B-Schools was a luxury because he had to try to get a job to help his family. He was rejected because of paperwork issues (migration certificate from Dacca Board was necessary). This was his first big upset in Calcutta. He thought his road to higher education was completely

shut and was in tears....but his father and brother came through for him. Dr. Banerjee was ultimately issued a letter admitting him into the entry level, Pre-University Course at Calcutta University. One other high note at this time was that OFGIC countered with a promotion which was a great sign of what individuals thought of this 17 year-old and what his true promise could be.

Dr. Banerjee had to move a few times and this became very stressful to him. He gradually became ill and, despite being treated by several doctors, there was no significant visible improvement. The doctor finally found the issue and told him to eat better and reduce stress. But studying for two examinations at the same time in addition to his normal office work was very stressful, he had no other choice.

On August 31, 1968, Dr. Banerjee found his name among six candidates that received first class. Out of eight papers, he scored 492 or 61.5%. He had been fighting for first class for so long, and at last his dream was fulfilled! Once Dr. Banerjee received his first class, his third call was to his sister and during that conversation tears of joy came to him. It was the first time he was truly happy in Kolata.

In 1973 Dr. Banerjee published his first article in the *Indian Journal of Accounting*. As he mused, overtime he has learned there are pains involved in the process of a publication, but at the same time it gives one a lot of satisfaction.

One of his most significant publications was *Accounting for Human Resources*. Dr. Banerjee received many accolades from this article including a note from Dr. Paul Garner, University of Alabama, and Dr. Samirendra Nath Dhar congratulating him on having dealt with such a complex issue. He was very proud of this accomplishment.

Dr. Banerjee's department was becoming hostile to him because there was a feeling that after the retirement of Dr. Roy, he would be selected for his professor spot, and Professor Roy was even more annoyed. Professor Roy even said your success is your greatest enemy.

In August 1984, Dr. Banerjee joined the Institute of Cost and Works Accountants of India as Director of Research, after taking leave from the University of Calcutta for one year. He felt great joy at being hired for this prominent position but sad because there was no teaching involved. Because he was travelling a lot in this new job and his family was missing him, this situation was short lived. He went back to the University of Calcutta taking over Dr. Roy's old job.

On January 5th, 1986, Dr. Banerjee was appointed as the editor of *The Management Accountant*, which was beyond his wildest expectations. However, within weeks there was a legal dispute brought against the Institute of Cost and Works Accountants and so Dr. Banerjee had to resign his post. It was very embarrassing to him, and it was not his fault.

On July 5, 1986, Dr. Banerjee received a letter from the Registrar at the University of Calcutta telling him that he just been promoted to Professor of Commerce. He locked himself in his room and in folded hands thanked God for his blessing of becoming a professor of the oldest and biggest university in India. His selection as professor was in an open post. Both in lecturer and reader posts, his selection were in open posts. No teacher in the department, prior to Dr. Banerjee, had achieved this feat.

Dr. Banerjee had the privilege of working as the Dean of the Faculty of Commerce, Social Welfare, and Business Management twice, 1987-1989 and 2003-2005. He was the youngest professor to become Dean. There was no unanimity in the Department although he had national and international reputation. Becoming a dean entailed a lot more meetings and not having a lot of staff help really was challenging. As a result, Dr. Banerjee maintained an office at home. Running an office in his small flat was very disturbing to his family, but they still were supportive. Now as Dean he could organize seminars of the Indian Accounting Association (and Foundation).

After 42 years on the faculty, he retired on January 31, 2011. Professor R. N. Shastri offered Dr. Banerjee “Uttario” and Sawl on his behalf and also a citation composed by him in Sanskrit. These retirement ceremonies were both mind blowing and heartbreaking to him. Again, Dr. Banerjee felt a wonderful opportunity was given him by the Almighty to be part of a university of national importance during a major period in his life.

Dr. Banerjee’s report entitled, *Accounting Education in India*, was a huge success. Professors Stephen Zeff and Gyan Chandra both gave Dr. Banerjee high praise for this work, especially after a review appeared in *Issues in Accounting Education*.

There was a huge issue concerning CAS I which really hurt the reputation of the department. All the effort made by him over the last 15 years was now ruined. Whatever ended up being the stand of the University Grant Commission we will never know, but the fact is that we had the opportunity but could not use it for doing research. Dr. Banerjee asked will the future generations of students forgive us for squandering this golden opportunity?

7. Friends

Dr. Banerjee had many friends, but a few of these friends appeared to have a special impact on his educational path and career. One of those was Sri Gour Chandra Das (Gour). Gour, who also was struggling with higher studies, and Dr. Banerjee became good friends and made a lot of life decisions together.

When Gour and Dr. Banerjee were scheduled to sit for the Part II examination, they both took a 30-day leave. During the recess between the halves, guardians of many students came to see how their boys were doing and brought tiffin for them. For Gour and Dr. Banerjee there was nobody. They just took care of each other.

After the results were published, neither Gour nor Dr. Banerjee could secure first-class because they had such a high deficiencies in Part 1 results. Gour and Dr. Banerjee decided to pursue a Master’s degree and cost accounting course simultaneously. Scoring above 60% they both felt great, because if you only got 50% it seemed as if you were second class citizens.

8. People Who Had an Influence on Dr. Banerjee

In primary school there was one teacher, Mr. Bhupati Ghosh, who really influenced Dr. Banerjee. Outside the classroom, Dr. Banerjee would address him as Kaka (uncle). He was a very good teacher, and his love and affection motivated the students to keep up to speed on all academic work. After school he coached

students for the matriculation exam for extra money because his teacher salary was not enough to support his family. As a result, Dr. Banerjee from a young age already saw the struggles in the profession of teaching.

Over the years, Dr. Banerjee had several other great teachers that helped shape his life. One of those was Jageswar Bhowmik. He had a very unique teaching style telling the entire class to listen to him (while he was correcting papers), so that the same mistakes might not be committed by others. Dr. Banerjee also got the teaching itch early in his career. Head Sir, asked him whether he would be able to teach a few subjects (Bengali, History, English, etc.) if the situation felt appropriate. This made Dr. Banerjee very happy. Principal Ray told Dr. Banerjee you should now try to do well in your studies. We do not know your destiny.... work hard and have faith in your inner self, you will achieve your goals. As Swamiji once said, God helps those who help themselves.

Dr. Banerjee interviewed as a stenographer for the Calcutta High Court and got the job with higher and a better way to pursue education. Here he met Justice durga Das Basu who had a similar experience to what Dr. Banerjee was going through. Justice Basu told him the journey is never easy. These were wise words indeed.

Justice Basu also looked out for Dr. Banerjee. He needed seven days leave to take his exam, but the Assistant register would not allow this. Dr. Banerjee went to Justice Basu and asked him what could be done. Justice Basu told him to ask the Assistant Register to come to his chamber. After that meeting, Dr. Banerjee received his seven-day leave. Interesting how that worked out! Neither Gour nor Dr. Banerjee could secure first-class primarily because they had such high deficiencies in Part 1 exam results. Because of this, Dr. Banerjee went to Justice Basu to talk to him about this. He was surprised that Justice Basu actually looked happy and advised to keep pursuing his education. When Dr. Banerjee received his first class, he wanted to call his parents, but they did not have a telephone. The call he made was to Justice Basu. That tells you a lot.

Dr. Banerjee was trying to get his first teaching position at the University of Calcutta and after several attempts Justice Basu wrote a wonderful recommendation letter and told him to go and talk to the Head of the Department. Needless to say, Dr. Banerjee received the appointment. Professor A.K. Nandy, on his first day of teaching, told Dr. Banerjee that he informed the students about Dr. Banerjee. They were ready for him and do not worry. He also told Dr. Banerjee that he would do well and had confidence in him. Dr. Banerjee was very moved by these niceties. Another turning point in Dr. Banerjee's career was when meeting with Professor G.D. Roy. One day they ended up sitting in a room together when Professor Roy asked Dr. Banerjee to come to lunch at his house to discuss research. Dr. Banerjee was so moved by this invitation, that he touched Dr. Roy's feet to show respect.

Dr. Roy helped him prepare a paper on cost accounting for an upcoming seminar. It was his first attempt at research and a great learning experience for Dr. Banerjee. Dr. Roy then convinced Dr. Banerjee to read *Accounting for Goodwill: Its Effect on Enterprise and Social Economies* by Dr. Barinda Kumar Basu.

After the transfer of registration for a Ph.D. to Dr. Roy, he submitted his

thesis to the University in 1977 and in 1978 received his Ph.D. What a great day!

9. Mentoring Students

One of the students in his initial classes, Madan Mohan Roy, maintained contact with Dr. Banerjee and later this student did obtain his Ph.D. from Vidyasagar University with Dr. Banerjee's help. This was, of course, very satisfying to Dr. Banerjee. A Ph.D. student could approach any eligible teacher in the University of Calcutta and any supervisor could choose any Ph.D. student to work with. Dr. Banerjee used a two-stage method for screening candidates (e.g., successful track record and initial write up on a potential topic). He supervised 19 successful Ph.D. candidates. Dr. Banerjee is very proud of the achievements of his Ph.D. students. There were also many promising students Dr. Banerjee had to say no to. He ran into one of these students a while back and could read the disappointment in her face. He felt very sad about this moment. Again, this demonstrated the empathy and caring he had for all his students.

10. Other Interesting Antidotes

Dr. Banerjee is also a master of understatement. Once he described a situation where any student making several mistakes in translation and grammar was destined to get a slap from the teacher and would angrily throw the class exercise book at the face of the erring student.

Because of this, Dr. Banerjee said the students always kept alert so that we didn't have to face this situation.

Even after Dr. Banerjee was retired, he wrote a letter to the University Grants Commission because he felt that funds released were used improperly by the department. The letter was ultimately sent to the Vice-Chancellor of the University of Calcutta. The Vice-Chancellor expressed displeasure and felt that Dr. Banerjee should have notified him before sending the letter. Dr. Banerjee said he had no axe to grind with anyone, but there were many lapses in handling the purchase of assets from these funds. He never heard another word about this situation.

11. Some of Dr. Banerjee's Shared Insights

Throughout this book Dr. Banerjee made and describes several insightful comments, some of which I have highlighted below.

Dr. Banerjee discusses how his teachers discouraged rote learning because it does not help one further their higher education learning process. This is so true. He believed his beloved Village School, with limited resources, achieved these objectives.

Dr. Banerjee also gained valuable insights going through stressful situations in life and learned the art of overcoming them. As Dr. Banerjee mused these are his lifetime of assets which are not subject to depreciation.

Another example was when his research supervisor told Dr. Banerjee that getting his Ph.D. is not an end to your education, it is just the beginning of a new journey.

Dr. Stayen Sen, the first academic Vice Chancellor also made a real impression on Dr. Banerjee. One of the things he said was professors always

complain about the low salaries, but if an hourly rate would be computed based on the time devoted to teaching and research, the real rate of pay would be one of the highest. Of course, there were some golden examples in the profession.

Other examples include Dr. Banerjee stating that from his perspective, once a Dean always a Dean and writing is better than reading. As he pointed out, when one teaches a subject there are many things he or she must imagine. If your teaching is to be successful, you need to write it systematically in the form of a book that will benefit the wider section of students. Writing brings clarity to thought and expression.

Dr. Banerjee also talked about critics. We must bear with them and respect them because we cannot change them. Maybe in the long run, our critics may leave us out of frustration. If we are right, we will defend our work strongly. We must not leave our ideals or conviction. If we believe in ourselves, we will ultimately win the race.

Dr. Banerjee tells us if one gives honest effort to something, success will come and sometimes it may be incredible. In other words, there is no shortcut to achieving success. One must continually work hard.

Finally, as Dr. Banerjee reflected, life is a journey, enjoy the journey. I hope you have enjoyed reading this book review. I thought I knew Dr. Banerjee well, but reading this book gave me extensive insights into how hard he worked, persevered, and thrived through his lifelong impactful journey. Well done Dr. Banerjee.

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