

Insights Gained from Analysing the Pre- and Post-Responsibility Reports of the Ten Largest Indian Companies

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ABSTRACT

The research paper examines the impact of business responsibility and sustainability reporting (BRSR) on corporate financial performance (CFP) measured by ROA%, corporate market performance (CMP) measured by Tobin Q, Corporate sustainability performance (CSP) measured by CSR spending and Leadership messages for the top 10 Indian segments of global Fortune 500 companies. Data was collected during pre- and BRSR periods to measure the impact of the reporting change. We have found that the mean corporate sustainability performance as % of PBT has gone up to 1.35% post-policy period against 0.04% in the pre-policy period. The leadership (ethical) expected from the listed companies in BRSR reporting has improved and started to yield results.

Keywords: Corporate Sustainable performance, Corporate Financial Performance, Corporate Capital Market Performance, Business Responsibility Reporting, Ethical Leadership

Subject Classification: 90-00; 00-XX.

INTRODUCTION

The expectations from corporations are not only to serve shareholders' interests but also to be responsible for society and the physical environment, which aligns with the stakeholder theory (Freeman, 1984). As per the World Business Council for Sustainable Development (WBCSD, 2005) report, corporate accountability or corporate social responsibility (CSR) means "the commitment of business to contribute towards sustainable economic development, working with employees, their families, the local community, or society at large to improve the quality of their life". The focus of the definition is that a firm, to become a sustainable entity, shall balance financial, social and environmental (the latter two often being known as non-financial) responsibilities.

The question then arises: What are the business drivers for a firm to report on its financial and non-financial aspects? The reasons may be many. *First* is the mandate of the local market regulator to publish an integrated report about economic, social and environmental commitments. *Second*, there is a recent trend of investors looking for ethical and socially responsible behaviour from the firm's management. *Third*, to portray a positive brand image to all the stakeholders about following better risk management practices. This means that firms focus not only on their single bottom line performance (or commercial aspects) but also on a balanced outlook towards social and environmental commitments and the triple-bottom line aspects.

Integrated reporting, or triple bottom line reporting, includes how the firm supports the environment and social aspects. For example- community development or education initiatives, environmental commitments such as reducing carbon footprint, or supporting green-cover development. Integrated reporting provides a wholesome view of tangible short-term economic achievements and medium- to long-term, more intangible assets in people, quality, or severe environmental management processes.

This paper considers the following three primary objectives – how does the integrated reporting (i) help improve

Financial Performance, (ii) improve Social Performance, (iii) improve Environmental Performance, and (iv) improve company Leadership (primarily ethical)?

The Securities and Exchange Board of India (SEBI), the Indian share market regulator, expects that to build an environment of trust and transparency, integrated reporting shall provide the necessary framework to firms. SEBI Circular (2017b) provided the guiding principles for the Integrated Report ('IR'), as presented by the International Integrated Reporting Council ('IIRC'), to be followed by the top 500 listed entities in India. As Karmakar (2019) opined, SEBI mandated the requirement of the submission of the Business Responsibility Report ('BRR') reporting for these listed companies under the regulation- 34(2)(f) of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 (SEBI Circular, 2015a). It is intended to meet SEBI's objective of firms disclosing their commercial, social, and environmental commitments. The BRR reporting encourages firms to report on their triple-bottom-line performance, including commercial, social and environmental obligations and aids in their implementation in some ways. The BRR guidelines are based on the Ministry of Corporate Affairs (MCA) National Voluntary Guidelines (NVG), 2011, refer to Table 1. It invites organisations to report on their attributes, divided into essential and leadership-driven attributes (India CSR, 2023; SEBI, 2023).

Year	MCA and SEBI Guidelines regarding BRSR
2009	MCA published Corporate Voluntary Guidelines for Corporate Governance
2011	MCA published National Voluntary Guidelines (NVG) on Environment, Social and Economic factors
2012	SEBI mandated top 100 listed companies to file Business Responsibility Reporting (BRR) based on NVG
2014	MCA announced Sec 135 for companies to spend 2% on Corporate Social Responsibility (CSR) based on average net profit before tax in the preceding three financial years
2015	SEBI extended BRR for the voluntarily top 500 listed companies from FY 2016-17. LDOR (Listed Obligations and Disclosure Requirements) 2015 regulations.
2021	SEBI BRSR (Business Responsibility and Sustainability Report) Core: From FY 2023-24, the top 1000 companies based on market cap shall voluntarily make disclosures as per BRSR. FY 2023-24 top 150 listed entities mandatory.

Source: Compiled by the authors from MCA Circular (2009a), MCA Circular (2011b), MCA Circular (2012c), MCA Circular (2021d) and SEBI circular (2015a); SEBI circular (2023).

Table 1 –BRSR milestones in India

The MCA and SEBI rolled out many initiatives to drive the firms' sustainable behaviours, for example- the MCA announced Sec. 135 in 2014, which called for companies to spend 2% of their Profit Before Tax (PBT) for CSR, SEBI in 2015 on voluntary basis extended BRR guidelines to the top 500 listed companies, and called as BRSR in 2021 applicable for the top 1000 companies from FY 2023-24. It is expected that such sustainability initiatives will be able to help drive the nascent commitments of companies towards their environmental, social and governance (ESG) responsibilities (Ng & Rezaee, 2015; Jain et al., 2016; Rezaee, 2016; Deephhouse et al., 2017; & Matten & Moon, 2020). To improve BRR compliance, SEBI clarified that non-compliance with BRR means failing to comply with the listing agreement, and defaulters may face heavy penalties, fines, suspensions or delisting if non-compliance persists (SEBI Circular, 2015a). The Indian market regulators thus have put forth many initiatives to build ESG momentum in the country as hoped that integrated reporting would play a significant role in its plans. The impact, whether positive, negative, or none, on performance is an outcome of this paper. The structure of the paper is as follows: the next section provides a literature review on sustainable reporting and hypothesis development, followed by data and methodology, findings, and discussions, and the last section contains the conclusions and policy implications.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

1.1 Impact of Sustainable Reporting on Corporate Performance Global scenario

The investigations into published sustainable reporting literature started with around 300 abstracts dealing with the phenomenon of the impact of Business Responsibility & Sustainability Reporting (BRSR) or non-financial reporting on Corporate Sustainable performance (CSP), Corporate Financial Performance (CFP), and Corporate

Market Performance (CMP). It was first filtered to around 190 abstracts, and finally, an in-depth study of around 100 papers was done to understand the link between the theory and the phenomenon under study. In the process, many databases were referred to, including ProQuest, EBSCOhost, and Scopus.

In the literature, the terms CSR, ESG or sustainable reporting are used interchangeably for non-financial reporting with a single objective to help build a firm's triple bottom line, that is, to meet environmental, social and commercial commitments (Ng & Rezaee, 2015; Jain et al., 2016; Rezaee, 2016; Deephouse et al., 2017; & Matten & Moon, 2020). The terms integrated reporting, sustainable reporting, non-financial reporting, ESG reporting, and CSR reporting are also used interchangeably in this research paper (Rezaee, 2016).

The impact of sustainable reporting on corporate performance is studied mainly in developed countries, and the findings are mixed as researchers have observed - positive impact, negative impact or no impact. *First*, positive impacts- Abatecola et al. (2012) observed a statistically significant relationship between non-financial corporate governance disclosures (or sustainability reporting) and corporate performance variables return on capital (ROC) and return on assets (ROA%) for Swiss and Italian companies, respectively. *Second*, negative or no impacts- Dhaliwal et al. (2011) observed no significant effect of ESG disclosures on market and financial returns due to non-financial disclosures for the US firms. The findings are primarily in developed countries and are inconclusive of the impacts of sustainability reporting on corporate performance. In summation, the research outcomes of the effects of sustainable reporting on corporate performance are mixed and are conducted mainly in the context of developed countries. Thus, it cannot be established whether or not sustainable reporting positively influences corporate performance, especially in the context of developing countries.

1.2 Impact of Business Responsibility and Sustainability Report (BRSR) on corporate performance in India

The sustainable reporting literature in developing countries is also proliferating, but it is still in its infancy compared to developed countries (Jain & Winner, 2016). In their study, Jain and Winner (2016) posited that most countries have sustainable reporting guidelines on environmental, social, and governance (ESG) aspects; however, the framework for reporting on sustainable reporting needs to be more consistent. One globally recognised reporting framework is the Globally Reporting Initiative (GRI), which companies across countries use to report their sustainability activities (Frost et al., 2005). The reporting framework takes care of the applicable accounting and sustainability norms and thus promotes sustainable development (Cortez & Cudia, 2011). The BRSR guidelines provide a framework for reporting sustainability activities for the listed companies in India (refer to Table 1).

India's sustainable reporting (BRSR) process is still evolving, with a foundation laid by the MCA's NVG guidelines announced in 2011. The NVG is based on the "9 Core Principles" and reports on a company's ESG activities. It advocates for companies to adopt the triple-bottom-line approach and balance commercial commitments with social and environmental commitments sustainably (MCA circular, 2009a; MCA circular, 2011b; SEBI 2023). It invites corporations to report about their disclosures and encourages ethical leadership in companies.

While many authors have studied the impact of BRSR reporting on corporate performance, the outcomes, such as the global scenario, are mixed. *Positive* impacts: Prasanna (2013) posited that legislation-related regulations provided enhanced, consistent quality information to the minority shareholders. *Negative* or *no* impacts: Kumar and Devi (2015) observed that sustainable reports should be prioritised due to a lack of time and skills. In summary, the effect of integrated reporting (BRSR) on corporate performance is mixed in India. This paper will add to the sustainability literature in India on the impact of integrated reporting on corporate performance.

1.3 Impact of Ethical Leadership on BRSR in India

The NVGs' Business Responsibility Report (BRR) needed to be amended to encourage corporations to lead in practises and disclosures. In May 2021, SEBI mandated 'Business Responsibility and Sustainability Reporting' for the top 1000 listed companies on the stock exchange (by market capitalisation) to report sustainability performance and keep stakeholders informed starting in the fiscal year 2022-2023. Business Responsibility and Sustainability Reporting (BRSR) helps companies practise sustainability and responsibility. The Principle-wise Performance Disclosure section helps entities link principles and fundamental aspects to critical processes and decisions. It has nine principles. The needed information is crucial and leadership. Every BRSR-filing company must disclose the essential indicators & voluntary basis leadership components.

Leadership indicators go beyond the BRSR framework's minimum disclosures. These indicators are for sustainable and responsible business leaders. Examples of leadership indicators include innovation, sustainable practices, stakeholder engagement, inclusive growth, and equitable development. Companies can commit to sustainable and ethical business practices and progress towards leadership by publishing essential leadership indicators. The principle-wise Performance Disclosure portion of the BRSR helps organisations communicate their sustainability performance to stakeholders and promote openness and accountability.

1.4 Corporate Performance Measurements

The two measures of company performance are financial performance (CFP) and market performance (CMP) (CED, 2007). The economic performance is reflected in the firm's profitability or share price (Jurkus et al., 2008). The accounting-based profitability tracks historical financial performance, while the share price-based market measures future financial performance (Hoskisson et al., 1994; Keats & Hitt, 1988). The Financial Performance is measured by Return on Asset (ROA%) (Burhan & Rahmanti, 2012). Market performance is commonly measured by the Tobin Q (TQ) and is used extensively for investment opportunities in finance literature (Singhal et al., 2016). In the current paper, ROA% is used as a measurement factor for financial performance, and TQ is used for market performance.

The third measure of company performance is Corporate Sustainability Performance (CSP). It does not have one definition in literature- business scholars consider CSR as a critical component of corporate sustainability (Kiron et al., 2015; Ng & Rezaee, 2015; Jain et al., 2016; Rezaee, 2016; Deephouse et al., 2017; & Matten & Moon, 2020). This paper measures the CSP by % of CSR spent on PBT (Profit Before Tax), in alignment with Sec. 135 MCA guidelines (MCA circular, 2012c; MCA FAQ, 2021d).

1.5 Hypothesis development

The current research attempts to add to the sustainability literature to study the impacts of BRSR on corporate performance in developing countries. To the best of the authors' knowledge, the impact of SEBI's BRSR reporting on corporate performance (sustainability, market and financial) in India has not been well researched, and the present research paper fills this gap. The Indian context is chosen as it is an emerging and developing country (EDC) and one of the fastest-growing economies in the world (GCSE OCR, 2021). Due to the regulator's pressure and increased expectations from the listed Indian firms of investors and society, we expect that the investments made in CSP would result in more efficient use of resources and a more socially responsible image of the firm. It will improve the accounting-based and the market-based financial performance, measured by ROA (%) and TQ, respectively. We also expect that the integrated reporting guidelines will help improve firms' compliance with CSP after implementing the BRSR 2021 compared to the previous periods. Therefore, given the scientific objective tradition, our null hypotheses are as follows–

Hypothesis 1: - There is no significant difference in the Market Performance measured by TQ before and after the introduction of BRSR 2021 guidelines

Hypothesis 2: - There is no significant difference in the Financial Performance measured by ROA (%) before and after the introduction of BRSR 2021 guidelines

Hypothesis 3a: There is no significant difference in Corporate Sustainability Performance (%) measured by the ratio of CSR spent to PBT before and after the introduction of BRSR 2021 guidelines.

Hypothesis 3b: There is no significant difference in Corporate Sustainability Performance (%) measured by the ratio of CSR unspent to PBT before and after the introduction of BRSR 2021 guidelines.

Hypothesis 4:- There is no significant difference in the Leadership messages before and after the introduction of BRSR 2021 guidelines

2. DATA AND METHODOLOGY

This research paper is empirical. The corporate performance data is referred by authors from secondary sources, i.e., company websites and the CMIE Prowess database (Prasanna, 2013), and collated from January to September 2023. The software used is SPSS16 for statistical quantitative data analyses (Bayoud et al., 2012). The outputs are triangulated with the Ethical Leadership Content Analysis.

2.1 Sample and Data Collection

The sample comprises the top 10 Indian segments of the global Fortune 500 companies published annually by

Fortune India magazine, a subsidiary of Fortune Global magazine. The concept of the Fortune 500 list goes back to 1955 when Edgar P. Smith, a Fortune editor, published it for the first time (Prusty & Kumar, 2016). The list of the 500 most prominent Indian public or private companies is published annually based on their total revenues in the respective fiscal year and made available publicly. Multiple authors have previously used the Fortune 500 companies list for research (Junior et al., 2014; Prusty et al., 2016). This research paper uses the list of the top 10 Indian segments of the Global Fortune 500 companies collated twice: the 2015 list for the pre-BRSR period and the 2021 list for the post-BRSR period, refer to Table 2. The first sample was chosen because 2015 was the year that SEBI extended BRR for the 500 listed companies, and the second sample was based on 2021 due to the availability of the latest company performance data. The cut-off period is from FY2012 to FY2021 due to the availability of data on companies' websites and CMIE prowess. The companies belonged to the Oil and Gas, automotive, Steel, Banking and IT/ ITES sectors in 2015, with the addition of the services sector in 2021.

Companies in 2015	Revenue (US \$)	Companies in 2021 (Global Fortune rank)	Revenue (US \$)
Indian Oil	61906	Reliance Industries (96)	84364
Reliance Industries	52406	Indian Oil (151)	67662
Tata Motors	36579	Oil and Natural Gas Commission (190)	55513
State Bank of India (SBI)	35245	State Bank of India (221)	50412
Bharat Petroleum	32927	Bharat Petroleum (309)	39586
Hindustan Petroleum	29230	Tata Motors (337)	35873
Oil and Natural Gas Commission	22625	Rajesh Exports (462)	26796
Tata Steel	19407	Tata Consultancy Services	22129
Hindalco Industries	14643	ICICI Bank	20519
Tata Consultancy Services	13475	Larsen & Toubro	20249

Sources: Prepared by authors refer Fortune India (2022); Malik (2020)

Table 2 – Top10 Indian Segment of global Fortune 500 companies in 2015 and 2021

2.2 Integrated Framework

Financial performance, market performance, and Sustainability performance are compared for the pre-BRR (FY 2012-2015) and BRSR (FY 2016-21) periods. FY2015 is the inflexion year, as SEBI triggered BRR reporting for the top 500 companies, while BRSR came into effect from FY2021 and is called the BRSR period (refer to Figure 1). The period 2012-2015 is called the pre-BRR period.

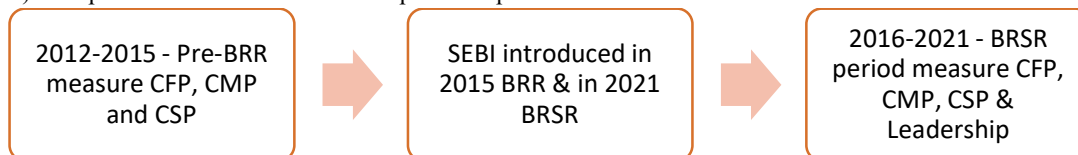


Figure 1: - Framework of the research paper

2.3 Statistical Tools

The statistical tools used to compare corporate performance are (i) descriptive analysis to understand the data. (ii) independent-t test to find out, if any, the difference in performance between the pre-BRR (2012-2015) and BRSR (2016-2021) periods due to the BRSR guidelines (Charumathi & Rahman, 2019). (iii) The 2021 chairman's reports for changes in the leadership messages using paired t-tests.

2.4 Method & Variables Measurement

ROA (%) for the financial performance and TQ for the market performance are widely used in analysing and evaluating companies' performances.

ROA (%) is an accounting-based measure of a firm's profitability. Return on asset is a profitability ratio that measures a company's income or operating success for a given period (Weygandt, 2007). In addition, ROA% is known as the variable that measures economic performance (Dincer, 2011; Nakamura, 2011). It is better related to efficiency than Return on Equity and is used by many researchers; for example- Burhan et al. (2012) used it to

measure the financial performance of Indonesian listed companies for the period 2006-2009, which includes manufacturing, service and other companies.

The formula is $ROA\% = (\text{Profit after Tax (PAT)} / \text{Total assets (TA)}) * 100$

Tobin Q or TQ

It measures the premium the market pays to the company's share (Singhal et al., 2016). Tobin Q is based on market measures and is defined as a firm's market value (MV) divided by its assets' replacement cost (Chung & Pruitt, 1994). It is used to measure corporate market performance, i.e.,

The formula is $TQ = \text{Market Value (MV) of Assets} / \text{Book Value (BV) of Assets}$.

where $MV \text{ of Assets} = (BV \text{ of assets} - BV \text{ of Equity} + MV \text{ of Equity})$.

CSP

Corporate Sustainability Performance (CSP) does not have one definition in the literature. CSR measures the firm's sustainability; the % of CSR spent on PBT is considered as the measure of Sustainability (Nakamura, 2011; MCA circular, 2012c), i.e.,

the formula is $CSR \text{ spent}\% = (CSR \text{ spent} / PBT) * 100$.

Likewise, the formula for the CSR unspent% is $(CSR \text{ unspent} / PBT) * 100$.

Period

The grouping variable is the period considered – 0 for the pre-BRR period (2012-2015) and 1 for the BRSR period (2016-2021).

Leadership Messages

The present study uses qualitative analysis to reveal the themes in yearly leadership statements released as part of reporting processes. We focused on the Chairman's/CEO/Managing Director's Letter to Shareholders and AGM addresses for FY 2014-15 & 2019-21. Code-segment analysis was used in MAXQDA Analytics Pro 2022 to analyse the data. Our data was painstakingly obtained from public sources of selected ten firms for each block of 10 companies, and each year's leadership statements are maintained separately for examination. For the ten companies over two years (FY2015 & FY2021), the results and analysis segment's 'document' is their annual leadership message. The 9 BRSR Principles underpin codes. The codes were purposefully and intuitively referred to from literature (Chakrabarti, A. 2023). There were 57 codes for the 9 BRSR Principles. Table 3 lists the BRSR Principles and Keywords used as codes in content analysis.

No. Principle Codes	Key words
1 Businesses should conduct and govern themselves with integrity, and in a manner that is Ethical, Transparent and Accountable.	accountability, reporting, integrity, ethical
2 Businesses should provide goods and services in a manner that is sustainable and safe.	consumers, impact, environmental, safe, sustainable (sustainability)
3 Businesses should respect and promote the well-being of all employees, including those in their value chains.	respect, promote, opportunities, vendors, partners
4 Businesses should respect the interests of and be responsive to all its stakeholders	responsive, stakeholders, engagement, perspectives, feedback
5 Businesses should respect and promote human rights	privacy, human right, operations, dignity, commitments, dialogue, diversity
6 Businesses should respect and make efforts to protect and restore the environment	protect, environment, stewardship, conservation, ecosystem, restore
7 Businesses, when engaging in influencing public and regulatory policy, should do so in a manner that is responsible and transparent.	public, policy, responsible, welfare, democratic, fairness, government
8 Businesses should promote inclusive growth and equitable	inclusive, development, marginalized, communities, empowerment, underserved,
9 Businesses should engage with and provide value to their	marketed, decisions, choices,

Table 3: - BRSR Principles and Keywords

3. FINDINGS

The data of the top 10 Indian companies is collated by authors from the company websites and CMIE Prowess database for 2012-2021. Based on the data collated, two balanced panels are formed; the first, pre-BRR, has 40 companies' yearly data, is ten sample companies for four years (2012-2015), and the second BRSR panel has 50 companies' yearly data that is ten sample companies for five years (2016-2021). The total sample data size is 90 companies' annual data. The unit of analysis is- one company's performance in each year of study, measured by Tobin Q, ROA %, CSR Spent to PBT (%), and CSR unspent to PBT (%). The first panel, pre-BRR, are grouped by a period '0', and the second BRSR is grouped by '1'.

A near-normal distribution of mean values is required to conduct statistical analysis, and to achieve this, the treatments for outliers, as suggested by Johnson & Wichern (2007), are used. The first step involved finding the

standardised 'z' values; that is, the formula is $z = (x - \bar{x} \text{ (or mean)}) / \text{sd (standard deviation)}$. The second step is to examine these 'z' values for very large or very small values and remove outliers. The yearly data is removed from the panel based on very large or small 'z' values; for example- if a record has a 'z' value of -6.02 or -34.42% CSR spent to PBT (%), due to the company having spent on CSR despite incurring losses in that year, it is removed. In the same way, based on the standardised 'z' values review, eleven outlier records are removed from the first panel, and sixteen outliers are removed from the second panel. The remaining companies, after applying data outliers' treatment (Johnson & Wichern, 2007), are: the first panel is 29 in the pre-BRR period, and the second panel is 34 in the BRSR period.

3.1 Descriptive analysis

According to Zikmund (2003) and Wagner (2010), descriptive analysis conveys precise behaviour of variables: mean, median and SD and data ranges.

	TQ	ROA%	UnspentCSRtoPBT%	SpentCSRtoPBT%		TQ	ROA%	UnspentCSRtoPBT%	SpentCSRtoPBT%
Mean	1.21	3.75	0.00	0.04		1.35	4.07	0.28	1.35
Median	1.08	2.54	0.00	0.00		1.27	4.53	0.00	1.49
Standard Dev	0.42	3.03	0.00	0.18		0.36	2.67	0.50	0.72
Skewness	1.92	1.03	0.00	3.74		0.55	0.06	1.67	-0.29
Standard Errc	0.08	0.56	0.00	0.03		0.06	0.45	0.08	0.12
Kurtosis	4.32	0.43	0.00	13.20		-0.31	-0.97	1.76	-0.18
Minimum	0.75	0.55	0.00	0.00		0.64	0.02	0.00	0.00
Maximum	2.66	11.88	0.00	0.81		2.13	9.16	1.67	2.92
Count	29.00	29.00	29.00	29.00		34.00	34.00	34.00	34.00

Pre-BRR analysis (2012-2015).

BRSR Analysis (2016-2021)

Table 3: - Descriptive Analysis

In the pre-BRR period, refer to Table 3, the mean TQ is 1.21 or stays above 1, which means that the shareholders seem to have paid a premium to the sample companies, which may be in recognition of their ESG activities or financial performances. In the BRSR period, the mean TQ went up to 1.35. The premium paid by shareholders has increased by around 12% against the pre-BRR. The financial performance measured by mean ROA % in BRSR has improved to 4.07, against a mean ROA% of 3.75 in pre-BRR or a rise of around 8%. The market premium paid rise is 12% against an 8% jump in financial performance, which may be due to the market factor in the rise in mean CSR spent to PBT at 1.35% in the BRSR period against 0.04% in the pre-BRR period. In BRSR, financial and market performance improvements may be due to implementing BRSR reporting. This may or may not be why we cannot segregate corporate performance based on managerial business decisions or other decisions, such as ESG decisions.

The mean CSR spent on PBT (%) in BRSR increased to 1.35% from 0.04% in the pre-BRR period. The maximum CSR spent in the BRSR period is 2.92% against 0.81% in the pre-BRR period, having jumped over three times. In the pre-BRR period, the sample companies paid no attention to the CSR activities, as the mean CSR unspent is almost zero and the mean CSR spent to PBT is 0.04%. In the BRSR period, sample companies showed positive spending on CSR due to the mandatory BRR or fear of penalty. In BRSR, the mean CSR unspent to PBT is 0.28%, indicating that companies may delay spending on CSR activities in the same year. It could also be due to Leadership being invited to behave ethically due to SEBI 2021 BRSR guidelines.

3.2 Independent t-tests for TQ, ROA, CSP, and Leadership Messages

A two-sample independent t-test is a statistical method for determining whether there is any difference in the mean values across two independent groups. It has three key assumptions: the two samples are random, the observations are independent, and the sample distribution is normal.

In this research paper, for the t-test assumptions, the two samples are random and independent as one is based on the 2015 Fortune 500 India segment list and the other is based on the 2021 Fortune 500 India segment list. However, the seven companies are familiar with the publishing methodology of the Fortune 500 list. A few authors have used a similar approach of t-test and data based on the Fortune 500 list; for example, Prusty & Kumar (2016). According to Hair et al. (2010), data is considered normal for the normality assumption if skewness is

between -2 to +2 and kurtosis is between -7 to +7. For the TQ, ROA% and CSR unspent to PBT (%), refer to Table 2; the skewness and kurtosis are within the normal range and suitable for independent-t tests (Hair et al., 2010). The CSR spent to PBT (%) in the BRSR period has a normal distribution, but it is an approximately normal distribution in the pre-BRR period. Based on this normality test, the three assumptions to apply an independent t-test are met to proceed with the independent samples t-test.

3.2. Independent samples t-test for TQ

Based on the independent samples t-test for TQ, the null hypothesis is that $TQ \mu_{pre-BRR}$ is equal to $TQ \mu_{post-BRSR}$ at a level of significance (α) of 0.10. Based on Levene's test, refer to Table 4, the p is 0.917, more significant than α ; the null hypothesis is not rejected. It concludes that, statistically, the two means $TQ \mu_{pre-BRR} = TQ \mu_{BRSR}$. No significant difference in TQ was observed between pre-BRR and BRSR periods due to the BRSR reporting, and hypothesis 1 was not rejected.

		Levene's Test for		t-test for Equality of Means					90% Confidence Interval of the Difference	
		Equality of Variances								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
TQ	Equal variances assumed	0.011	0.917	-1.48	61	0.144	-0.145	0.098	-0.308	0.018
	Equal variances not assumed			-1.46	55.69	0.149	-0.145	0.099	-0.311	0.02

Table 4: - Independent Samples t-test for TQ

3.2. Independent samples t-test for ROA%

Based on the independent sample t-test for ROA%, the null hypothesis is that $ROA \mu_{pre-BRR}$ is equal to $ROA \mu_{BRSR}$ at a level of significance (α) of 0.10. Based on Levene's test, in Table 5, the p is 0.558, more significant than α (0.10). The null hypothesis is not rejected; the two means $ROA \mu_{pre-BRR} = ROA \mu_{post-BRSR}$. No significant difference in ROA% was observed between pre-BRR and BRSR periods due to the BRSR guidelines, and hypothesis 2 was not rejected.

		Levene's Test for		t-test for Equality of Means					90% Confidence Interval of the Difference	
		Equality of Variances								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
ROA%	Equal variances assumed	0.347	0.558	-0.435	61	0.665	-0.313	0.719	-1.51	0.888
	Equal variances not assumed			-0.431	56.33	0.668	-0.313	0.726	-1.52	0.902

Table 5: - Independent Samples Test for ROA%

3.2. Independent samples t-test for CSR spent to PBT%

Based on the independent sample t-test for CSRspent %, the null hypothesis is that $CSRspent \mu_{pre-BRR}$ equals $CSRspent \mu_{BRSR}$ at a significance level (α) of 0.10. Based on Levene's test, refer to Table 6, the p-value is 0.0, less than α (0.1). The null hypothesis is not accepted, nor is the alternative accepted; the two means $CSRspent \mu_{pre-BRR} \neq CSRspent \mu_{post-BRSR}$ statistically. The null hypothesis 3a is rejected, and the alternative is accepted; that is, there is a statistically significant difference in CSRspent (%) between the pre-BRR and BRSR periods. This indicates that BRSR may have positively impacted CSR spending in the sample companies. Based on the mean CSRspent (%), it is observed that it has jumped to 1.35% in the BRSR from just 0.04% in the pre-BRR period.

		Levene's Test for		t-test for Equality of Means					90% Confidence Interval of the Difference	
		Equality of Variances								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CSR Spent	Equal variances assumed	32.613	0	-9.513	61	0	-1.31	0.137	-1.54	-1.08
	Equal variances not assumed			-10.21	37.97	0	-1.31	0.128	-1.52	-1.09

Table 6: - Independent Samples Test for CSR Spent to PBT%

3.2. Independent samples t-test for CSR unspent to PBT%

Based on the independent sample t-test for CSRUnspent %, the null hypothesis is that $CSRUnspent \mu_{pre-BRR}$ is equal to $CSRUnspent \mu_{BRSR}$ at a level of significance (α) of 0.10. Based on Levene's test, in Table 7, the p-value is 0.0 and less than α (0.1). The null hypothesis is not accepted, nor is the alternative accepted. That is, the two means $CSRUnspent \mu_{pre-BRR} \neq CSRUnspent \mu_{BRSR}$ statistically. The null hypothesis 3b is rejected, and the alternative accepted that there is a statistically significant difference in CSRUnspent (%) between pre-BRR and BRSR periods. The sample companies' mean CSRUnspent jumped to 0.28% in BRSR from almost none in the pre-BRR period, refer to Table 2. It may be a planned strategy of companies whereby the CSR unspent funds are spent at an appropriate time in future years as per the company's plans.

		Levene's Test for Equality of Variances		t-test for Equality of Means					90% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CSR UnSpent	Equal variances assumed	54.21	0	-3.06	61	0.003	-0.285	0.093	-0.441	-0.129
	Equal variances not assumed			-3.32	33	0.002	-0.285	0.085	-0.431	-0.14

Table 7: - Independent Samples Test for CSR unspent to PBT%

3.2. Independent T-test for Leadership Messages

At year-end comparisons, selected companies will analyse collected data. Leadership messages would be compared year-by-year for the ten companies in FY 2015 & 2021. The paired t-test examines population mean changes before and after an experimental intervention. A paired t-test will discuss any significant changes in leadership messaging patterns before and after the BRSR Principles are applied in FY 2021 in two blocks (Table 10).

BRSR principles, year-wise frequency and percentage of coded segments/ key words					
BRSR Principle	FY 2015	Percentage	FY 2021	Percentage	Change %age
1	4	1.31%	11	2.78%	1.47%
2	86	28.20%	86	21.77%	-6.42%
3	31	10.16%	66	16.71%	6.54%
4	16	5.25%	25	6.33%	1.08%
5	37	12.13%	54	13.67%	1.54%
6	31	10.16%	47	11.90%	1.73%
7	52	17.05%	52	13.16%	-3.88%
8	43	14.10%	46	11.65%	-2.45%
9	5	1.64%	8	2.03%	0.39%
Total	305	100.00%	395	100.00%	

Table 10: - BRSR Principle, year-wise comparison of coded segment

A macro-view (Table 10) of the 20 leadership messages revealed 700 coded segments representing all 9 BRSR Principles. A deeper analysis provided a significant focus on BRSR Principles.

The paired t-test results (table 11) for the year-wise comparison are described below. The paired t-test was used to examine significant changes in leadership messages over selected periods because of BRSR applicability. A paired two-sample means t-test was run on the coded segments of the 9 BRSR Principles for FY 15 and FY 21. The t-test results indicated significant differences in leadership messages across both selected periods at a 5% significance level, with a two-tailed p-value of 0.0288. The Pearson correlation coefficient of 0.901 indicates a higher correlation between the two sample periods, supporting that leadership messages often build on previous years' messages to establish context or narrative. We found that applying BRSR principles led to changes in leadership messages, supporting our motivation for the study.

Paired t-Test	FY2015	FY2021
Mean	33.89	43.89
Variance	577.88	646.36
Observations	9	9
Pearsons Correlation	0.9018528	
p (Two tail at 5%)	0.0288299	

Table 11: - Paired t-test of FY 2015 & FY2021 due to BRSR

3.3 Multi-Collinearity Tests

The multi-collinearity tests provide information about the interdependency between various variables. Based on the multi-collinearity test (refer to Table 8), the relationship of TQ with CSR spent to PBT (%) is weak and negative in pre-BRR and BRSR periods. It indicates a negative or no correlation between improved CSR spend and its market performance. Likewise, researchers Margolis and Walsh (2003) posited that investments in social

causes do not return benefits to stakeholders.

The relationship of ROA% or financial performance with CSR spent to PBT (%), refer to Table 7, was weak and negative in pre-BRR, and it changed to a positive, stronger correlation in BRSR. This indicates that the coupling between the CSR spent and ROA% became stronger in BRSR, or the companies may have realised the significance of CSR in financial performance.

In BRSR, the relationship of CSR unspent to PBT (%) is strongly positive with TQ and weak positive with both ROA% and CSR spent to PBT %.

Variables	TQ	ROA%	CSRUnspenttoPBT%	CSRSpenttoPBT%	TQ	ROA%	CSRUnspenttoPBT%	CSRSpenttoPBT%
TQ	1	0.056	*	-0.096	1	0.294	0.316	-0.122
ROA%		1	*	-0.107		1	0.096	0.285
CSRUnspenttoPBT%			*	*			1	-0.09
CSRSpenttoPBT%				1				1

* - Insignificant, not calculated

Pre-BRR (2012-2015)

BRSR (2016-2021)

Table 8: - Pre-BRR and BRSR multi-collinearity test

4. DISCUSSIONS

The top 10 Indian Fortune 500 companies' financial performance, market performance, sustainability performance and Leadership quality are compared for pre-BRR (FY 2012-2015) and BRSR (FY 2016-21). FY2015 is the inflexion year, as SEBI voluntarily triggered BRR reporting for the top 500 companies, and from FY2021, BRSR kicked off.

Based on research work, in the BRSR period, the mean CSR spending of companies increased to around 1.35% compared to 0.04% in the pre-BRR period. The CSR unspent increased to 0.28% in the BRSR period. The sample companies demonstrated a lag in CSR spending in the BRSR period. Thus, the sample companies may need more time to get recognition of their ESG activities in the corporate performance (financial or market) in the same year by consumers and shareholders. This may be why, in the sample companies, TQ and ROA%, no statistical difference is observed between pre-BRR and BRSR periods despite the rise in CSR spending and CSR unspent. It may be due to the presence of other variables or the nature of the relationship between variables that may have driven the rise in CSR but no impact on financial and market performance in BRSR.

The market and financial performance increased by 12% and 8% in the two periods, respectively. Due to the BRSR reporting or fear of penalty, companies have demonstrated positive, sustainable behaviour: improved CSR spending, commanding a better market premium, and improved financial performance, supported by another author, Abatecola et al. (2012).

The leadership messages demonstrated a significant jump in quality across BRSR's nine principles in the two periods. We have found that applying BRSR principles led to positive changes in leadership messages (Chakrabarti, Anindita. 2023).

The sample companies' management may have pushed ahead with CSR as a key strategic driver for their growth and positive changes in companies due to the BRSR or fear of penalty, as may be the case, supported by Dhaliwal et al. (2011). These may have found value due to the BRSR reporting, supported by many authors. Ioannou & Serafeim (2017) posited that improved sustainability disclosures due to introducing reforms are associated with increased firm value in China, Denmark, Malaysia and South Africa. Porter and Linde (1985) posited that CSR built a competitive advantage. Many authors (Barnett, 2007; Barnett & Salomon, 2012) posited that CSR helped attract resources (human, capital), earn profits due to deeper relationships with stakeholders, and market products and services.

In the BRSR, in the CSR unspent to PBT%, a statistically significant difference is observed from pre-BRR. The mean CSR unspent increased to 0.28% BRSR period from almost zero in the pre-BRR period, supported by Churet and Eccles (2014) that a time lag exists between ESG reporting and the eventual reflection in financial performance.

This paper has not observed a significant impact of BRR on the market performance and financial performance. Many researchers have followed a similar pattern (Dhaliwal et al., 2011; Adams et al., 2012), with no significant impact of ESG disclosures on US firms' market returns, ROA%, and ROE.

5. CONCLUSIONS

This paper examined the impact of Business Responsibility & Sustainability Reporting (BRSR) on Corporate Financial Performance, Market Performance, Corporate Sustainability and Leadership. It was compared between

pre-BRR (2012-2015) and BRSR (2016-2021) for the top 10 Indian segments of the global Fortune 500 companies, with two samples considered- the first based on the 2015 list and the second based on the 2021 list.

One of the most essential organisation science theories is the Stakeholders Theory (Freeman, 1984), which explains the relationship between a company and its stakeholders. It suggested that a company must balance its commercial interests with its social and environmental commitments to become sustainable. Freeman's phenomenon is very well observed in the sample companies, as in BRSR, the mean CSR spent on PBT % is 1.35, compared to the pre-BRR mean CSR spent on PBT at 0.04%. It is getting closer to 2%, as required by MCA Sec. 135 (MCA Circular, 2012b). The BRSR implementation and expectations of leadership being ethical seem to have positively impacted sample companies' sustainable performance.

Be that as it may, the sample companies have funding blocked towards CSR due to BRSR reporting guidelines or fear of penalty. It is positive news for the country's overall sustainability momentum. Ethical leadership's role in BRSR reporting may have contributed to this positive movement toward CSR (Duane et al. et al., 2016). Thus, this is an area in which research scholars may investigate the role of ethical leadership in CSR.

SEBI's 2015 decision to implement a BRR report for the top 500 listed companies has yielded expected positive results, as reflected by an uptick in CSR spending in the BRSR period. Sanan and Yadav (2011) noted that the disclosure reforms in India are critical in driving a culture of transparency, accountability, and economic governance.

SEBI policy implications - To further enhance companies' environmental and social commitments in the country, SEBI has planned to make BRSR mandatory from FY 2023-24 for 150 listed companies based on market capitalisation. This paper supports SEBI's policy decision.

The outcomes of this paper are helpful reflections for the SEBI or regulators of other developing countries and the companies that have dilemmas about their next steps regarding CSR spend. Despite a few limitations, the paper contributes to the sustainability literature on the impact of non-financial reporting (BRR) or integrated reporting on financial performance, market performance, sustainability performance and ways for Leadership (ethical) improvements, especially for developing countries.

Management implications - the managers or executives of the companies, despite being aware of the benefits of CSR spending, and those who still need to commit to CSR funds, there are a few lessons. However, they may have local reasons, which vary from company to company. Be that as it may, the uptick in CSR spend of the sample companies in the BRSR period is an encouraging sign to help build a more sustainable and socially responsible environment in the country.

Limitations: This paper has certain limitations. *First*, the study has been undertaken by considering the data of only the top 10 Indian segments of Fortune 500 companies. It is limited in size, catering to about one percentage of listed corporates in BSE, India. As a future research paper, it could be expanded to include the top 500 listed companies. *Second*, there may be other reasons not considered within this paper that impact CSR spending, TQ, and ROA%, such as business areas such as oil and manufacturing have to spend compulsorily due to regulator requirements or the level of diversity within the board of directors, size of the company, ownership (Indian or Foreign), these may be analysed by interested scholars.

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