Exploring the Sustainability Reporting Quality and Financial Performance Nexus - An empirical study in Indian Context

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Abstract

The study explores the nexus between sustainability reporting quality and financial performance of Indian firms in the short run and long run. We make use of sample of National Stock Exchange (NSE) listed firms (289 firm year observations) between the years 2014-2020, which have published at-least four externally assured Global Reporting Initiative (GRI) based sustainability reports during this period. The study makes use panel data regression with random effect. Our findings suggest that sustainability reporting quality has a negative impact on financial performance (ROA and Tobin Q) in the short term and positive impact in the long term. These findings have theoretical implications for academia and policy makers at the local, national and international levels. Further, the findings have practice implications for firm management, investors as well as regulatory authorities. The paper demonstrates the importance of inculcating sustainability initiatives in the firm at the grass root level.

Keywords: Sustainability reporting quality, financial performance, India, panel data regression

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1. Introduction

Recently sustainability has emerged as a major phenomenon changing as well as directing how firms function and communicate with their stakeholders. The community expects firms to responsibly handle environmental and social issues in a meaningful manner adding value to the community (Luning, 2012). Corporate sustainability disclosures are increasingly being adopted by firms (De Villiers and Sharma, 2017; De Villiers, Venter and Hsiao, 2017). In many countries they have been mandated by the regulatory authorities.[2] Legislation leads to normative pressure for conformance. This further highlights the sustainability disclosure as it signals conformance to the standard as well as conformance to the norm of transparency. Sustainability disclosure has its roots in the Triple Bottom Line (TBL) framework for corporate performance measurement (Wheeler and Elkington, 2001).The TBL framework basically provides a method to measure or track the business performance environmentally, socially as well as economically (Sala, 2020; Onyali, 2014).

Sustainability practices have emerged as a critical component ensuring the existence and perseverance of an organization in addition to ensuring adequate quality products (Simone et al., 2022). However, it is neither possible to monitor a firm continuously nor is it possible to evaluate a firm's sustainability performance objectively (King and Toffel, 2007; Touboul, 2013).Various stakeholders have no other option but to rely on various signals to assess a firm's performance (Spence, 1973). The sustainability disclosure or report is considered as one such signal providing an idea about the sustainability standing of the organization. The firm communicates its sustainability measures to various stakeholders through the sustainability disclosure report which is published in different formats by different firms. This study considers sustainability reports published as a part of the annual report or a standalone report or an integrated report. For the purposes of this paper, we only include reports adhering to the GRI standards. The GRI sustainability reporting framework is one of the most frequently used international sustainability accounting standards (Ballou et al., 2006; Gray, 2006). The standard provides precise

[2] In 2014, legislation (Directive 2014/95/EU) was enacted in the European parliament and the European Council of the European Parliament and the European Council. Similarly, in 1921, the Indian government amended Section 135 of the Companies Act 2013 mandating CSR. Also, the 2021 directive was bought in by SEBI (Securities & Exchange Board of India) making the Business Report and Sustainability Report (BRSR) format mandatory from FY2022-23).

guidelines on how to report each parameter. Sustainability reporting enhances value (Caraiani et al., 2012), supports communication among organizations (Vitolla and Raimo, 2018) and enables firm to achieve long-term goals. Firms often communicate their marketing plans using sustainability reports (Sweeney and Coughlan, 2008). In addition, it communicates firm's transparency to all stakeholders (Clarkson et al., 2011). This leads to an increase in stakeholders' belief in the firm. Additionally, the report is also a key investor decision point (Brooks and Oikonomou, 2018).

However, firms also release a sustainability report either to report incidents to the public or to distract stakeholder attention to other issues i.e., basically to change the narrative/stakeholder viewpoint (Lindbloom, 1994). Additionally, different stakeholder groups may have different preferences. For example, workers working at an industrial unit may prefer staff accommodation near the work premises but this may be opposed by other stakeholder groups. Similarly, a firm runs the risk of alienating certain stakeholder groups by disclosing their performance across the environmental, social or governance indicators. Therefore, a firm may choose to release a comprehensive sustainability report or selectively report only certain parameters pertaining to sustainability. Firms usually report in varying degrees of transparency. The disclosure lies in a range. Firms may extensively provide information for certain parameters where their performance is above par or they may curtail disclosure for select indicators where their performance is below par. Essentially, the sustainability disclosure provides the firm the flexibility to choose what it wants to disclose (Ullman, 1985; Gray et al., 1995).

Various theories have provided arguments for and against sustainability reporting. On one hand, the 'Friedman approach' states that primary responsibility of the firm management is to maximize shareholder wealth (Friedman, 1970). Sustainability reporting entails a certain cost. There is always an opportunity cost attached to sustainability reporting. Funds spent on sustainability reporting could have been used on research & development or marketing and so on (Woodroof et al., 2019). On the other hand, there is a perception that sustainability reporting brings about a gradual move towards more environment friendly business practices (Chabowski et al., 2011). This concept is further supported by the 'stakeholder approach' which posits that the organization should aim to develop value for all the parties associated with the firm and not restrict the benefits to shareholders only (Freeman and Reed, 1983). Therefore, needs of all the stakeholders should be

considered before taking any decision or action (Nguyen, 2020). Another theory of prime importance when considering the sustainability reporting for firms is the 'legitimacy theory'. It states that the firm makes use of sustainability reporting to gain acceptance of stakeholders and fulfil the societal expectations from the firm (Deegan, 2007). In addition, stakeholders attach a lot of importance to the compliance of a norm as well as the transparency norm (Michelon, 2011). Various stakeholders i.e., consumers, regulators, institutional investors are quite vocal in their demand for transparency regarding the firms' sustainability initiatives (Cui et al. 2018). This leads to normative pressure on the firm indicating stakeholder preference for compliance to various norms and practices of the industry/domain/region (Touboul, 2013; Fernandez-Feijoo et al., 2014). Various other factors play an important role with regards to sustainability reporting i.e., size (Patten, 2002; Holder-Webb et al., 2008), industry as well as ownership (Ntim and Soobaroyen, 2013). Therefore, sustainability reporting has benefits as well as costs. It is fairly important for stakeholder support and approval. This makes it all the more impertinent for the firms to analyse and decide on the quality of sustainability report to be published.

Given this background, this paper studies how sustainability reporting impacts financial performance. Further, this paper also analyzes how the impact of sustainability reporting on financial performance varies with time. Results indicate that sustainability reporting negatively impacts financial performance in the short run while in the long run, sustainability reporting has a positive impact on financial performance.

The remaining paper has seven major sections. The first section presents the problem statement followed by the second section which is an extensive review of the relevant literature on sustainability reporting. Section 3 discusses the theoretical framework and develops hypotheses based on the same. Section 4 details the research methodology which includes sample specification, data description, methodology adopted, and variable measurement as well as specific model details. Section 5 outlines the results and its discussion and Section 6 discusses the implications of the study for policy makers, managers and academia. Further, Section 7 concludes the paper and gives plausible scope for future research.

2. Literature review

There have been a number of studies pertaining to the link between sustainability reporting and financial performance. If we were to consider studies specific to India, Rajput et al (2012) were able to examine a positive relationship between corporate social responsibility activities and profit before tax. Similar results were also obtained by Ghosh (2013) on proxying corporate social responsibility by presence or absence in the S&P ESG index. In 2016, Laskar & Maji stated that sustainability reporting based on GRI parameters had a significant positive relationship with the market to book ratio of the firm. Similar results were also reported by various other researchers (Goel and Mishra, 2017; Chelawat and Trivedi, 2016; Shafat and Zameer, 2018). However, Kohli and Saxena (2012) posited that a weak correlation exists between CSR and financial performance of a firm.

This is further strengthened as Balasubramaniam (2019) reported a negative relationship between Tobin Q and ESG score. Additionally, Garg (2015) found a negative relationship between sustainability reporting and financial performance in the short term and a positive relationship between the variables in the long term. Further, Aggarwal (2013) reported mixed and inconclusive results between sustainability reporting and financial performance.

For detailed and more comprehensive review, studies from different countries are summarized in the Table 1. It is evident from the below mentioned table that sustainability reporting has been increasingly adopted by various firms across geographies over the past decade. However, the studies have yielded a mixed bag of results. More rigorous analysis is the need of the hour. The study makes important contributions to sustainability reporting and financial performance literature. This study considers the time period between the years 2014-2020. SEBI introduced Business Responsibility and Sustainability Reporting (BRSR) in 2021. These were voluntary for FY 2021-2022 and were made mandatory for FY 2022-2023 for top 1000 market capitalisation. Various firms were able to foresee possible regulation and bought about changes in their environmental and social parameters. This paper studies if this first mover advantage translated into better financial performance. This study further examines the impact in the short run as well as the long run.

Table 1: Relationship between Sustainability Reporting and Financial Performance

Study	Country	Measure of Corporate Sustainability	Measure of Financial Performance	Relationship
Lorraine et al. (2004)	UK	Media articles exposing environmental accidents/commendations	Share Prices	Negative
Freedman and Patten. (2004)	US	Environmental parameters of high pollutant industries	Share Prices	Negative
Cormier et al. (2008)	Multiple Countries	Content Analysis	Analyst earnings forecasts	Positive
Clarkson et al. (2011)	US	Environmental Performance	ROA, Cash Flows, Total Debts/Total Assets	• Negative relationship with Leverage • Positive and significant relationship with ROA and Cash Flows.
Swinkels (2012)	US, Canada	GRI	Tobin's Q, Dividend per share, ROA, ROE	No relation
Ong et al. (2014)	Malaysia	Environmental Performance parameters	ROA, ROE	Positive
Backstrom et al. (2015)	Sweden	Sustainability performance index based on disclosures DJSI, JEITA, COMPUSTAT	ROA	Positive only for board with education board diversity
Hussain (2015)	Multiple Countries	GRI (G3)	Tobin Q, ROA, ROE, D/E	Environment and social initiatives impact market and accounting performance but not capital structure
Qiu et al. (2016)	Multiple Countries	Bloomberg ES parameters	Forecast of earnings and dividends from IBES	• No relationship between environmental disclosure and financial performance. • Significant positive relationship between social disclosure and financial performance
Chen et al. (2018)	China	Environment parameters	ROA, ROE	Negative relationship associated with mandatory CSR disclosure
Buallay, (2019)	European Banks	Bloomberg ESG parameters	Tobin Q, ROA, ROE	Significant Positive Impact on performance
Dinçer and Altınay (2020)	Turkey	Four Indicators of environment, human resources, product liability, and community involvement.	Interest Margin, Return on Equity, Return on Assets	Negative

Source: Authors' Compilation

3. Theoretical Framework and Hypotheses

Sustainability reporting is supported by the stakeholder approach which gives importance to all relationship networks present in a firm's task environment including customers, employers, suppliers, regulators, investors and others who will be impacted by any organizational action (Freedman and Reed, 1983). Further, sustainability reporting is also in line with the legitimacy theory. The theory basically posits an understanding or contract between the firm and the society such that the firm supports and performs actions to gain social approval (Guthrie and Parker, 1989). Therefore, a firm basically issues a sustainability report to seek legitimacy from the stakeholders (Connelly et al., 2011). The report acts as a signal (Spence, 1973) and boosts sustainability related legitimacy (Hahn and Kuhnen, 2013).This basically explains how affected parties resolve issues related to unavailability of information. In this case, as the affected parties are not able to ascertain the sustainability performance of the firm continuously, they are forced to rely on other parameters to proxy the performance. Consequently, the firm which has access to insider information may choose to restrict the sustainability reporting if the firm sustainability performance is not up to the mark. It may do so to ensure stakeholder support and

approval. For example: Investors may study the sustainability report for information regarding regulatory risk before making any investment decision (Krueger et al., 2020). The GRI parameter 303-4 explicitly asks for "priority substances of concern for which discharges are treated" (Global Sustainability Standards Board (GSSB) et al., 2018).The firm may issue a statement stating that all waste water released fully complies with the waste water release norms. This is an example of a low-quality disclosure. However, the firm may also choose to disclose the priority substances and the treatments done if the firm has actually worked on the same and the firm sustainability practice is better than the competitors. The investor is more inclined to invest in the firm in the latter case.

In this study, we empirically study how the quality of sustainability reporting affects the firm's financial performance. The specific research questions are: one, does sustainable reporting impact firm financial performance?; and two, does this effect change over time?. For answering our research questions, we have developed hypotheses based on signalling, legitimacy and stakeholder theories. We split our hypotheses into long term and short term. Therefore, we put forward our hypotheses as mentioned below:

Hypothesis 1: H_1- Sustainability reporting quality does not impact a firm's financial performance in the short run

Hypothesis 2: H_2- Sustainability reporting quality does not impact a firm's financial performance in the long run.

4. Research Methodology

This section outlines the research design as well as the variables used in the analysis with their respective sources.

4.1. Sampling

The study is based in India. The study uses the data from the firms which have published at least 4 GRI based externally assured sustainability reports between the years 2014-2020. All sustainability reporting parameters have been obtained from the Refinitiv Eikon Database. Eikon provides ESG data on more than 400 parameters for more than 7000

firms globally. The firm-year wise breakup is mentioned below in Table 2. The sample is unbalanced.

Table 2: Firms' Year-wise break up

Year	Number of firms
2014	30
2015	33
2016	38
2017	41
2018	43
2019	49
2020	55
Total	**288**

Source Author's own elaboration

The industry group categories include Basic materials, Industrials, Consumer Cyclicals, Consumer Non-Cyclicals, Commodity Chemicals, Oil & Gas Refinery/Marketing, Technology, Independent power producer and Oil & Gas Exploration firms.[3]

Financial variables (ROA, Tobin Q, Sales, and Leverage) have been obtained from the Center of Monitoring of Indian Economy (CMIE) Prowess database. It is an exhaustive database on publicly traded Indian companies maintained by the CMIE.

4.2. Variables

4.2.1. Dependent Variable

Both accounting ratios as well as market valuation ratios can be used to proxy the financial performance of a firm. In this study we make use of the accounting ratio Return on Assets (ROA). This is in line with past literature (Auperle et al., 1985; Ghosh, 2013; Klapper and Love, 2004). We also make use of market valuation ratio Tobin Q as markers of financial performance. Tobin Q stresses on long term performance (Lenz et al., 2017). Further, as it is a market-based measure; it includes the external stakeholder valuation dynamics (Nekhili et al., 2017). It is not as sensitive as accounting ratios and thus, can be compared across different industries (Nekhili et al., 2017).

[3] The categorization is based on Eikon Industry Classification.

In this paper, we analyze the impact of the comprehensive and selective sustainability performance on Financial Performance. We also look how the relationship varies with different time durations. For the shorter time duration, we consider year end firm ROA and Tobin Q. For the longer time duration, we make use of the average Financial Performance (ROA and Tobin Q) over a 3-year period. All independent variables had the same value as the base year where base year is the first year. For example, to compute ROA_{LT} for the year 2020; average ROA values for 2020, 2021 and 2022 were taken. We basically considered the average ROA over a 3-year period including base year.

4.2.2. Independent Variable

Sustainability reporting quality is an independent parameter. For the purpose of this study, we consider the GRI sustainability reporting guidelines. These are among the most frequently used sustainability reporting norms. (Marimon et al., 2012)The GRI framework outlines exact details which must be made public by the firm. We make use of a disclosure index constructed based on the GRI sustainability reporting framework. The index concentrates on fundamental sustainability reporting items and is adapted from past literature (Hummel and Schlick, 2016).

Various studies make use of the binary system for content analysis (Encoding 0 for absence and 1 for fulfilling a particular criterion) (Hussain, 2015; Laskar et al., 2018). We go a step further and attempt to account for the quality of the disclosure through the encoding. We allocate 4 points for high quality reporting where adequate detail including numeric data meeting the GRI guideline criteria is provided. We allocate 2 points for low quality reporting where appropriate information is not provided and 0 for non-reporting.

The minimum GRI guidelines are outlined in the index. In case the conditions outlined in the guidelines are not met or some other non-relevant information is provided, we allocate 2 points for low quality data. In case no information is provided the disclosure is cited as absent and 0 points are allocated. Corporate sustainability has environmental, social and governance dimensions (Elkington, 1997). Therefore, environmental and social dimension strengthen the validity of the index.

Based on past literature, we control for the major factors that contribute to Financial Performance such as size, leverage, industry sector, and time (Choi and Wang, 2009; Surroca et al., 2010; Touboul, 2013; Hummel and Schlick, 2016). Large firms enjoy a higher market share enabling them greater possibilities to raise capital and diversify their offerings. We control size using the natural log of total sales (Patten, 2002). We controlled for leverage using the debt-to- equity ratio (Hussain, 2015; Lo and Sheu, 2007). The capital structure of the firm definitely impacts the firm's value (Hussain, 2015; Lo and Sheu, 2007). High leverage can lead to situations where returning debt may be difficult. This may also hamper future returns.

Industry specific factors like competitive intensity, growth rate, and availability of suppliers can explain differences in firm performance. Further, year specific factors can also impact financial performance. Therefore, we use industry specific and firm specific dummies.

4.3. Empirical Model

Panel data regression is used to study the association between sustainability reporting and firm performance (Kim and Oh, 2019; Ghosh, 2013). The suitable panel data model is computed to evaluate the impact of sustainability reporting quality and additional explanatory variables on the ROA and Tobin Q of selected Indian firms. The study makes use the Hausman test to select the appropriate panel data model between fixed and random effects (Hausman, 1978). The major difference being, fixed effect models capture certain features which are constant throughout the observations while random effects measure variability between entities as part of a larger group.

For dependent variable ROA, the Hausman test-Chi-square value is 5.73 with a p – value of 0.2199. As the p value is >0.05, we estimate the model with panel data random effects. For dependent variable Tobin Q, the Hausman test-Chi-square value is 10.63 with a p value of 0.0610. As the p value is >0.05, we estimate the model with random effects. The random effects model is generally represented as

$$Y_{it} = \beta_k X_{it} + \beta_0 + \omega_{it} \quad (1)$$

where X is the number of covariates and ω_{it} is the composite error term. We estimate the following panel data models:

Model 1: $ROA_{STit} = \beta_0 + \beta_1 SRQ_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 Age_{it} + \omega_{it}$ (2)

Model 2: $TQ_{STit} = \beta_0 + \beta_1 SRQ_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 Age_{it} + \omega_{it}$ (3)

Model 3: $ROA_{LTit} = \beta_0 + \beta_1 SRQ_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 Age_{it} + \omega_{it}$ (4)

Model 4: $TQ_{LTit} = \beta_0 + \beta_1 SRQ_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 Age_{it} + \omega_{it}$ (5)

where,

ROA_{ST} – Short Term ROA
TQ_{ST} – Short Term Tobin Q
ROA_{LT} – Long Term ROA
TQ_{LT} – Long Term Tobin Q
SRQ – Sustainability Reporting Quality
Age – Organization Age
Size – Organization Size
Leverage – Organization Leverage

5. Results & Discussion

Table 3 outlines the summary characteristics for the models relating to short term financial performance. The table outlines the mean, standard deviation, minimum and maximum variable values. Table 5 and 6define the correlations between the various models analysed in the short-term financial performance study parameters. Correlation coefficients between the various independent and control factors are quite low. On similar lines Table 4 details the summary characteristics for the models relating to the long-term financial performance. Table 7 and 8 define the correlations between the various models analysed with regards to long term financial performance.

Table 3: Summary statistics with short term ROA and short-term Tobin Q

Variable	Mean	Std. dev	Min	Max
ROA_{ST}	9.282	10.82281	-16.19	73.79
Tobin Q_{ST}	2.570821	3.013648	0.0351217	20.40716
SRD	0.523	0.5001822	0	1
SRQ	21.37	2.55	12.5	29
Age	51.93	24.50047	12	115
Size	13.12	1.15	9.521	16.089
Leverage	0.44197	0.17692	0.041	0.964

Source: Authors' calculations

Table 4: Summary statistics with long term ROA and long-term Tobin Q

Variable	Mean	Std. dev	Min	Max
ROA_{LT}	9.197	10.82029	-5.3	55.12
Tobin QL_T	2.51	2.77	0.187	10.72
SRQ	22.28	3.54	12.5	28
Age	52.1	25.24	14	115
Size	13.01	1.14	10.2	15.38
Leverage	0.43122	0.174	0.165	0.746

Source: Authors' calculations

Table 5: Pearson correlations with short term - ROA as dependent variable

Variable	ROA_{ST}	SRQ	Age	Size	Leverage
ROA_{ST}	1				
SRQ	-0.1283* (0.017)	1			
Age	-0.1142* (0.0352)	0.26*** (0.000)	1		
Size	-0.306*** (0.000)	0.1307* (0.0159)	0.156** (0.0038)	1	
Leverage	-0.538*** (0.000)	0.0843 (0.1206)	0.109* (0.0438)	0.41*** (0.000)	1

Source: Authors' calculations. ***p<.001, **p<.01, *p<0.05, +p<.10

Table 6: Pearson correlations with short term Tobin Q as dependent variable

Variable	ROA_{ST}	SRQ	Age	Size	Leverage
ROA_{ST}	1				
SRQ	-0.244*** (0.000)	1			
Age	-0.181*** (0.0008)	0.26*** (0.000)	1		
Size	-0.584*** (0.000)	.1307* (0.0159)	0.156** (0.0038)	1	
Leverage	-0.444*** (0.000)	0.0843 (0.1206)	0.109* (0.0438)	0.41*** (0.000)	1

Source: Authors' calculations. ***p<.001, **p<.01, *p<0.05, +p<.10

Table 7: Pearson correlations with long term - ROA as dependent variable

Variable	ROA_{LT}	SRQ	Age	Size	Leverage
ROA_{LT}	1				
SRQ	0.0023+ (0.062)	1			
Age	-0.1042* (0.5334)	0.3121+	1		
Size	-0.3772* (0.0196)	-0.1005 (0.5482)	0.071 (0.672)	1	
Leverage	-0.654*** (0.000)	-0.0698 (0.6769)	0.1844 (0.2677)	0.438** (0.0059)	1

Source: Authors' calculations. ***p<.001, **p<.01, *p<0.05, +p<.10

Table 8: Pearson correlations with long term Tobin Q as dependent variable

Variable	Tobin Q_{ST}	SRQ	Age	Size	Leverage
Tobin Q_{ST}	1				
SRQ	0.0587+ (0.0726)	1			
Age	-0.1789 (0.2824)	0.3121 (0.0564)	1		
Size	-0.676*** (0.000)	-0.1005 (0.5482)	0.071 (0.672)	1	
Leverage	-0.636*** (0.000)	-0.0698 (0.6769)	0.1844 (0.2677)	0.438** (0.0059)	1

Source: Authors' calculations. ***p<.001, **p<.01, *p<0.05, +p<.10

Table 9: Impact of sustainability reporting on short term financial performance

Variables	Model 1	Model 2	Model 3	Model 4
DV	ROA_{ST}	Tobin Q_{ST}	ROA_{LT}	Tobin Q_{LT}
SRQ	-.434*	-.0900*	2.02+	1.07+
	(0.012)	(0.013)	(0.067)	(0.08)
Age	-0.0018	-0.013	0.027	0.003
	(0.942)	(0.127)	(0.617)	(0.788)
Size	-1.83*	-.837***	-1.24**	-1.24**
	(0.019)	(0.000)	(0.001)	(0.005)
Leverage	-11.92*	-.642+	-40.93***	-7.09**
	(0.01)	(0.058)	(0.000)	(0.001)
Yr dummy	Yes	Yes	Yes	Yes
Ind. dummy	Yes	Yes	Yes	Yes
Constant	47.06***	15.38***	22.42***	44.35***
	(0.000)	(0.000)	(0.000)	(0.000)
R-square	0.2491	0.3798	0.49	0.64
Chi-square	21.15***	30.89***	18.45***	25.63***
	(0.000)	(0.000)	(0.000)	(0.000)

Source: Authors' calculations. Yr-Year, Ind.-Industry, Robust p values in parenthesis, ***p<.001, **p<.01, *p<0.05, +p<.10

Table 9 details the impact of sustainability reporting quality on short/long term financial performance proxied by ROA and Tobin Q. Model 1 implies that sustainability reporting quality negatively impacts return on assets (coefficient -.434 is significant) at 5% significance level. Model 2 confirms that sustainability reporting negatively impacts the Tobin Q (coefficient -.009 is significant) at 10%significancelevel.Therefore, we reject the null hypothesis H_{10} and accept the alternative hypothesis H_{11}

Both Model 3 and Model 4 imply that sustainability reporting quality positively impacts long term financial performance (ROA coefficient 2.02 and Tobin Q coefficient 1.07 significant at 10 % level). Hence, we reject the null hypothesis H_{20} and accept the alternative hypothesis H_{21}. As the Chi-square is significant, all four models denote the goodness of fit. The results demonstrate that sustainability reporting quality has a negative influence over financial performance in the short term. However, in the long-term sustainability reporting quality has a positive impact on financial performance.

The results are consistent with results of Lopez et al. (2007); Lin et al. (2009) and Yang et al. (2010) positing that sustainability reporting impacts financial performance negatively

in the short run and impacts financial performance positively in the long run. Results are also consistent with Garg (2015), major differences being inclusion of sustainability reporting quality, larger sample size, and use of international sustainability standards, longer time period and different methodology used.

The negative impact results of sustainability reporting quality (SRQ) on the firm's short term financial performance is in congruence with results obtained by Aggarwal (2013) and Cormier et al. (2007). The basic premise remains that the sustainability disclosure has risks as well as benefits. Disclosure is associated with potential cost escalation and risk. The firm task environment constituents i.e., competitors, regulatory authorities may use the information in a manner harmful to the firm's interests and cause financial loss. It may also cause withdrawal of support from specific stakeholder groups and lead to financial implications.

In the long run, sustainability reporting quality has a definite positive impact on the financial performance. The results are in line with Goel and Mishra (2017); Chelawat and Trivedi (2016) and Shafat and Zameer (2018). The stakeholders are able to genuinely assess the firm's environment, social intentions in the long run over a longer period of time. Further, over a period of time the firm is able to recover initial costs spent on sustainability initiatives and subsequent reporting.

The size and leverage coefficient of the control variables are negative and statistically significant for both short and long-term financial performance. For size, this is in contradiction to the traditional positive firm size and profit relationship posited by (Baumol, 1959). However, there is ample support in past literature for a negative relationship between size and financial performance (ROA) (Becker et al., 2010; Kartikasari and Merianti, 2016). Larger firms may also attract higher bureaucracy, higher government interference as well as less flexibility. The negative relationship between leverage and financial performance is also in line with previous research (Dogan, 2013). High debt can have financial ramifications and impact financial performance negatively.

6. Implications

The paper discusses the linkage between sustainability reporting quality and financial performance of the firm both in short term and long term. It provides a number of insights for policy makers and academia. Firstly, the long run impact of sustainability disclosure quality on financial performance highlights the significance of including sustainability initiatives from the grass root level itself. This will definitely enhance the financial performance of the firm in the long run. Secondly, there is a need to develop cost friendly sustainability practices as well as to set aside funds for sustainability initiatives so as to ensure stakeholder approval. This has achieved support at the topmost level with around 59% of the India's CEO's willing to invest at-least 6% of revenues in programs to raise sustainability performance (KPMG India CEO outlook 2022).

Thirdly, this study augments the literature between financial performance and sustainability reporting for further scope in research. The results obtained from the study regarding the short term and long-term effect of reporting on financial performance will help researchers in better understanding of the varied impact of sustainability reporting. Fourthly, the time period of the study is very crucial as Securities & Exchange Board of India (SEBI) mandated the Business Responsibility Reporting (BRR) for the top 100 NSE/BSE firms in the year 2012. The GRI framework can be considered as the superset of BRR. Therefore, it is interesting to study firm's going ahead and adopting international sustainability standards demonstrating the understanding that sustainability initiatives will become mandatory in the near future. It also shows the firm's willingness to invest in sustainability related initiatives to prevent regulatory issues as well as be assured of long-term stakeholder support. It will be interesting to contrast this study with studies post 2022-2023 where the government has mandated the new Business Responsibility and Sustainability Reporting (BRSR) guidelines

7. Conclusion

The study observes that application of suitable panel data regression models reveal negative relationship between sustainability reporting quality and financial performance in the short term and positive relationship in the long term. The negative short-term

results may be attributed to cost escalations due to sustainability initiatives, increased risk perceptions or confusion about the actual sustainability reporting quality by stakeholders leading to stakeholder withdrawal. This may have financial implications as well. However, in the long run, the stakeholders may be able to finally discern the true sustainability reporting quality of the firm and sustainability reporting has a positive impact on the firm performance.

Another limitation can be the paucity of externally assured sustainability reports. Very few Indian firms published externally assured sustainability reports on a continuous basis. This was one reason for the low number of firms in the initial years of analysis. Further, SEBI has mandated the new BRSR format from 2022-2023 for the top 1000 firms by market capitalization. So, we hope this will change in the near future and sustainability reporting will be more widely adopted across India.

It is important to study the impact of individual dimensions of sustainability reporting i.e., environmental or social or governance reporting on financial performance. The interplay between sustainability performance, sustainability reporting and financial performance would also be an interesting research topic. In addition, the study can be extended to include multiple countries or multiple cultures.

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Appendix

Table A1: Sustainability Disclosure Quality Parameters

Environmental dimensions			
Code	**Disclosure Item**	**Minimum requirements**	**GRI Linkage**
E1/301	Materials Used	All substantial input materials by weight or volume, Percentage of recyclable material used	EN1/301
E2/302	Energy Consumption & Renewables	direct and indirect energy consumption, share of renewable energy sources. (Includes energy consumption within and outside organization) [a]	EN3/4/302
E3/303a	Water Withdrawal	Water Withdrawal by source.[b]	EN8/303a
E4/305a	GHG Emissions	GHG Scope 1, Scope 2 and Scope 3 Emissions,	EN16/17/305a
E5/305b	Ozone-depleting and other emissions.	total emissions of ozone-depleting substances; other significant air emissions by type and weight for at least one substance; alternatively, an explicit statement of irrelevance for both.[c]	EN19/20/305b
E6/306a	Water Discharge	total discharge by quality (emissions to water by type and weight for at least one substance; alternatively, an explicit statement of irrelevance) and destination.d	EN22/306a
E7/306b	Waste	Total waste by type and disposal method	EN23/306b
E8/308	New Supplier Assessment	Percentage of new suppliers screened using environmental criteria	308-1/EN-32
Social dimensions			
S1	Employment	Total workforce based on at least three criteria (division, region, employment type, employment contract, qualification, age or gender)	LA1/102-7/102-8
S2	Turnover	Total Number of Employees leaving by any reason.	LA2/401
S3	Labour Management	Minimum number of weeks' notice typically provided to employees and their representatives prior to the implementation of significant operational changes	402
S4	Collective Bargaining.	Percentage of total workforce covered by collective bargaining agreements	LA4/407
S5	Safety & Health	work safety and health based on following criteria (rates of injury, occupational diseases, lost days, absenteeism, fatalities)	LA7/403
S6	Training	total training time	LA10/404
S7	Discrimination	total number of incidents or explicit statement that no incidents occurred	HR4/406
S8	Child, Forced and compulsory Labour	scope and numerical results of audits (within company or supply chain) regarding at least one aspect	HR6/7/408/409

Source: Hummel and Schlick (2016), [a] - For industry groups 8: share of renewable energy produced, [b] – For industry groups 7: by source is excluded, [c] – For industry groups 7: ozone-depleting substances or other significant air emissions, [d]- For industry groups 7: by quality & destination is excluded