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## Article

# Sustainability (disclosure and report format) and firm performance in India. Effects of mandatory CSR reporting

Cogent Business & Management

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*Suggested Citation:* Oware, Kofi Mintah; Worae, Thomas Adomah (2023) : Sustainability (disclosure and report format) and firm performance in India. Effects of mandatory CSR reporting, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 10, Iss. 1, pp. 1-22, <https://doi.org/10.1080/23311975.2023.2170075>

This Version is available at:

<https://hdl.handle.net/10419/294247>

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# Sustainability (disclosure and report format) and firm performance in India. Effects of mandatory CSR reporting

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**To cite this article:** Kofi Mintah Oware & Thomas Adomah Worae (2023) Sustainability (disclosure and report format) and firm performance in India. Effects of mandatory CSR reporting, Cogent Business & Management, 10:1, 2170075, DOI: [10.1080/23311975.2023.2170075](https://doi.org/10.1080/23311975.2023.2170075)

**To link to this article:** <https://doi.org/10.1080/23311975.2023.2170075>



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Received: 20 December 2022  
Accepted: 14 January 2023

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Reviewing editor:  
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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

# Sustainability (disclosure and report format) and firm performance in India. Effects of mandatory CSR reporting

Kofi Mintah Owae<sup>1</sup> and Thomas Adomah Worae<sup>2\*</sup>

**Abstract:** This study aims to determine how sustainability reporting disclosures and report format affect company performance in India's mandatory reporting environment. The study employed feasible generalised least square, panel-correlated standard errors and probit regression. The sample size is 80, and the study period is between 2010 and 2020. We find that utilizing Business Responsibility Reporting (BRR) criteria as sustainability disclosures, have a positive and statistically significant relationship with business value (Tobin's q) and market performance (SPR). Similarly, Global Reporting Initiative (GRI) sustainability reporting disclosures positively influence the SPR and adversely affect Tobin's q. The study shows that BRR sustainability reporting disclosure and mandatory reporting have an interactive and positive influence on Tobin's q. Also, we see that the stand-alone sustainability reporting format positively influences market performance (SPR). Lastly, we see that a firm with a mandatory reporting responsibility will choose a report format (i.e. stand-alone) to disclose its sustainability activities. The implication from the study shows that firms that continue to employ GRI sustainability reporting in India should be aware that it does not send out sound signals that can lead to a rise in firm value or improve long-term performance.

**Subjects:** Business, Management and Accounting; Accounting; Corporate Governance; Corporate Social Responsibility & Business Ethics

## ABOUT THE AUTHORS

Kofi Mintah Owae has a PhD in Business Administration (finance option) from Mangalore University, India and an MBA degree from Aberdeen Business School (UK). He is currently a senior lecturer in the department of banking technology and finance, Kumasi Technical University-Ghana and a researcher in Mangalore University-India. He is also a chartered accountant with membership from Institute of Chartered Accountants (ICA), Ghana and Institute of Cost Executive & Accountants (ICEA)-UK. He has 22 publications in various journal including three "A" s under ABDC (Meditari Accountancy Research), four "B" s under ABDC (Social Responsibility Journal & Society and Business Review) and three C (South Asian Journal of Business Studies, Journal of Financial Reporting and Accounting & Management Research Review) all with Emerald publications.

Thomas Adomah Worae holds DCom (Accounting) from the University of Limpopo, South Africa, MSc in Finance and Accounting from the University of Wales-UK and Advanced Diploma in Administrative management from the Institute of Administrative Management-UK. His research interest is in areas of carbon accounting, Water accounting, environmental impacts and capital structure decisions. Worae currently works with Kumasi Technical University-Ghana. He teaches financial management, strategic management and business research methods etc. Prior to joining the current employer, he had worked with Kingsland College of Business Studies, Stratford-London, Hilton Community Service, Essex in the United Kingdom and University College of Management, Kumasi-Ghana.

**Keywords:** GRI and BRR sustainability disclosures; firm performance; report format; signalling theory and institutional theory; mandatory reporting

## 1. Introduction

Analysts have recommended sustainability reporting based on Global Reporting Initiative (GRI) guidelines (Brown et al., 2009). The Indian government, on the other hand, developed a national voluntary standard called Business Responsibility Reporting (BRR) for reporting on the social, environmental, and economic commitments of India's top 100 listed companies (Ministry of Corporate Affairs Government of India, 2011; PTI, 2015). It is suggested that BRR's guidelines be streamlined to make it easier for major corporations to implement the nine principles of BRR (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2014). Also, there is ample evidence that India's sustainability reporting practices receive attention from both policy and practitioners (Laskar & Maji, 2016). Nonetheless, there are mixed associations between CSR disclosure and firm performance (Beloskar & Rao, 2021; Fahad & Busru, 2020; Goel, 2018) and between mandatory reporting and firm performance (Jادیyappa et al., 2019; Manchiraju & Rajgopal, 2017). Also, the gap in comparing BRR to GRI rules to make an appropriate suggestion is a new addition to the sustainability reporting conversation. Firms can select between a stand-alone report type and an integrated report format when reporting sustainability disclosure to stakeholders (Hassan & Guo, 2017). Firms in India use either stand-alone or integrated forms of report format for reporting, but whether one is better is missing in the sustainability reporting debate. This research study is also based on adopting the BRR reporting policy shift. In light of the foregoing, this study evaluates sustainability disclosure, report format, mandated reporting, and listed firm performance in India and interprets the link using signalling and institutional theories.

The present literature establishes a link between GRI-based sustainability reporting disclosures and corporate performance (Dissanayake et al., 2016; Karaman et al., 2018; Laskar, 2019; Sampong et al., 2018; Wang & Jiang, 2019). There is also a connection between reporting format and environmental disclosure (Hassan & Guo, 2017) and mandatory reporting and disclosures or firm performance (Arena et al., 2018; Goel, 2018; Manchiraju & Rajgopal, 2017). However, research on the impact of BRR sustainability reporting disclosure on corporate performance is lacking. In the Indian context, there is a paucity of research on the influence of mandatory reporting on sustainability reporting disclosure utilizing GRI or BRR principles. Also, the interactive effect of report format and sustainability reporting disclosure using BRR guidelines lacks empirical evidence. Similarly, no studies we know examined the impact of firm performance in the choice of sustainability reporting format or the effect of sustainability report format on firm performance. Lastly, the effect of mandatory reporting on sustainability or the style of CSR reporting is still new to the research community. Accordingly, the current study used signalling and institutional theories to interpret the relationship between sustainability disclosure, sustainability report format, mandatory reporting, and listed firm performance in India. The researchers used generalised least squares, panel-correlated standard errors, and probit regression. Between 2010 and 2019, it used the Indian stock market as a test platform for 800 firm-year observations.

The study contributes to the existing knowledge in four ways. The study's first contribution assures firms and policymakers that BRR sustainability disclosure is a value creator and communicates positive signals that increase listed firms' firm performance in the Indian context. The second contribution of the study shows the superiority of BRR over GRI in India's context because the beta coefficient is higher in BRR reporting than in GRI reporting. According to previous studies in industrialised economies, GRI is the best sustainability standard for reporting sustainability disclosures (Brown et al., 2009; KPMG, 2011). The argument of GRI superiority suffers environmental effects (i.e. where there is mandatory reporting in the environment). The third contribution of the study enriches mandatory reporting studies in emerging markets. The empirical literature on the effect of mandatory reporting on sustainability disclosures using BRR guidelines through this study is available. Previous studies only examined mandatory reporting and

performance (Jادیappa et al., 2019; Manchiraju & Rajgopal, 2017) or mandatory reporting on GRI sustainability disclosures (Arena et al., 2018; Goel, 2018). The fourth contribution of the study adds new information to aid investors in decision-making on a sustainability reporting system that benefits them and makes it easy to understand (i.e. stand-alone or integrated sustainability reporting). Previous studies examined reporting format and environmental disclosure (Hassan & Guo, 2017). Still, this study examines reporting format and firm performance in a bi-direction study.

## 2. Literature review and the study hypotheses

### 2.1. Signalling theory and institutional theory

Signalling theory seeks to address the information asymmetry problem, which occurs when stakeholders have superior information about a firm's activities over another (Ross, 1977; Spence, 1973). Previous research has shown that corporate social responsibility (CSR) drives businesses to engage with stakeholders about their social responsibilities in the community and society (Verrecchia, 1983). It is proven that sustainability reporting gives a firm a competitive advantage, leading to increased performance (Alonso-Almeida et al., 2018; Wang & Jiang, 2019). The signalling theory is applicable for describing the impact of India's corporate performance on the sustainability reporting framework and report style. Different studies utilised signalling theory to examine corporate disclosure (Healy & Palepu, 2001). According to the findings of this study, the reporting format and sustainability reporting disclosures will send out positive signals that will help investors and shareholders make better decisions.

In addition, the setting of this study recognizes the importance of companies documenting their CSR actions when one of the variables is mandatory reporting. Signalling theory alone is insufficient to explain this study. We also apply an institutional approach used in earlier studies (Jادیappa et al., 2019) to gain a deeper understanding, making this theory acceptable for our research. Some norms and regulations govern an institution (Matten & Moon, 2008). Coercive isomorphism, related to externally ordered laws and norms, obligates Indian businesses to carry out their CSR activities environmentally responsible manner (DiMaggio & Powell, 1983). The relationship between mandated reporting, sustainability reporting using GRI or BRR, sustainability report style, and firm performance of listed companies in India is expected to be given theoretical meaning by signalling and institutional theories.

### 2.2. India and sustainability reporting practises

The Companies Act 2013, section 135, enforces large listed companies' mandatory report on firm sustainability disclosures using BRR (Ministry of Corporate Affairs, 2013). The inclusion criteria increased from 100 in 2011 to 500 firms in 2015 (Ministry of Corporate Affairs Government of India, 2011; PTI, 2015). The pillars or guidelines of BRR are simplified to make it easy for large firms to adopt. The BRR uses nine principles (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2014) which cover; Principle 1- Ethics, Transparency and Accountability; Principle 2- the provision of safe goods and services that contribute to long-term sustainability throughout their life cycle; Principle 3- promote the wellbeing of all employees; Principle 4- respect the interests of, and be responsive towards all stakeholders, especially those who are disadvantaged, vulnerable and marginalised; Principle 5- respect and promote human rights; Principle 6- respect, protect, and make efforts to restore the environment; Principle 7- engage in influencing public and regulatory policy, should do so in a responsible manner; Principle 8- inclusive support growth and equitable development; Principle 9- engage with and provide value to their customers and consumers in a responsible manner. The simplicity of the nine principles makes the communication of information simple and easy for the investor to assess the firm, which sends positive signals leading to patronage and an increase in the firm's value. The relevance of BRR is drawing authors' and research's attention, as evidenced in previous studies (Goel, 2018). Also, there is ample evidence that India's sustainability reporting practices receive attention from both policy and practitioners

(Laskar & Maji, 2016). However, existing literature lacks a deeper grasp of the BRR criteria and their impact on its firm value or market performance, leaving a gap in this research study.

### **2.3. Sustainability reporting disclosure and firm performance**

Various research on sustainability reporting revealed a mixed relationship (Deegan et al., 2006; Dissanayake et al., 2016; Effiong & Singhal, 2014; Goel, 2018; Gomes et al., 2015; Al Hawaj & Buallay, 2022; Pätäri et al., 2012; Paun, 2018; Taneja & Girdhar, 2013). It is argued that sustainability reports are complicated and underutilized (Escoto et al., 2022; Paun, 2018). Other authors studied the coverage, nature, and drivers of sustainability reporting (Dissanayake et al., 2016). Further research also looked into sustainability reporting in Portugal before and after the country's most recent economic downturn (Gomes et al., 2015). The global economic and financial crisis had a negative influence on credibility. Nonetheless, the reports' quality was maintained for worldwide acceptance (Gomes et al., 2015). Another study on SMEs in developing economies investigating social sustainability and financial performance showed that social sustainability positively influences financial performance (Masocha, 2019). Another paper showed a significant association between high-quality reports and market reaction (Guidry & Patten, 2010). Likewise, another study examined French companies' sustainability reporting. The investigation employed an exploratory study for 40 French firms practising sustainability reporting and conducted semi-structured interviews with sustainability managers and assurance providers (Gillet, 2012). A review of the literature on sustainability reporting showed mixed outcomes. A further study in the Indian context, where large firms report sustainability using the BRR principles, can deepen the sustainability reporting debate.

### **2.4. Hypothesis development**

The below hypothesis is developed to meet the gaps in research confronted by managers in emerging economies, including India. Research established that stock market regulators in India changed sustainability reporting in 2012. However, research on this policy shift is still in its early stages. Given the new direction and its effects, this study examines sustainability disclosure, sustainability report style, mandatory reporting, and firm performance of listed companies in India, providing a unique perspective in research. The study investigates the relationships using signalling theory and institutional theory.

### **2.5. Effects of sustainability reporting disclosure and report format**

According to the authors of a study, corporate sustainability disclosure has a beneficial effect on profitability performance (Bodhanwala & Bodhanwala, 2018; Li & Jia, 2022). Likewise, GRI sustainability reporting disclosure and firm performance also showed similar positive results (Laskar & Maji, 2016) but sometimes showed a negative association between sustainability disclosure with GRI and profitability (Laskar, 2019). Nonetheless, there is confirmation that India's sustainability reporting climate shows positive signs (Jain & Winner, 2016). After the Security and Exchange Board of India (SEBI) adopted sustainability reporting using business responsibility reporting (BRR) in 2012, the discrepancy in the outcomes necessitates additional research. Other researchers looked at the data before and after the legislation was implemented and found a link between sustainability reporting disclosure and Tobin q in the study period between 2012 and 2013 (Goel, 2018). However, this study sought to expand the period to cover 2010 because large firms started sustainability reporting in the 2009/2010 financial year. Another study, using India as testing grounds for 2007 and 2016, argued that CSR disclosure negatively influences firm value (Fahad & Busru, 2020). Furthermore, management must decide on a report format for consumption by stakeholders. We see this in previous studies on report format and environmental disclosure (Hassan & Guo, 2017) or sustainability disclosure (Abeer A. Hassan et al., 2020). However, there is no empirical research on the influence of report format in an Indian setting. Given the change in sustainability reporting policy, we expect a beneficial effect on business performance. The following hypotheses are developed in this study in light of the previous.



*H1a.* Sustainability disclosure using BRR guidelines positively affects firm value and market performance.

*H1b.* Sustainability disclosure using GRI guidelines positively affects firm value and market performance.

*H1c.* The interactive effect of sustainability disclosure and report format positively affects firm value and market performance.

## **2.6. Effects of mandatory reporting**

Mandatory reporting and company performance have been investigated in several studies (Jadiyappa et al., 2019; Manchiraju & Rajgopal, 2017). For example, a study in the Indian context examined mandatory reporting and financial performance. The findings revealed that mandated reporting considerably impacts the relationship between CSR spending and financial performance (Oware & Mallikarjunappa, 2020). Another study found that making CSR reporting mandatory leads to more CSR disclosure (Arena et al., 2018). On the other hand, mandated CSR reporting causes a 4.1 percent drop in the stock values of listed companies in India (Manchiraju & Rajgopal, 2017). Although several studies have looked at mandatory reporting and company performance, there is a lack of scholarly research in India on the impact of mandated reporting on sustainability reporting disclosure using GRI or BRR criteria. Using institutional theory and signalling theory, we test the below hypotheses.

*H2a.* Sustainability disclosure using GRI guidelines interacts with mandatory reporting and positively affects firm value and market performance.

*H2b.* Sustainability disclosure using BRR guidelines interacts with mandatory reporting and positively affects firm value and market performance.

## **2.7. Firm performance, mandatory reporting and sustainability reporting format**

Sustainability disclosures are reported using a stand-alone or integrated reporting approach (Hassan & Guo, 2017). Previous research has only looked at sustainability reporting disclosures and business performance (Buallay, 2019; Goel, 2018; Karaman et al., 2018; Laskar, 2019; Rotondo et al., 2019), but not whether the report style a company chooses affects its performance.

Some previous studies examined reporting format, environmental disclosure and environmental performance using European companies. The findings showed that stand-alone environmental reports have a higher value than integrated financial and environmental reporting (Hassan & Guo, 2017). In contrast, according to another study, organizations that produce more sustainability information are more likely to integrate it into their yearly financial reports (Abeer A. Hassan et al., 2020). Likewise, another study argued that an integrated reporting format enhances annual reporting information to stakeholders (James, 2015).

We are unaware of any research that has looked into the impact of company performance on sustainability reporting format selection. We adopt a bi-directional model adopted in a previous study (Uwuigbe et al., 2018). India also has a unique environment for reporting CSR activities (Arena et al., 2018). Also, CSR disclosure in sustainability reporting is presented as a stand-alone or part of integrated reporting, but the effect of mandatory reporting on sustainability or CSR reporting format is yet to receive attention. The identified gaps give this research study to examine the below hypotheses:

H3a. The choice of sustainability reporting format positively affects firm value and market performance.

H3b. Firm performance influences the choice of the sustainability reporting format.

H3c. Mandatory reporting influences the choice of the sustainability reporting format.

### 3. Research methodology

#### 3.1. Data and sample

From 2010 to 2020, the study covered 80 listed businesses on the Indian stock exchange with sustainability reporting. The study used a balanced panel, which removed firms with missing data, resulting in a balanced data set of 80 out of 131 enterprises. Fifty-one businesses were removed because some lacked data for the study period, and the banking reporting format was incompatible with the study's requirements (Dittmar & Mahrt-Smith, 2007; Macve et al., 2010). Sustainability reporting organisations report on all firms in India that are sustainability reporting compliant, and as of 2020, the database contained 131 firms that consistently prepared and reported on firm's sustainability. The top 100 listed firms with required market capitalisation started sustainability reporting using BBR guidelines in 2012 and increased in 2015 to 500 listed firms, but not all the firms met the criteria above ("BRR and Sustainability Report Tracker for Listed Companies," 2019; Green Clean Guide, 2011) and this summary reflects the sample and population size are Table A1. As a result, the study's balanced panel of 80 companies was created, and the sample characteristics are in Table A2. Our industry classification is in our sample: Healthcare, consumer service, consumer goods, utilities, industrials, oil and gas, technology, telecommunication and basic materials. The data came from a secondary source, and the extracted data were double-checked for consistency and reliability by the study's co-author.

The study data set is further strengthened by a triangulation method where sustainability reporting data is re-firmed from each firm web page and the Indian stock market. The information coverage using content analysis covered the type of sustainability reports disclosure guidelines and the integrated reporting information. The accounting year closes on March 31, and the study employed stand-alone integrated financial reports. The research will be placed between 2010 and 2019. It is justified since, beginning with the 2009/2010 accounting year, Indian companies started reporting on sustainability, and the reporting was based on the Global Reporting Initiative (GRI). In 2012, Business Responsibility Reporting (BRR) was introduced by SEBI through its listing regulation. However, some firms continue the dual reporting of sustainability based on GRI and BRR. The study objectives seek to compare the BRR and GRI; therefore, a meaningful comparison forms the basis of the choice of the study period between 2010 and 2019 inclusive.

#### 3.2. Model specification

We define the following economic models to investigate the relationship between sustainability disclosures, report format, and listed firm performance (firm value and market performance):

$$Perf_{it} = \alpha + \beta_1 FRWRK_{it} + \beta_2 SRF_{it} + \beta_3 FRWRK \times MAR_{it} + \beta_4 FRWRK \times SRF_{it} + \sum \phi CTRL_{it} + \mu_{it} \quad (1)$$

Equation 1 uses the feasible generalised least square (FGLS) method and has  $t$  and  $i$  to denote the cross-sectional units and period.  $Perf_{it}$  represents a dependent variable of Tobin's  $q$  and  $SPR$ .  $FRWRK$  represents the GRI or BRR of sustainability reporting.  $SRF$  represents the sustainability reporting format, and  $MAR$  represents mandatory reporting. The variable  $CTRL$  represents the control factors, such as financial leverage, independent board directors, board size, firm size, year effect, and industry type.

$$SRF_{it} = \alpha + \beta_1 Perf_{it} + \beta_2 MAR_{it} + \sum \phi CTRL_{it} + \mu_{it} \quad (2)$$



Equation 2 uses a probit regression and has  $t$  and  $i$  to denote the cross-sectional units and period.  $SRF_{it}$  represents a dependent variable of the sustainability report format, a binary outcome.  $Perf$  represents Tobin's  $q$  or  $SPR$ , and  $MAR$  represents mandatory reporting. The variable  $CTRL$  represents the control factors, such as financial leverage, independent board directors, board size, firm size, year effect, and industry type.

### 3.3. Dependent variable

- (1) The firm performance is either dependent or independent, depending on the equation. The firm performance consists of market performance and firm value. Firm value is proxy by Tobin's  $q$ , consistent with previous studies (Ming-Hsiang & Chien-Pang, 2015; Qiu et al., 2016; Wang et al., 2008), which measures the long-term performance of the firm. Tobin  $q$  equals the market value of equity and the book value of total liabilities divided by the total firm assets. The study also uses  $SPR$  as a variable indicator for measuring market performance. Similarly,  $SPR$  is derived based on the current stock price divided by the previous stock price. This measurement is consistent with previous studies (Ming-Hsiang, C., & Chien-Pang, L., 2015). The stock market's reaction to the firm's performance in the short term is measured by stock price returns.
- (2) Depending on the equation, the sustainability reporting format is either dependent or independent. It shows the company's preference for a sustainability report that incorporates financial reporting or a standalone sustainability report as a document for stakeholders (A. Hassan et al., 2020; Hassan & Guo, 2017). This dummy variable equals one if the firm chooses a stand-alone sustainability report format and 0 if it chooses an integrated reporting format.

### 3.4. Independent variables

- (1) GRI or BRR sustainability reporting uses the binary of one if the submission of sustainability reporting is GRI framework or otherwise zero. The principle applied to BRR. If a firm submits sustainability reporting using the BRR framework, then one or zero. The method of binary outcome is consistent with other studies (Jain & Winner, 2016; Laskar, 2018, 2019).
- (2) Many studies covering the period of mandatory policy reporting employ a binary variable of 1 for the mandatory period and 0 for the voluntary period (Cai et al., 2012; Ministry of Corporate Affairs, 2009, 2013).

### 3.5. Control variables

- (1) Financial leverage measures the total liabilities ratio to total assets (Clarkson et al., 2008; Cormier et al., 2011). The firm's ability to meet its obligations affects factors that influence the firm performance or choice of sustainability report format.
- (2) The independent board comprises all independent directors who can function as internal auditors for the company at the board level (Liu et al., 2012). We expect a positive effect on listed firms' performance in India or the choice of sustainability report format.
- (3) Board size brings different expertise to the firm (Inoue & Lee, 2011). We expect a positive effect on firm performance or choice of sustainability report format. Previous studies argued that board size positively influences CSR disclosure (Ludwig & Sassen, 2022; Pareek et al., 2019).
- (4) Firm size measures a firm's capacity to undertake CSR activities and is calculated as the natural logarithm of the firm's total assets (Clarkson et al., 2008; Mishra & Suar, 2010). We perceive that big firms will use more BRR sustainability reporting than GRI reporting.
- (5) Industry effect (Shabana et al., 2016) and year indicator dummy, which represents the timing effect (Qui et al., 2016), will influence the firm performance choice of sustainability report format.

### 3.6. Methodology

H1, H2 and H3 of the study use Stata 15.0. We assessed the study using descriptive statistics, feasible generalised least squares, panel-correlated standard errors, and probit regression. Evidence of heteroscedasticity, autocorrelation and endogeneity in standard errors are insignificant (Wooldridge, 2002).

## 4. Empirical results and discussions

The study's empirical analysis is presented in the Tables below, covering the description of the study, the regression and the robust test of the study.

### 4.1. Descriptive statistics and correlation coefficient analysis

The descriptive statistics in Table 1 show that SPR has an average mean (median) of 0.896 (1.000). Tobin's q value has an average mean (median) of 3.607 (2.261), above one and showing that its shareholders created value during the study period. The research also reveals that 47.7% of the companies studied employ a stand-alone reporting structure for their sustainability operations. Tobin's q has a negative and substantial relationship with GRI's sustainability reporting but a favourable relationship with BRR's sustainability reporting, as seen in Table 2. However, SPR correlates positively with GRI and BRR. We examine the multicollinearity between the independent variables through a pairwise correlation (see, Table 2). The results allow us to rule out multicollinearity between the studied model's independent variables. 0.735 and 0.689 are the most significant coefficients among the independent variables. A variance inflation factor (VIF)-based multicollinearity test also reveals no evidence of multicollinearity. The greatest VIF is less than 5.0, which aligns with past research and literature (Damodar, 2004; Dougherty, 2017; Pandey & Sahu, 2019). We can deduce that multicollinearity is not a concern.

### 4.2. Multivariate regression- effects of sustainability reporting disclosure and report format

H1a states that the sustainability disclosure using BRR guidelines positively affects the firm value and market performance. Model 1 in Table 3 indicates a favourable connection between BRR criteria for sustainability disclosure and Tobin's q ( $\beta = 1.590^{***}$ ,  $SE = 0.304$ ). Also, Model 2 from Table 3 indicates a favourable connection between sustainability disclosure with BRR guidelines and SPR ( $\beta = 0.097^{***}$ ,  $SE = 0.026$ ). The reporting of sustainability disclosure using BRR guidelines communicates positive signals to the stakeholders and investors, which is a competitive advantage and, in the process, leads to a growth in firm value and improves Indian firms' market performance. Thus, the information asymmetry problem is reduced for stock market investors (Ross, 1977; Spence, 1973), which agrees with the signalling theory. Our interpretation of the findings backs up a recent study that found that CSR disclosure encourages companies to communicate with stakeholders about their social responsibilities in the community and society (Verrecchia, 1983). We see that BRR can project CSR activities by listed firms in India. The simplicity of the nine principles of BRR (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2014) also may reduce the information asymmetry problem, accounting for the positive association between sustainability disclosure using BRR guidelines and company performance. We, therefore, accept H1a. There are, however, currently no studies that examine sustainability disclosure with BRR guidelines. Nonetheless, the simplicity of the BRR guidelines makes understanding sustainability reporting easier for an average investor, which is also consistent with other studies (Bodhanwala & Bodhanwala, 2018).

H1b states that sustainability disclosure using GRI guidelines positively affects the firm value and market performance. Model 3 in Table 3 indicates a significant negative relationship between GRI requirements for sustainability disclosure and Tobin's q ( $\beta = -1.037^{***}$ ,  $SE = 0.243$ ). We believe the negative relationship between sustainability disclosure using GRI guidelines and Tobin's q, which evaluates long-term performance, is due to the relative ease of usage of BRR, which was developed to discourage the use of GRI guidelines indefinitely. The significance of GRI guidelines

**Table 1. Descriptive statistics**

<b>Variables</b>	<b>Obs.</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max</b>
Tobin's q	880	3.607	2.261	3.547	0	25.151
Stock price returns	880	0.896	1.000	0.314	0	1.502
Global Reporting Initiative (GRI)	880	0.444	0.000	0.497	0	1
Business Responsibility Reporting (BRR)	880	0.620	1.000	0.486	0	1
Sustainability report format	880	0.477	0.000	0.499	0	1
Mandatory CSR reporting	880	0.636	1.000	0.481	0	1
Financial leverage	880	0.368	0.00	0.483	0	1
Independent directors	880	5.824	6.000	1.764	1	14
Board size	880	10.961	11.000	2.847	5	20
Firm size	880	11.777	12.000	1.516	8	16
Type of industry	880	0.200	0.000	0.400	0	1
Year effect	880	15.000	15.000	3.164	10	20

**Source: Authors' calculations**

materialises into a long-term benefit to the firm using Tobin's  $q$  as an indicator. Still, the policy change might reduce the relevance of GRI guidelines in the Indian context. Furthermore, our results measured the entire period from 2010 to 2019. We used a binary parameter, but a previous study only measured the pre-period between 2012 and 2013 and used a 16 parameter for the disclosure. Their findings revealed a link between the GRI rules and Tobin's  $q$  (Goel, 2018). This could explain the differences between our findings and those of other research that have yielded positive results. Nonetheless, a study using Swedish data also argued an inclusive association between GRI disclosure and Tobin's  $q$  (Pham et al., 2021). In addition, another study found no association between CSR disclosure and Tobin's  $q$  (Sampong et al., 2018). Model 4 in Table 3 indicates a positive and statistically significant relationship between GRI criteria for sustainability disclosure and SPR ( $\beta = 0.036^*$ ,  $SE = 0.027$ ). For a firm measuring short-term performance, applying GRI sustainability reporting is appropriate for communicating positive signals to investors. This study's findings align with prior research that has found a link between GRI sustainability disclosure and corporate performance (Laskar, 2019; Laskar & Maji, 2016). We also see that undertaking sustainability reporting reduces the information asymmetry problem for Indian stock market investors (Ross, 1977; Spence, 1973). Stakeholders receive the appropriate decision-making signals, consistent with the theory (Healy & Palepu, 2001). Therefore, H1b is accepted.

H1c states the interactive effect of sustainability disclosure and report format positively affects firm value and market performance. There is an insignificant association between the interactive variable of sustainability disclosure with BRR guidelines x report format and Tobin's  $q$  ( $\beta = 0.365$ ,  $SE = 0.268$ ) in Model 9 of Table 3. However, the interacting variable, BRR guidelines x report format and SPR, have a positive and statistically significant relationship in Model 10 from Table 3 ( $\beta = 0.061^{**}$ ,  $SE = 0.023$ ). H1c is accepted. We see that reporting by firms on CSR activities (i.e. use of the BRR principles) communicates positive signals to stakeholders. When a firm chooses a stand-alone sustainability reporting format, the effect communicates positive signals to stakeholders. The intended outcome is an increase in stock price returns, a measure of firm performance. We may claim that if managers pick stand-alone reporting as a report format, stakeholders in India will have access to more information, leading to a reduced information asymmetry problem. Even though no previous studies have looked into the interaction between BRR reporting and report style, past studies have claimed that stand-alone environmental reports are more valuable than combined financial and environmental reports (Hassan & Guo, 2017). As a result, our findings are consistent with past research, adding to the discussion around sustainability disclosure and reporting in emerging economies.

#### **4.3. Multivariate regression- effect of mandatory reporting**

H2a states that sustainability disclosure using GRI guidelines interacts with mandatory reporting and positively affects firm value and market performance. Tobin's  $q$  ( $\beta = -0.733^{**}$ ,  $SE = 0.279$ ) has a negative and statistically significant relationship with GRI criteria x mandatory reporting (Model 7 from Table 3). However, no significant relationship exists between GRI standards x mandatory reporting and SPR ( $\beta = 0.010$ ,  $SE = 0.024$ ) in Model 8 from Table 3. This study's H2a is accepted. Our findings align with a recent study that found a link between CSR disclosure and Tobin's  $q$  (Fahad & Busru, 2020). The persistent unfavourable connection following mandatory reporting implementation advises management that GRI principles are better suited to voluntary reporting than compulsory reporting. Because of the structure and qualities of GRI reporting and mandated reporting, stakeholders are likely to get contradicting information, which is incompatible with the signalling theory.

H2b states that BRR guidelines' sustainability interacts with mandatory reporting and positively affects firm value and market performance. Model 5 in Table 3 reveals a favourable connection between BRR guidelines x mandated reporting and Tobin's  $q$  ( $\beta = 1.825^{***}$ ,  $SE = 0.337$ ). However,

**Table 2. Correlation coefficients and variance inflation factor (VIF)**

	1	2	3	4	5	6	7	8	9	10	11	12	VIF
TOB	1												
SPR	0.073**	1											
GRI	-0.267**	0.083**	1										1.38
BRR	0.118***	0.388***	0.021	1									1.45
SRF	-0.144**	0.092**	0.414***	0.054	1								2.15
MAR	0.075**	0.426**	0.063*	0.689**	0.008	1							1.38
FL	-0.163**	-0.067**	0.029	-0.063**	0.040	-0.050	1						4.08
IBZ	-0.013	-0.005	0.086***	-0.049	0.161***	-0.142***	-0.147***	1					1.09
BZ	-0.085**	0.006	0.179***	0.042	0.171***	-0.067***	-0.086*	0.735***	1				2.45
FS	-0.342**	0.097**	0.424***	0.250***	0.331***	0.173***	0.125**	0.141**	0.411**	1			1.94
DIND	-0.187**	0.001	0.222***	0.022	0.085**	-0.000	0.060*	-0.034	0.161**	0.420*	1		1.27
YDU	0.059*	0.469***	0.059*	0.660***	-0.057	0.837	-0.066***	-0.107**	-0.048	0.189	-0.00	1	4.41

Note: \*\*p < 0.05, \*\*\*p < 0.01 and \*p < 0.10 level (two-tailed), N = 880. Pairwise Correlation.

Model 6 from Table 3 shows no significant association between sustainability disclosure with BRR guidelines x mandated reporting and SPR ( $\beta = 0.030$ ,  $SE = 0.029$ ).  $H2b$  is accepted. Comparing the beta coefficient before and after mandatory reporting, the study shows an increase in the beta factor. It implies that even though BRR sustainability reporting has favourability with investors, the introduced mandatory reporting adds to the positive signals from BRR sustainability reporting and consequently causes an increase in the firm's firm value. In previous research, mandatory reporting has been shown to enhance CSR disclosure (Manchiraju & Rajgopal, 2017). We perceive the increase contributes to the higher beta coefficient in the interactive variable study. The interactive effect with positive results is consistent with signalling and institutional theories (DiMaggio & Powell, 1983; Healy & Palepu, 2001).

#### **4.4. Multivariate regression- sustainability reporting format and firm performance**

$H3a$  states that the choice of sustainability reporting format positively affects firm value and listed firms' market performance. There is no relationship between the sustainability reporting format and Tobin's  $q$  ( $\beta = -0.147$ ,  $SE = 0.239$ ) in Model 1 of Table 4. However, the reporting format positively influences SPR ( $\beta = 0.079^{***}$ ,  $SE = 0.020$ ) in Model 2 of Table 4. We accept  $H3a$  because of the significant associations between report format (stand-alone sustainability reporting) and market performance measured by SPR. Therefore, it is suggested that Indian firms that utilise stand-alone sustainability reporting communicate better information to investors in decision-making and, thus, are likely to affect the firms' market performance positively. Our findings align with prior research that looked at the reporting format, environmental disclosure, and environmental performance of European corporations and concluded that stand-alone environmental reports are more valuable than integrated financial and environmental reports. (Hassan & Guo, 2017). The positive effect of using a stand-alone report format is consistent with the signalling theory that argues information asymmetry when the report communicates appropriate information (Ross, 1977; Spence, 1973). This study meets the criteria; therefore, stand-alone sustainability reporting is suitable for listed firms in India.

$H3b$  states that firm performance influences the choice of sustainability reporting format in India's listed firms. Model 3 of Table 4 shows that Tobin's  $q$  does not affect the choice of sustainability report format ( $\beta = -0.010$ ,  $SE = 0.014$ ). However, Model 4 of Table 4 shows that firm performance measured by SPR is likely to cause the choice of stand-alone sustainability report format ( $\beta = 0.646^{***}$ ,  $SE = 0.164$ ).  $H3b$  is accepted. The positive outcome is that the bi-directional analysis between report format (stand-alone sustainability reporting) and market performance is significant and relevant in the Indian context. As a result, a company with higher stock returns is more likely to employ stand-alone sustainability reporting to communicate its CSR efforts to stakeholders rather than integrated reporting. There has been no previous research that compares the relationship between firm performance and the format of a sustainability report.

$H3c$  states that mandatory reporting influences the choice of the sustainability reporting format. According to  $H3c$ , listed companies in India are influenced by mandated reporting when it comes to sustainability reporting formats. Table 4's Model 5 demonstrates that mandatory reporting is more than likely to lead to using a stand-alone sustainability report format ( $\beta = 0.569^{***}$ ,  $SE = 0.172$ ). This study's  $H2c$  has been accepted. According to previous studies, mandatory reporting increases CSR disclosure (Arena et al., 2018). But no studies have examined whether mandatory reporting influences the choice between stand-alone sustainability reporting and integrated reporting. This study affirms that mandatory reporting works well with stand-alone than integrated reporting of sustainability disclosures. Our study agrees with the institutional theory (DiMaggio & Powell, 1983).



**Table 3. FGLS regression-sustainability disclosure, mandatory reporting, report format and firm performance**

	Tobin's q Model 1	SPR Model 2	Tobin's q Model 3	SPR Model 4	Tobin's q Model 5	SPR Model 6	Tobin's q Model 7	SPR Model 8	Tobin's q Model 9	SPR Model 10
	FGLS	FGLS	FGLS	FGLS	FGLS	FGLS	FGLS	FGLS	FGLS	FGLS
<i>Control variables</i>										
Financial leverage	-0.678*** [0.232]	-0.018 [0.020]	-0.764*** [0.233]	-0.022 [0.020]	-0.710*** [0.231]	0.022 [0.020]	-0.745*** [0.234]	-0.022 [0.019]	-0.742*** [0.235]	-0.023 [0.020]
Independent directors	-0.051 [0.096]	0.010 [0.008]	-0.055 [0.096]	0.007 [0.008]	-0.059 [0.095]	0.009 [0.008]	-0.076 [0.098]	0.008 [0.008]	-0.091 [0.098]	0.003 [0.005]
Board size	0.106* [0.064]	-0.002 [0.005]	0.113* [0.064]	-0.001 [0.008]	0.122* [0.064]	-0.001 [0.005]	0.122* [0.066]	-0.002 [0.006]	0.127** [0.065]	-0.004 [0.008]
Firm size	-0.935*** [0.092]	-0.002 [0.008]	-0.723*** [0.097]	-0.002 [0.008]	-0.947*** [0.092]	-0.001 [0.008]	-0.798*** [0.095]	-0.003 [0.009]	-0.904*** [0.094]	-0.004 [0.009]
Type of industry	-0.296 [0.304]	0.007 [0.026]	-0.306 [0.305]	-0.002 [0.026]	-0.316 [0.303]	0.002 [0.026]	-0.358 [0.307]	0.001 [0.028]	-0.353 [0.308]	0.005 [0.026]
Year effect	-0.016 [0.046]	0.036*** [0.004]	0.135*** [0.036]	0.046*** [0.003]	-0.069 [0.052]	0.042*** [0.005]	0.175*** [0.039]	0.045*** [0.004]	0.124*** [0.037]	0.043*** [0.004]
<i>Independent variables</i>										
BRR	1.590*** [0.304]	0.097*** [0.026]								
GRI			-1.037*** [0.243]	0.036* [0.027]						
MAR x BRR					1.825*** [0.337]	0.030 [0.029]				
MAR x GRI							-0.733** [0.279]	0.010 [0.024]		

(Continued)

Table 3. (Continued)									
	Tobin's q	SPR	Tobin's q	SPR	Tobin's q	SPR	Tobin's q	SPR	SPR
BRR x SRF							0.438* [0.258]	0.073*** [0.022]	
Chi-square	187.29***	267.33***	176.54***	253.35***	189.69***	250.76***	163.24***	250.60***	263.87***
Obs.	880	880	880	880	880	880	880	880	880

FGLS is a feasible generalized least square. \*, \*\* and \*\*\* represents 10%, 5% and 1% level of significance

**Table 4. FGLS & probit regression- mandatory reporting, firm performance and sustainability report format**

	<b>Tobin's q</b>	<b>SPR</b>	<b>SRF</b>	<b>SRF</b>	<b>SRF</b>
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>
	<b>FGLS</b>	<b>FGLS</b>	<b>PROBIT</b>	<b>PROBIT</b>	<b>PROBIT</b>
<i>Control variables</i>					
Financial leverage	−0.738*** [0.235]	−0.022 [0.020]	0.020 [0.262]	0.004** [0.095]	0.008 [0.095]
Independent directors	−0.065 [0.097]	0.004 [0.008]	0.142*** [0.039]	0.137*** [0.039]	0.155*** [0.039]
Board size	0.118* [0.065]	−0.002 [0.005]	−0.062** [0.027]	−0.062** [0.026]	−0.065** [0.026]
Firm size	−0.846*** [0.097]	−0.008 [0.008]	0.375*** [0.042]	0.388*** [0.040]	0.383*** [0.041]
Type of industry	−0.391 [0.308]	0.006 [0.026]	−0.230* [0.128]	−0.230* [0.129]	−0.213* [0.129]
Year effect	0.136*** [0.037]	0.047*** [0.004]	−0.053** [0.015]	−0.085*** [0.16]	−0.127*** [0.026]
<i>Independent variables</i>					
SRF	−0.147 [0.239]	0.079*** [0.020]			
Tobin's q /SPR			−0.010 [0.014]	0.646*** [0.164]	
MAR					0.569*** [0.172]
Chi-square /Pseudo sq.	155.60***	269.83***	0.113***	0.125***	0.121***
Obs.	880	880	880	880	880

FGLS is a feasible generalized least square. \*, \*\* and \*\*\* represents 10%, 5% and 1% level of significance

According to the control factors, firm size, independent board size, and industry type are all sensitive to the sustainability report format. According to our findings, financial leverage and company size are also sensitive to the profitability of listed companies in India.

#### 4.5. Robust test

The feasible generalised least square (FGLS) method overestimates the coefficients' significance (Berk & Katz, 1995). To assess the robustness of the results shown in Tables 3 and 4, we robust test the results with a panel-corrected standard errors (PCSE) method in Table 5. Tables 5 under PCSE show that the coefficients have the same sign and significance as FGLS models. Therefore, we accept the findings under PCSE.

#### 5. Conclusion

The study investigates the effect of sustainability reporting disclosures and report format on firm performance in India's mandatory reporting environment. The study employed feasible generalised least square, panel-correlated standard errors and probit regression. Content analysis is used to calculate the score in terms of the sustainability disclosure using GRI or BRR (binary coding system) and sustainability report format (binary coding system). Between 2010 and 2020, it used the Indian stock market as a test platform for 880 firm-year observations. The first results reveal that the sustainability reporting format has a favourable and significant relationship with GRI and BRR sustainability reporting disclosures. Thus, the report style and disclosures communicate well to investors and stakeholders. The second conclusion reveals that the sustainability disclosures in the BRR guidelines have a favourable connection with firm value (Tobin's q) and market performance

(SPR). The positive relationship between sustainability disclosure utilizing BRR rules and listed company performance in India may be due to the simplicity of the nine principles.

Similarly, GRI sustainability reporting disclosures positively influence the SPR of listed companies in India, indicating that using GRI for sustainability reporting is an excellent way to provide favourable signals to investors about a company's short-term performance. GRI sustainability reporting disclosures, on the other hand, hurt Tobin's q. It has been proposed that the introduction of mandated reporting may cause investors and stakeholders to question the long-term benefits of GRI reporting, given that India implemented new rules in 2013 requiring large companies to utilize BRR reporting. Nonetheless, the interacting variable of BRR sustainability reporting disclosure and mandatory reporting has a positive and statistically significant relationship with Tobin's q, according to the third finding. It is suggested that mandated reporting adds to the positive signals generated by BRR sustainability reporting, increasing the firm's value. According to the fourth finding, the interacting variable of GRI sustainability reporting disclosure and mandatory reporting has a negative and significant effect relationship with Tobin's q. The fifth finding demonstrates that the stand-alone sustainability reporting format has a positive and statistically significant relationship with market performance (SPR) and that SPR is more than likely the driving factor behind the decision to use a stand-alone sustainability reporting format over integrated reporting. Similarly, the BRR and report format interactive variable increases market performance (SPR). Lastly, the introduction of mandatory reporting more than likely causes the choice of a stand-

**Table 5. PCSE regression- Sustainability disclosure, report format and firm performance**

	<b>Tobin's q</b>	<b>SPR</b>	<b>Tobin's q</b>	<b>SPR</b>	<b>Tobin's q</b>	<b>SPR</b>
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
	<b>PCSE</b>	<b>PCSE</b>	<b>PCSE</b>	<b>PCSE</b>	<b>PCSE</b>	<b>PCSE</b>
<i>Control variables</i>						
Financial leverage	-0.678*** [0.149]	-0.019* [0.011]	-0.763*** [0.158]	-0.022* [0.011]	-0.738*** [0.156]	-0.022** [0.011]
Independent directors	-0.051 [0.093]	0.009* [0.006]	-0.055 [0.087]	0.008** [0.006]	-0.065 [0.091]	0.004 [0.006]
Board size	0.106** [0.050]	-0.002 [0.002]	0.113** [0.046]	-0.001 [0.003]	0.119** [0.048]	0.001 [0.003]
Firm size	-0.935*** [0.086]	-0.002 [0.004]	-0.723*** [0.095]	-0.003 [0.005]	-0.846*** [0.088]	-0.008* [0.005]
Type of industry	-0.296** [0.101]	0.005 [0.007]	-0.306 [0.110]	-0.002 [0.008]	-0.390*** [0.104]	0.006 [0.008]
Year effect	-0.016 [0.043]	0.037*** [0.014]	0.135*** [0.026]	0.046*** [0.013]	0.135*** [0.026]	0.048*** [0.013]
<i>Independent variables</i>						
BRR	1.590*** [0.374]	0.096* [0.050]				
GRI			-1.037*** [0.176]	0.037*** [0.014]		
SRF					-0.147 [0.129]	0.079*** [0.023]
F test/Chi-square	288.83***	53.09***	1037.25***	37.57***	380.70***	38.50***
R-squared	0.176	0.233	0.167	0.224	0.150	0.235
Obs.	880	880	880	880	880	880

PCSE is linear regression with panel-correlated standard errors. \*, \*\* and \*\*\* represents 10%, 5% and 1% level of significance

alone sustainability reporting format. The study is robustly tested using the panel-corrected standard errors (PCSE).

## 6. The implication of the study

### 6.1. Theoretical contribution

The study's first contribution assures firms and policymakers that BRR sustainability disclosure is a value creator and communicates positive signals that increase listed firms' firm performance in the Indian context. The second contribution of the study shows the superiority of BRR over GRI in India's context because the beta coefficient is higher in BRR reporting than in GRI reporting. GRI is the best sustainability standard for reporting sustainability disclosures, according to previous studies in industrialized economies (Brown et al., 2009; KPMG, 2011). The argument of GRI superiority suffers environmental effects (i.e. where there is mandatory environmental reporting). The third contribution of the study enriches mandatory reporting studies in emerging markets. The empirical literature on the effect of mandatory reporting on sustainability disclosures using BRR guidelines through this study is available. Previous studies only examined mandatory reporting and performance (Jadiyappa et al., 2019; Manchiraju & Rajgopal, 2017) or mandatory reporting on GRI sustainability disclosures (Arena et al., 2018; Goel, 2018). The fourth contribution of the study adds new information to aid investors in decision-making on a sustainability reporting system that benefits them and makes it easy to understand (i.e. stand-alone or integrated sustainability reporting). Previous studies examined reporting format and environmental disclosure (Hassan & Guo, 2017). Still, this study examines reporting format and firm performance in a bi-direction study.

### 6.2. Managerial implications

BRR guidelines to report sustainability disclosure send sound signals to stakeholders and investors, which is a competitive advantage that leads to an increase in firm value and improved market performance for Indian companies. As a result, in the Indian setting, enterprises and stock market experts must pay close attention to BRR's usefulness in investment decisions.

Firms that continue to employ GRI sustainability reporting in India should be aware that it does not send out sound signals that can lead to a rise in firm value or improve long-term performance. However, short-term performance is still significant when Indian-listed companies report on sustainability using GRI rules. The persistent unfavourable connection following mandatory reporting implementation advises management that GRI principles are better suited to voluntary reporting than mandatory reporting. This information is needed for companies listed on the Indian stock exchange when considering whether to continue reporting using GRI criteria in India or abandon them and focus solely on BRR rules. We recognize that multinationals with interests outside India may feel more comfortable with GRI reporting.

Comparing the beta coefficient before and after mandatory reporting shows an increase in the beta factor, implying that BRR sustainability reporting favours investors in India. The introduced mandatory reporting adds to the positive signals from BRR sustainability reporting. Stand-alone for sustainability reporting provides more incredible information to investors for decision-making and, as a result, is more likely to contribute to positive market performance in India than integrated reporting with sustainability disclosures. Management of listed companies in India is urged to use a stand-alone report format for reporting to stakeholders on their sustainability disclosure.

### 6.3. Policy implications

The value provided by utilizing BRR to implement sustainability disclosure informs advocates and policymakers that BRR is important in India, just as GRI is in Western economies. This study's findings further underscore the need for compulsory reporting of CSR activities in India. Furthermore, the requirement of a stand-alone report for sustainability reporting in India is another outcome that a SEBI policy encourages. Every indicator suggests that it provides a more

significant advantage to business performance and that stakeholders are more comfortable with it than integrated reporting.

## 7. Limitations and future research direction

Our study could have a drawback in that it used a binary measurement of 1 for a guideline and 0 for no guidelines (BRR or GRI). This may reduce measurement variation when contrasted to a measure based on a set of disclosures to establish a firm's level of disclosure. Instead of using a binary assessment, future research assessing BRR can employ the nine principles outlined in the BRR recommendations to see if the outcome will be the same. Also, BRR sustainability reporting does not have a global presence like GRI sustainability reporting and may reduce the generalisation of BRR sustainability globally. Nonetheless, future studies informed by this literature can examine sustainability reporting using BRR, and firm performance in a comparative study between family and non-family-managed firms in India since family firms dominate India. A sustainability report format (either stand-alone or as part of integrated reporting) is also required to communicate with stakeholders. Future research could look into the elements considered when choosing a report format.

### Funding

The authors received no direct funding for this research.

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### Disclosure statement

No potential conflict of interest was reported by the authors.

### Citation information

Cite this article as: Sustainability (disclosure and report format) and firm performance in India. Effects of mandatory CSR reporting, Kofi Mintah Oware & Thomas Adomah Worae, *Cogent Business & Management* (2023), 10: 2170075.

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## Appendix

**Table A1. Description of the sample of study on the Bombay Stock Exchange**

	<b>Large firms after amended Act 2013</b>	<b>Large firms with sustainability reporting after the amended Act 2013</b>
Population of study	500	131
Sample size after removing firms with missing data		80

**Table A2. Characteristics of the sample**

<b>Major business category</b>	<b>Number</b>	<b>%</b>
Health Care	7	8.75%
Consumer service	0	0.00%
Consumer goods	23	28.75%
Utilities	3	3.75%
Industrials	27	33.75%
Oil and gas	7	8.75%
Technology	3	3.75%
Telecommunication	2	2.50%
Basic material	8	10.00%
Country		
India	80	100%
Quoted on the Bombay Stock Exchange		
Yes	80	100%
No	0	0.00%



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