The Impact of Board Characteristics on Economic Performance of Corporate Sustainability: Learnings from India

Sandeep Goel
Associate Professor
Management Development Institute (MDI), Gurgaon, Haryana 122001, India
Email: sandeep@mdi.ac.in

Nimisha Kapoor (corresponding author)
Associate Professor
Institute of Management Sciences, University of Lucknow, Lucknow, India
Email: nimisha1kapoor@gmail.com

Abstract

Purpose: The research on the impact of board characteristics on the economic performance of corporate sustainability is limited, especially in the context of developing nations such as India. The Indian model of corporate ownership is the 'Promoter dominated shareholder model' (PDSHM) with companies having global presence. This article empirically examines the effect of board attributes on the economic dimension of companies' sustainability performance in corporate enterprises in India since board quality ensures fair, responsible, credible and transparent management performance to its stakeholders.

Design/methodology/approach: The study uses a panel-data framework to analyze the importance of board characteristics of size, independence, audit committee independence and gender diversity in the context of the economic performance on corporate sustainability among large public companies in India.

Findings: It is found out that there is a clear correlation exists between board characteristics and the economic performance of corporate sustainability. The results show that board quality as measured by its attributes is the driving force for the economic performance of corporate sustainability and significantly affects the indicators of the economic dimension of sustainability in corporate India.

Practical implications: In the case of Indian firms with global operations, the study draws new dimensions about the quality of board attributes on the economic performance of sustainability. These findings are important from the board's point of view for both academia and business to structure the practical insight into the firm's sustainability performance, particularly for emerging economies like India. They are equally relevant because of growing regulatory focal points for other companies that are located in economies with relatively mature corporate governance structures. This will eventually help select the appropriate board structure and process for measuring the economic performance of corporate sustainability.

Keywords: Board, Independent Directors, Gender Diversity, Women Directors, Audit Committee, Economic Performance, Sustainability.

1. Introduction

During the past few decades, corporate sustainability has gained momentum both for practice and research considerably. The companies strive to be sustainable in order to

optimize their operations, meet customer expectations and achieve value-added market share. Therefore, corporate sustainability achieves importance in terms of improvements in cost, quality, time, and flexibility - the so-called devil's quadrangle (Reijers and Mansar, 2005). But, the assessment of sustainability performance for corporate houses continues to be a big challenge.

Elkington, (1998) emphasized the importance of the Triple Bottom Line (TBL) reporting of financial, social and environmental issues. The concept has emerged since the mid-1990s and many companies now generate separate TBL and Sustainability Reports to supplement the annual reporting of social and environmental information. In this process, the economic performance of corporate sustainability continues to be the topic of interest for everyone especially at the policy-making level by the board. But, the research on the impact of board characteristics on the economic performance of corporate sustainability is limited, particularly in a developing economy like India

The firm's economic performance is the most pressing factor for the management of any corporation. It gets affected by the minutest variable in this market-driven world. This has also led to the deterioration of the economic dimension of sustainability and resulting in corporate frauds. These frauds like, Enron and WorldCom during the 1990s in the US or Kingfisher in 2013 in India have encountered diverse types of accounting and economic choices by the management. This trend is rooted in the Agency theory and finds its relevance in the corporate governance literature (Jensen and Meckling, 1976).

Walls et al. (2012) observed, "The companies with more independent boards and higher gender diversity exhibit higher environmental performance." Likewise, corporate governance (CG) and environmental disclosure are related by Rodrigue et al. (2013), while Mallin et al. (2013) add social disclosure. Similarly, there are studies which examine the relationship between CG, social disclosure (Haniffa and Cooke, 2005), and performance (Johnson and Greening, 1999; Williams, 2003).

In Indian context, Bansal and Sharma (2016) examine the role of audit committee characteristics and other components of CG in improving firm performance and find significant positive relationship of board size and CEO-Chairman duality with firm performance. Ganguli, and Guha Deb (2016) explore the impact of board composition and ownership structure on firm performance of Indian firms and show both accounting and market performance of firms are substantially associated with the concentration of ownership and board size but not to board independence. Both these studies address firm performance but do not examine the "economic performance" of 'corporate sustainability,' an important dimension of the dynamic business world.

Thus, it is observed that the current literature does not encompass the effect of board quality on the economic dimension of corporate sustainability, we conduct a detailed study in the context of a developing economy like India.

Different models of corporate governance (CG) exist in various countries. Kapoor and Goel (2017) have stated that, “in the US, there is the shareholder model of corporate governance and in nations like Japan, there is coordinated model. Indian firms, however, showcase the Promoter Dominated Shareholder Model (PDSHM) with heavy concentration of control by the promoters.” In the private sector, most of the firms are family-owned companies with the largest shareholder holding over 50%. Approximately 90% of businesses in India are family-owned **(**Merchant, 2011). *This requires special attention to the board structure and process motivation in influencing the economic performance of firms’ sustainability and their analysis at an early stage, especially when Indian firms operate globally.*

According to Goel (2018), “India further suffered two major corporate frauds of Satyam and Kingfisher in 2008–2009 and 2012–2013, respectively which posed a question mark on the effectiveness of the governance framework of the country. This led to the new Companies Act, 2013 in India after a gap of 57 years since the old Companies Act, 1956, and amendment of clause 49 of the Listing Agreement by the Securities and Exchange Board of India to enforce better governance practices among Indian corporate.” *This further act as a reference point to the nations globally, highlighting the relevance of the study for having a strong relook at the ‘quality of the economic dimension of sustainability’ of corporate houses.*

While the association between board mechanism and sustainability performance is well known in several studies, little work has been conducted specifically to explore the board’s relationship with “economic performance” of sustainability in emerging market economies, and very few studies in India address such ties. The present paper discusses how the board attributes of size, independence, audit committee independence, and women directors of a firm affect economic performance (EP) indicators of sustainability of corporate enterprises in India. The results indicate that there is a significant relationship between board attributes and the economic dimension of corporate sustainability practices of the Indian firms, from which future studies can further examine this information provision, including quality issues. The importance and significant contributions of this study are India as a nation and the 2013-2018 time period that it covers. As mentioned above, this time frame has witnessed the introduction of the new Companies Act, 2013, and amendment of clause 49 of the Listing Agreement by Securities and Exchange Board of India to enforce better governance practices among Indian corporate. Our findings can also direct future studies: showing that the predicted impact is usually confined to one dimension of sustainability (either social or environmental), requiring the need to simultaneously evaluate the triple bottom line performance of the CG aspect under consideration, in particular its economic rationale. Therefore there is a need to investigate “economic performance of sustainability – and board of directors” relationship in that specific context.

The present research contributes in the following ways to the literature. First, it provides evidence of importance of economic performance of sustainability in Indian companies. Second, it explores the role of board attributes in influencing earnings viability,

particularly in an emerging economy such as India which has been positioned by the Central Statistics Organisation and the International Monetary Fund as the fastest-growing major economy in the world[i]. Third, this study helps the investors in rational decision making by assessing the reliability and usefulness of financial information (for economic efficiency) reported by the firms, particularly in India, wherein about 90 percent of Indian businesses are family-owned. Fouth, it is significant not only for Indian companies and organizations operating in other emerging economies but equally useful for companies in developed nations with advanced corporate governance structure because of common regulatory focal areas and practical insights. Last, the results are important to policymakers around the world, as it results in more specific and refined policy formulation on 'gender equity' with increased representation of women on the board. Such policies will result in better economic performance sustainability.

The remaining paper is structured as follows. The next section presents a detailed literature review of the board related concepts for developing predictions about economic performance of sustainability. The proceeding section explains hypotheses development. Section 3 discusses sample selection procedure, research methodology and descriptive statistics. Section 4 presents the results of the analysis and Section 5 concludes the paper with limitations and future implications to follow.

2. Literature review and Hypothesis development

The important theories on which the study is based are the agency theory and the stewardship theory. The board of directors is a mechanism which has developed to monitor the actions of the management and to guide the organization the directors on the board bring with them the expertise to run the organization in the most appropriate manner (Hermalin and Weisbach, 1998). The idea of developing such mechanism finds its roots in the Agency Theory. The board of directors acting as agents of the managers should be able to create value for the shareholders. Stewardship theory also suggests that the directors are the stewards who are motivated to function according to the interests of the owners (Clark, 2004). Both these theories highlight the fact that a good board should be able to create economic sustainability for the firm.

The primary objective of this study is to explore the impact of board size, board independence, audit committee size and independence, and gender diversity on the economic dimension of corporate sustainability in the Indian context. As mentioned above, India saw a new Companies Act, 2013 after a gap of 57 years since Companies Act, 1956 on account of emerging corporate governance issues and challenges. The Companies Act, 2013, is a landmark legislation in the area of corporate governance in India. In order to improving governance in India, it introduced important measures including refining the role of independent directors, and board committees, and most significantly it makes compulsory for listed companies to include at least one woman director in their boards.

The following measures of economic performance of sustainability and board quality have been identified from existing literature and their supervisory role is evaluated: pursuance of the economic dimension of sustainability, the board size, board

independence, audit committee size and independence, and participation of women directors as the representation of gender diversity on the board of the company.

2.1 Sustainability: Conceptual framework

Initially, corporate social reporting focused on environmental reporting as one of its components (Hackston and Milne, 1996). Thereafter, several attempts to determine the status of social and environmental accounting (SEA) and corporate reporting practices were made (Owen, 2008; Eugenio et al., 2010). Specific theoretical models were applied to describe the corporations' rationale for disclosing information on social responsibility (Gray et al., 1995); most literature supports agency theory and legitimacy theory.

According to stakeholder theory, a firm's goals and objectives can be accomplished by managing the conflicting interests of all participating stakeholders, including employees, customers, suppliers, communities, managers, and shareholders (Ansoff,1965; Freeman, 1984; Davis et al.,1997). The limited focus of the firm on shareholders has shifted significantly, and the agency view takes into account all other stakeholders that are linked to various social, environmental, and ethical considerations (Donaldson and Preston, 1995; Freeman, 1984).

According to Pfeffer and Salancik (2003), "resource dependency theory proposes that directors bring on diverse resources such as information, skills, knowledge, key constituents (suppliers, customers, public policy decision-makers, and social groups) and legitimacy that reduce uncertainty, which in turn reduces transaction costs." In this context, board characteristics of board size and independent directors are presumed to connect the firm and its external resources, thereby helping in reducing the uncertainty through improved corporate disclosure practices which are critical for long-term sustainability (Kiel and Nicholson, 2003).

All these possible areas will definitely add to the literature of the economic dimension of sustainability and strengthen it further not only in India but globally. Therefore, there is a strong need to explore the relationship between board size, board independence, audit committee independence, and gender diversity, and economic performance of corporate sustainability in the present times, and across the industries to find whether the corporate boards in India are efficiently performing their monitoring roles as proclaimed by the Agency Theory. The proposed study aims to fill the aforementioned gap areas and analyses the relationship between economic aspect of sustainability performance and board attributes in the Indian context, industry-wise post regulatory reforms.

2.2 Measurement of economic performance of sustainability

As discussed earlier, firm performance has been widely highlighted for board characteristics (for example, Bansal and Sharma, 2016; Ganguli, and Guha Deb, 2016) which include both accounting and market performance of firms. But, the economic performance of corporate sustainability is not explored in real sense.

As organizations aim to produce excellent results, performance measurement assumes highest significance. The review of present literature distinguishes two classes of studies on this subject (Van and Shafagatova, 2016). The first group focused on performance measurement models and the second on performance measures. Usually, the organizational performance measurement models seek to provide a systematic view of the performance of an organization. The indicators need to be specified then for each performance assessment model. A performance measure or indicator explains how it is measured and compared against a desired value.

The models for assessing organizational efficiency without operationalized metrics are more flexible. For example, the Balanced Score Card (BSC) provides four perspectives (i.e. financial, customer, internal processes, learning and growth) for which objectives and performance indicators ensure consistency between strategies and operations (Kaplan and Norton, 1996).

The Global Reporting Initiative (GRI) provides a voluntary reporting framework that contains goals and operationalized indicators with respect to environmental, economic and social sustainability, as stated in the Triple Bottom Line[ii].

The Triple Bottom Line approach defines three interdependent dimensions of sustainability (i.e. economic, social and environmental) on which organizations should focus in order to succeed in the long run (Elkington, 1997). The social and governance dimensions of sustainability are relatively newer measures of firm performance and thus receive much attention. In the context of sustainability measurement, the economic dimension gets undermined, being already included in traditional business process management (BPM). The present article explores this undermined dimension and thus discusses the measurement of economic performance of sustainability in light of the present cut-throat competition in Indian companies. There still remains a need to develop the concept of economic performance of sustainability.

According to Pre Consultants, The Netherlands, “Sustainability performance indicators (SPIs) or sustainable development indicators are used to measure a company’s performance and to monitor and report on future progress. SPIs are categorized in three areas, covering the *economic, environmental or social aspects of sustainability.”* “Economic performance indicators” (EPIs) or measures are suggested to be measured by:

(i) company turnover,
(ii) profit,
(iii) quantity of products sold, etc[iii].

The challenge many companies face is to condense large amounts of economic sustainability indicators into rationale key indicator(s). Based on these observations, we propose the following measures of economic performance of sustainability:

(i) Change in Sales for measuring firm's 'economic performance of corporate sustainability,' being Sales the rationale indicator of core performance of the firm and ∆ Sales can easily capture the trend in its "economic" performance of sustainability.
(ii) *Profit is considered as another measure of economic sustainability.

[*Profit is defined as Earnings before interest and tax (EBIT) in the present study; and not Profit after tax (PAT). PAT as a measure is not considered as it includes non-operating income as well which might be misleading and is generally used for measuring 'financial performance' of the firm in return on assets (ROA) variable.]

2.3 Board Size and Sustainability

"The role of boards of directors (BODs) with their values and perspectives about the dimensions of long-term economic, social and environmental sustainability may be crucial to organizational success or failure" (Post et al., 2011). They are responsible for mapping the company's conduct, ensuring conformity with the legal system and maintaining credibility in the eyes of stakeholders through fair and timely disclosure (Jensen and Meckling, 1976; Fama and Jensen, 1983).

In his seminal paper, Jensen (1993) discussed the significance for keeping the corporate boards small. According to him, "With the increase in board size, it is difficult for the directors to participate objectively and freely in board activities. Consequently, larger boards become unmanageable and fail to function effectively." A negative relationship between the size of the corporate boards and firm performance has been documented in several empirical studies (Black and Kim, 2012; Cheng, 2008). These studies conclude that large boards fail to create value for their shareholders, but smaller boards can perform this function better.

Empirical research on the board size and management's performance resulted in conflicting findings where few studies competed for the smaller board, indicating that it could efficiently control management because it could easily take a majority decision (Cheng, 2008; Ienciu, 2012). Despite expected outcomes, some studies suggest that larger board outlines the presence of a wider range of stakeholders with requisite experience and expertise, contributing to greater firm performance (Halme and Huse, 1997; Dalton et al., 1999).

Board size may influence the degree and extent of Sustainability reporting practices. Pfeffer and Salancik (2003) stated, "From a resource dependency viewpoint, the breadth and diversity of larger boards strengthens the transparency in reporting practices as members bring different perspectives, views and ideas to the corporate decision-making process." Furthermore, from a stakeholder theory perspective, as reported by Rao et al. (2012), "larger boards include members from diverse stakeholder groups who can argue for the inclusion of more multi-dimensional factors in sustainability reporting (SR) practices of the firm and who can consequently expand the reach and improve the quality of SR practices."

Frias-Aceituno et al. (2013) reported a positive correlation between greater board size and corporate disclosure for the Anglo-Saxon, Germanic, and Latin models of corporate governance. However, some researchers have argued that small boards can track managerial activities better and increase the effectiveness and efficiency of decision-making process (Cheng, 2008; Rao et al., 2012).

The corporate board characteristics can play important role in improving the quality of organizational reporting systems and, more specifically, in sustainability reporting practices (Formentini and Taticchi, 2016; Roos, 2017). Based on this, the following hypothesis about board size is proposed:

H1: Larger Board is associated with higher economic performance of sustainability.

2.4. Board Independence and Sustainability

Fama and Jensen (1983) proposed that "the board's structure is a significant instrument for diffusing agency conflicts inside the firm. Moreover, it contributes to board effectiveness by providing significant checks and required balances of power on management." Thus, it is expected that the higher percentage of non-executive directors on the board may help in the disclosure of more voluntary information and thus may reduce the possibility of withholding information (Yuen et al., 2009).

"Agency theory argues that outside directors are needed for effective monitoring of the corporate boards. Such outside directors protect shareholders from the opportunistic behaviour of the managers who may seek personal gains" (Kiel and Nicholson, 2003). Board independence intends to strengthen governance structures as these directors promote long-term economic, social and environmental sustainability of companies (Rao et al., 2012). Thus, the presence of independent directors improves the overall sustainability performance of the firms. However, the same argument might not be applicable in the specific context of 'economic sustainability.'

"Independent directors appeared to rank social and environment responsibilities higher than economic and legal responsibilities, and they force management to pursue intensive social activities and to disclose detailed information on social and environmental dealings", as stated by Brooks et al., (2009). Mahmood and Orazalin (2017) explore the association of board independence with various dimensions of sustainability reporting for Kazakhstan. In the study, the relationship of board independence and overall sustainability and social sustainability is positive, while its relationship with economic sustainability and environmental sustainability is negative. Although all these relationships were not significant statistically, their negative relationship is an interesting finding. Similar findings are reported by Prado-Lorenzo and Garcia-Sanchez (2010) regarding the dissemination of information on green-house gases. They find that board independence decreases the information dissemination of the sample firms. Amran et al. (2014) also found no evidence of a positive association between board independence and sustainability reporting quality in the Asian Pacific region. Similarly, Kılıç and Kuzey (2020) have found a negative association between

board diversity and sustainability reporting in the context of Turkey. Therefore, the following hypothesis is thus formulated:

H2: Higher board independence is associated with lower economic performance of sustainability.

2.5: Gender Diversity and Sustainability

'Gender diversity' denotes the participation of women directors on the board of company. Few studies have examined the role of women board members worldwide. The literature on board diversity and firms' financial performance (e.g. Carter, Simkins, and Simpson, 2003; Campbell and Mínguez-Vera, 2008; Adams, Gupta, and Leeth, 2009) widely underpins the perception that the women directors' presence in the board improves the financial performance of the company. "In business contexts, women are more ethical in the workplace and less likely to engage in unethical behaviour to gain financial benefits" (Betz, O'Connell, and Shepard, 1989).

Gul, Fung, and Jaggi (2009) have exhibited that "female directors' participation not only results in greater risk aversion and ethical behaviour, but they are better at seeking voluntary information which may lessen information asymmetry between female directors and managers." Additionally, female directors are different from their male directors and have different priorities (Adams and Funk, 2012). Female directors have different leadership styles (Bear et al., 2010) and are more willing to support community group and social responsibility projects (Hillman et al., 2002).

"Female directors hold different visions and attitudes than their male partners about their values, personalities, communication patterns, leadership styles, etc., and they analyze organizational goals, objectives and performance from different perspectives. They are generally averse to litigation and reputation loss, and are more concerned with local communities and stakeholders" (Srinidhi et al., 2011). Female directors are found to be more susceptible to ethical standards and socially responsive activities as compared with male directors (Isidro and Sobral, 2015).

"Female directors tend to adopt more trust-building relationships and emphasize intense stakeholder engagement and reduced information asymmetries" (Gul et al., 2013). Similarly, Frias-Aceituno et al. (2013) concluded that the presence of women on boards is positively related to corporate disclosure in the Anglo Saxon, Germanic, and Latin models of CG.

Liao et al. (2014) specifically refer to a divergent perspective between members of the board as a characteristic that enhances the representativeness of the governance. The presence of women on the board as a measure of diversity has been positively associated with increased orientation towards social responsiveness (Williams, 2003).

Similarly, the literature focusing on corporate governance and economic performance reveal that diversity in board composition leads to better corporate decision-making and economic performance (for example Erhardt et al., 2003; Campbell and Minguez-Vera,

2008; Jyothi and Manglagiri, 2019). Board gender diversity has been found to having a positive association with the sustainability reporting practices of oil, gas and mining companies in Kazakhstan (Mahmood and Orazalin, 2017). In the Malaysian context, inclusion of women directors is found to improve corporate sustainability disclosure (Zahid et al, 2020). Hence, the estimated coefficient for board diversity is expected to be positive, and the following hypothesis is developed:

H3. Higher gender diversity on board is associated with higher economic performance of sustainability.

2.6: Audit Committee Size and Sustainability

"The formation of board committees plays an important role in influencing operational decision-making processes and in monitoring the actions and activities of the BOD, top executives and senior managers" (Khan et al., 2013). In addition to supervising the financial benefits of shareholders, board committees also secure the interests and benefits of staff, consumers, and all other outside stakeholders (Liu and Zhang, 2017).

"An audit committee is one of the dynamic monitoring mechanisms that is required by the firms to assist the board in its internal responsibilities and to enhance its effectiveness. The responsibilities of an audit committee include overseeing the process of financial reporting. Consequently, the existence of an audit committee enhances the internal control system, which improves the quality of disclosure" (Forker, 1992). The monitoring of financial reporting can be effectively done by the audit committees of the board. Various studies have recognized the prominent role played by audit committees in monitoring mechanism and maintaining the quality of financial reporting (Davidson et al., 2005; Kent and Steward, 2008; Rainsbury et al., 2008).

The earlier literature (Barako et al., 2006; Yuen et al., 2009) indicated a positive association between the presence of an audit committee and the extent of voluntary disclosure. Kapoor and Goel (2017) investigate the relationship between earnings management, specific board characteristics and firm's profitability in the Indian context. The study finds that profitability is an important variable, moderating the association between the audit committee and earnings management. Thus, the following hypothesis is proposed about audit committee size and economic angle of sustainability:

H4: Large Audit Committee is associated with higher economic performance of sustainability.

2.7: Audit Committee Independence and Sustainability

The monitoring of the financial reporting and quality of governance can be enhanced with the presence of a higher number of independent directors on the 'audit committee.' Amar (2014) and Sharma and Kuang (2014) have reported the association of audit committee independence with improved quality of financial reporting in France and New Zealand respectively.

Similarly, DeZoort and Salterio (2001) reported that “the committee should be independent, with sufficient experience and knowledge, well-educated in financial aspects to be able to effectively perform the monitoring role.”

Most of the studies that evaluate the significance of audit committee independence are contextualised in developed economies like the USA, Australia and France where the regulatory framework is already developed. Future studies need to focus on developing economies that are still in the process of transformation in the policy framework.

Research in the context of emerging economies has been limited. In the Indian context, Puri et al. (2010) have argued that the audit committees perform diverse functions in the multiple areas that include financial reporting. Similarly, Sarkar and Sarkar (2012) have highlighted the importance of audit committee independence for improving corporate governance in emerging economies.

In the case of India, Kapoor and Goel (2017) also found that independent audit committees are effective in their monitoring role. Chatterjee (2011) emphasized the value of an active committee, as it demonstrates the commitment to the issues of concern and the attempts to ensure sufficient internal control. The independence and sustainability association has however been found to be negative (Naciti, 2019; Mahmood and Orazalin, 2017). Thus, the following hypothesis is developed:

H5: Higher audit committee independence is associated with lower economic performance of sustainability.

3. Research Design

This study is confined to top 100 public companies in India as per the market capitalization as on 1st March 2019, listed on Bombay Stock Exchange (BSE). These include companies in diverse industries and with different types of shareholdings. The sample also included few banking companies which were omitted from the analyses owing to their distinct regulatory mechanism. After removing companies with incomplete data, the final sample comprised of 89 firms with 534 firm-year observations. These companies account for around 60% of total market capitalization at BSE as on 1st March 2019, which is a fair representation of the market size.

The time period of the study is six years (2012-13 to 2017-18) to study the effect of post regulatory changes in the Companies Act, 2013 in India. Financial data for analysis of Indian companies were collected for seven years (2012 to 218) to calculate economic performance indicators (EPIs) of sustainability. Financial data was sourced from the leading database in India, ‘Ace Analyser’ (http://www.acenalyser.com). Data for governance variables were hand-collected from the published annual reports of the companies under study.

3.1. Board characteristics of size, independence, audit committee size and independence, and diversity

Annual reports of each listed company in India contain a distinct report on corporate governance as per the mandatory requirement of Clause 49 of SEBI's Listing Agreement. The report on corporate governance specifies various board characteristics for the respective financial year. For the present study, firm-level governance is measured by board size, board independence, audit committee size and independence and gender diversity as the participation of women directors.

'Board size' is defined as the total number of directors on the board of the company. 'Board independence' is calculated as the proportion of independent directors to the total number of directors on the board. In this context, only those directors have been included as independent that does not have any material relationship with the company and not receiving any remuneration for their services. Promoter directors and nominee directors are excluded as they are not strictly independent of the company's management. 'Audit committee size' is measured as the total number of directors on the committee' and 'audit committee independence' is computed as the number of independent directors to total directors on the audit committee. 'Gender diversity' is measured as the proportion of women directors to the total number of directors on the board.

3.2. Calculation of economic performance of sustainability

As discussed in Section 2.2, According to Pre Consultants, for the present study, economic performance of sustainability is measured as "change in Sales" and "EBIT" as they are the true indicators of the core performance of the firm. They can very well capture the trend in firm's economic dimension of its sustainability.

3.3. Control Variables

This study evaluates the impact of board characteristics on the economic performance of sustainability of large listed companies in India. Therefore, financial variables were included in the model to control for their probable impact on economic performance indicators (EPIs) of sustainability of the sample firms. The variable "return on asset" (ROA) might have an impact on economic aspect of sustainability (Mahmood and Orazalin, 2017). Similarly, the financial leverage of the firm might also be associated with a change in sales. "Leverage" is computed as the ratio of long term debt to total capital employed by the firm. Therefore, ROA and leverage were also included as control variables in the model.

4. Empirical Model

The study explores the relationship of economic performance of sustainability with board-specific characteristics in a panel data framework. The panel data structure includes the same cross-sectional observations over a period of time. It is well known that this data structure can detect effects that cannot be observed in either cross-section or time-series data (Gujarati and Sangeetha, 2007). Panel data control for individual heterogeneity of the units being observed. It increases the efficiency of the

model because in this data form there is more information, increased variability, higher degrees of freedom and less collinearity among variables (Baltagi 2008).

The two common techniques to model panel data are the fixed effect model of regression (FEM) and random effect regression model (REM). The difference between the techniques arises because of the underlying assumption of the two models. In the case of FEM, it is assumed that the unobserved effect is correlated with the explanatory variables of the model and becomes a part of the residual term. While in the case of REM, it is assumed that the unobserved effect is not correlated with the explanatory variables of the model. The panel data analysis can also be used to allow for the unobserved effect to be correlated with the explanatory variables. The formal test for determining the suitability of any of the estimation techniques is the Hausman specification test (Hausman 1978). If the null hypothesis of the Hausman test is rejected, the individual effects are considered to be fixed, else the effects would be random. The estimates of βs in such cases would be more efficient.

Board and audit committee monitoring are complementary mechanisms to support economic performance of sustainability. Therefore, their effectiveness is measured through separate regression models. The following models are formulated to explore the association of board and audit committee characteristics with economic performance of sustainability.

Model 1 analyses the association of board-level characteristics with economic performance of sustainability.

Model 2 analyses the characteristics of the audit committee and their association with economic performance of sustainability.

Model 1

$$Economic\_performance\_sustainability_{it} = \beta_0 + \beta_1 * board\_size_{it} + \beta_2 * board\_independence_{it} + \beta_3 * gender\_diversity_{it} + \beta_4 * ROA_{it} + \beta_5 * leverage_{it} + \varepsilon_{it} \quad (1)$$

Model 2

$$Economic\_performance\_sustainability_{it} = \beta_0 + \beta_1 * ac\_size_{it} + \beta_2 * ac\_independence_{it} + \beta_3 * board\_size_{it} + \beta_4 * board\_independence_{it} + \beta_5 * ROA + \beta_6 * leverage_{it} + \varepsilon_{it} \quad (2)$$

Where: economic_performance_sustainability = is measured in two ways, ∆sales and profit. ∆sales is log of net sales and profit is the firm's earnings before interest and taxes (EBIT).

board_independence = the proportion of independent directors on the board.
gender_diversity = the proportion of women directors on the board.
board_size = the number of directors on the board.
ac_size = total number of directors on the audit committee
ac_independence = the proportion of independent directors on the audit committee
ROA = return on asset.

Lev	= financial leverage of the firm. It is calculated as the ratio of long term borrowings to total capital.
Firm_size	= log of total assets of the firm.
ε	**=** Error term
Subscript i	= firm
Subscript i	= time period.

Such exploration regarding the association of the economic dimension of sustainability with board level characteristics might be faced with the problem of endogeneity. This arises when there are chances that the relationship being studied might be affected by another variable (not explicitly included in the model). In such cases, the unobserved variable is captured by the residual term, and is correlated with the dependent variable thereby biasing the estimates.

4.1. Descriptive Statistics

Table 1 presents the descriptive statistics of the variables. The mean value of board size is 10.84 directors and it ranges between a minimum of 4 to a maximum of 21 directors on a board. The mean independence is at 51.17%. This indicates that almost half of the corporate boards comprise of independent directors. However, the range of board independence is large. At the lowest level, board independence is 0% suggesting an absolute absence of independent directors on the board and the maximum value is 83% indicating that the majority of the board in independent. The mean value for gender diversity is 11.43% with minimum and maximum values of 0% and 44% respectively. Audit committee size has a mean value of 4.27 directors and it varies between a low of 1 to a high of 9 directors on the audit committee. Independence of the audit committee has a mean value of 79.76%. The variation of audit committee independence is large between 0% and 100%. Besides board and audit committee characteristics, two control variables were also included in the analysis to evaluate their probable impact on the dependent variable. Mean values of ROA and leverage are 12.11 and 0.44 respectively.

Table 1 Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
board_size	10.84	2.66	4	21
board_independence (%)	51.71	0.12	0	83.00
gender_diversity (%)	11.43	0.07	0	44.44
ac_size	4.27	1.21	1	9
ac_independence (%)	79.76	0.17	0	100
ROA	12.11	9.97	-23.4	73.9
Lev	0.44	0.93	0	9.3

Table 2 presents the cross-correlation matrix of the variables. Among the exploratory variables, the highest correlation is found between board independence and audit committee independence at 0.45. This further stresses the approach of formulating separate models to analyze the impact of board and audit committee characteristics

respectively. Besides this pair, none of the pairs of variables has a high correlation between them.

Table 2 Cross-correlation matrix

		1	2	3	4	5	6	7	8	9
1.	Δsales	1.00								
2.	EBIT	0.63	1.00							
3.	board_size	0.28	0.39	1.00						
4.	board_independence	-0.24	-0.16	0.00	1.00					
5.	gender_diversity	-0.12	-0.12	-0.19	0.09	1.00				
6.	ac_size AC Size	-0.14	0.17	0.25	0.18	0.11	1.00			
7.	ac_independence	0.00	-0.00	0.09	0.45	-0.09	-0.20	1.00		
8.	ROA	-0.28	0.00	-0.05	0.08	-0.01	0.29	-0.11	1.00	
9.	lev	0.10	0.05	-0.08	-0.10	0.02	-0.08	-0.08	-0.29	1.00

4.2. Empirical results

Regression tests were conducted to evaluate the association between corporate board characteristics and economic performance of sustainability in a panel data framework. The regression results are reported in Table 3. There are two common techniques for panel data estimation. Hausman specification test is the formal test to evaluate both techniques. This test was run separately for each model. Results of the Hausman specification test are also reported in Table 3. The tests indicated suitability of FEM over REM in each of the models. If the data is modelled through FEM, it also controls for time-invariant endogeneity. Another concern regarding the study conducted on diverse data is probable heteroscedasticity (Baltagi, 2008). White's test was conducted which indicated the presence of heteroskedasticity. Therefore, the models were adjusted using cluster corrected standard errors.

Table 3 Regression Results

	Model 1		Model 2	
	Δsales	EBIT	Δsales	EBIT
	Coefficient	Coefficient	Coefficient	Coefficient
board_size	0.0239**	717.17	0.0227***	125.16
	(2.07)	(0.37)	(1.93)	(0.06)
board_independence	-0.6858*	-29594	-0.4745***	-30815
	(-2.98)	(-0.87)	(-1.78)	(-0.88)
gender_diversity	1.4695*	99296***		
	(4.71)	(2.70)		
ac_size			0.0210	5122***
			(0.97)	(1.71)
ac_independence			-0.3385**	-8438
			(-2.08)	(-0.60)
ROA	0.0018	2106.56*	0.0045	2118*
	(0.52)	(3.38)	(1.26)	(3.48)
lev	-0.0299	-2783.3	-0.0340	-3289
	(-1.15)	(-1.19)	(-1.27)	(-1.31)
C	11.7139*	40736**	11.9713*	44634**
	(77.63)	(2.10)	(67.13)	(2.01)
N	534	534	534	534
F-stat	8.22	6.32	3.06	3.83
F-stat (prob)	0.00	0.00	0.00	0.00
Chi-square	29.81	18.47	26.9	14.95
Chi-square (Prob)	0.00	0.00	0.00	0.02

***, **, *** denote significance at 1%, 5% and 10% significance level respectively. Figures in parenthesis denote t-statistic**

The variables of interest for the Model 1 are board size, independence and gender diversity. The variable board size is found to be positively associated with economic performance of sustainability with 5% level of significance. This is in accordance with previous studies (Formentini and Taticchi, 2016; Roos, 2017). This suggests that larger boards bring diverse perspectives and experience with them and can lead to better economic performance of sustainability. Association of board independence is negative and significant at 1% level of significance. This finding is in accordance with similar studies that have found a negative association of board independence with the economic aspect of sustainability (Naciti. 2019; Mahmood and Orazalin, 2017; Prado-Lorenzo and Garcia-Sanchez, 2010). This suggests that independent directors remain focused on monitoring management actions which have stricter mandates (like related-party transactions). It is the executive directors who are more focused on sustainability reporting.

Gender diversity is also found to be associated at a 1% level of significance with economic performance of sustainability. This finding is similar to previous studies like

Mahmood and Orazalin (2017) and supports arguments brought forward by studies like Erhardt et al. (2003) and Campbell and Minguez-Vera (2008). Inclusion of women directors on the board brings a different approach towards decision making than their male counterparts. Female directors are known to emphasize intense stakeholder engagement and reduce information asymmetries leading towards economic performance of sustainability. Besides, board-level variables, two control variables, ROA and leverage were included in Model 1 to isolate any probable impact on the economic dimension of sustainability. The variable ROA does not have a significant association with ∆sales but has a significant association with profit at 1% level of significance. The variable leverage failed to have significant association with any measure of economic performance of sustainability.

Since board and audit committee are complementary mechanisms for guidance and control, a separate model was formulated to evaluate the impact of audit committee characteristics on economic performance of sustainability. The important variables in Model 2 are audit committee size and independence. Size of the audit committee is positively associated with economic sustainability. The association of audit committee size and EBIT is significant at 10% level of significance. This finding is in agreement with prior studies on audit committee size (Barako et al., 2006; Yuen et al., 2009) that suggest that size of the audit committees may improve economic performance of sustainability of the firms.

On the other hand, audit committee independence is negatively associated and significant at 5% level of significance. This is in accordance with similar studies that have found a negative relationship between board independence and sustainability (Naciti. 2019; Mahmood and Orazalin, 2017). This further strengthens the argument that independent directors whether on board or audit committees are focused on monitoring management actions having stricter mandates. In terms of reporting of economic performance of sustainability, it is the executive directors who maintain the prominent role.

Two board-level indicators were included in the Model 2 to control their probable impact on economic performance of sustainability, board size and independence. Both these variables remained significant in Model 2 at 10% level of significance. Financial variables were also included in the model to control their impact on economic performance of sustainability, ROA and leverage. Out of these variables, only ROA was found to have a significant association with EBIT. The variable leverage remained insignificant in both the models.

5. Conclusion

Based on existing research on performance measurement, we analyze the relationship between board-level characteristics and economic performance of sustainability in the Indian context. Sustainability sensitive companies are gradually realizing that incorporating ‘responsible economic business’ activities adds on value to their corporation as well as it wins the trust of the general public. The present study is an attempt to examine economic performance of corporate sustainability and impact of

corporate governance, as measured by board level-attributes, on such sustainability for a sample of 89 public companies in India from diverse areas. At first, the article examines the extent of the economic dimension of sustainability and states that impact analysis of board quality on this angle of economic performance of sustainability is limited. But the firms in India, and globally, realize the importance of such economic performance indicators (EPIs) of corporate sustainability and these will improve in the near future.

Corporate governance as measured by board-level attributes is found to affect the economic performance of sustainability of the public companies in India. Specifically, board characteristics of size and gender diversity have a positive association with economic dimension of sustainability while independence (whether of the board or the audit committee) has a negative association with it. If a firm focuses on its economic performance of sustainability, then it should try to have a larger board size and encourage diversity of opinions on the board. Moreover, the efforts of the inside directors in promoting economic performance of sustainability should be encouraged and valued. Overall results of the study support that the companies use economic performance of their sustainability as a strategy to legitimize their business operation as well as to reduce agency problems to an extent.

6. Limitations of the study

As with all research, this study has several limitations which provide avenues for future research.

First, though our sample accounts for around 60% of the total market capitalisation of BSE for completeness of data, the scale of future research can still be expanded.

Second, this work focuses only on the board characteristics of internal governance practices. The study has used only five board-level attributes of board-governance, viz. board size, independence, audit committee size and independence and women directors. The distribution of these variables can be modified as per the design of the work on economic performance of sustainability. Future research should thus examine whether other internal and external mechanisms of board practices play a role in this respect.

Third, the research time frame is of seven years (2012-2018) for calculating the economic performance indicators (EPIs) of sustainability. This period is ideally suited to for defining the impact of post regulatory changes in the Companies Act, 2013 and SEBI’s Code of Corporate Governance on the practice of earnings management in India. Researchers may like to choose another time span based on their viewpoint. Therefore, extending a sample size beyond 2018 and including more observations in future research would provide a deeper understanding of the relationship between Board quality and EPIs.

All these possible areas will contribute to the literature and further enhance it. They will encourage future research prospects in the given areas that will enrich our knowledge and understanding of the economic performance of sustainability reporting.

7. Implications for future research

Despite the aforementioned limitations, the study has contributed to the literature on economic performance of corporate sustainability in the Indian context. Further, the study presents empirical evidence of 'economic dimension of sustainability' of public companies in India and it also provides an insight into the impact of board quality attributes on such dimension. The findings result in the betterment of the ongoing standard-setting process, especially as it is concerned with the thorough overhaul of the economic dimension of sustainability carried out under the new GRI system.

As stressed upon by Kapoor and Goel (2017), "the results of this study are significant to policymakers and other stakeholders as it illustrates the need for an effective board in discharging its role qualitatively, rather than quantitatively. There is a strong need for well-defined policies and regulatory structure about board composition since the board which shapes a company. Board is the central pillar of corporate governance." Previous research has documented the impact of board-related reforms on investor confidence (Lee and Shailer, 2008). If specific board related reforms are formulated, they would not only lead to improved quality of earnings but also help in strengthening investor confidence.

Furthermore, the findings of the analysis indicate that the current research focuses more on developed economies. In developed economies, the regulatory and governance framework is relatively rigorous and established. The companies functioning in such settings have limited flexibility concerning board features. However, in the case of developing economies, research in this domain has been limited and more or less inconclusive. Potential studies in developing economies that are still in the process of developing a comprehensive corporate governance framework should be contextualised. This would be of interest to multinational corporations having stakeholders in both developed and developing economies. This would also lead to advancement in research on policy prospects in this area.

"The results of this study are significant not only for organisations operating in India but also for other companies that are based in economies with relatively mature frameworks for corporate governance. Thus, our results have important policy consequences for the western world. For various entities with investment and other business motives for India, the findings are significant as well. Such firms aim at a superior standard of financial reporting to make informed decisions", (Kapoor and Goel, 2017).

In conclusion, the correlation between board characteristics of size, independence, audit committee and diversity and sustainability as highlighted in the Indian perspective in the present study is equally relevant for developed and other developing companies in the light of global corporate governance. Such insights would help in understanding the relevance of different regulatory mechanisms for various contexts. Similar initiatives in other countries would be helpful in rationalizing the management of reported earnings and improving the reliability and transparency of reported earnings to promote economic performance of sustainability.

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ENDNOTES

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