

Does Board Education Diversity affect Environmental Accounting Disclosure? Evidence from Listed Firms in Kenya

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Purpose- The purpose of this study was to examine the effect of board education diversity on environmental accounting disclosure among firms listed in the Nairobi Security Exchange.

Design/Methodology- The study adopted both explanatory and longitudinal research design. The target population comprised 65 listed firms at Nairobi Securities Exchange from 2008 to 2017. However, inclusion criteria were the 27 listed firms from 2008 to 2017, giving a total of 270 observations. A documentary analysis guide was used to collect secondary data.

Findings- The findings showed that board education had a significant and positive impact on environmental accounting disclosure. The findings validate the human capital theory's proposition.

Practical Implications- Firms listed at the Nairobi Securities Exchange ought to diffuse the education level of the board of directors to increase the level of environmental accounting disclosure. Besides, their boards should be well educated and experienced to enhance disclosure of environmental accounting.

Introduction

Environmental accounting (Bassey, Effiok, & Eton, 2013) is designed to provide data for assessing the conduct of a company towards its setting and the financial impact of such action. Environmental management accounting is a collection of methods and techniques that can be used to gather and provide management information on the shared connection between the business and the environment (Debnath, Bose, & Dhalla, 2011). Environmental accounting and reporting enhance the quality of decision-making. It allows the corporations to set objectives to reduce major environmental indicators such as greenhouse emissions, gas emissions, power use, resource use (Beredugo & Mefor, 2012). Through environmental accounting and reporting, firms understand the need to change unsustainable consumption, unfavorable patterns of production, thereby protecting and managing natural resources available. Also, accounting data is vital for accountability, comparability, and probity. However, the unavailability of such data could be tantamount to being biased, non-transparent, fraudulent, and risk-prone. The situation may dissuade patronages from customers, vendors, investors, surrounding communities and possible public sanction that becomes aware of the contribution of an organization to sustainable growth.

While disclosure of environmental accounting is already a common trend in big, small, and medium-sized companies (Chan & Welford, 2005; Sahay, 2004) it does not address these issues on their accounting reporting, it is, in fact, a challenge for companies whose present environmental focus is presented in financial terms (Cho & Patten, 2007; Lamberton, 2005). Furthermore, corporate accounting reporting, usually reveals its good business practices that ensure business sustainability to contribute to the maximization of shareholder value, but nothing related to the environment's bad business practices (Chan & Welford, 2005). However, there is a peril of transmitting a false image of company accounts, highlighting they are positively managed (Lamberton, 2005). Furthermore, environmentally sensitive industries face increased societal pressure as they are more likely to be associated with visible environmental concerns, such as greenhouse gas emissions and environmental disaster risk (da Silva Monteiro & Aibar-Guzmán, 2010). Consequently, if environmentally sensitive companies do not reveal adequate environmental data, disturbing responses between environmental pressure groups and governments may be unbridled. The most notable problems of corporate governance over the past decades (Garas & ElMassah, 2018) has been the variety of executives and board members; hence, corporate disclosure. Since boards of directors are accountable for disclosure procedures, they need to be conscious that appropriate disclosure of data is crucial to assess investment potentials and risks (Garas & ElMassah, 2018), it is anticipated that diverse boards disclose value-relevant data to stakeholders to enhance decision-making processes.

Board's capability is another characteristic included in previous studies, too, based on the premise that knowledge and skills ensure better monitoring, resulting in higher disclosure. However, other studies suggest that board potential could be evaluated using the following features: knowledge and skills to adequately monitor an organization (Nicholson & Kiel, 2004), legitimacy and the ability to connect the company to key stakeholders and other relevant parties (Ong & Wan, 2008), professional accounting and financial knowledge to report in a more simple way, experience measured from a diverse background and management of other unconnected businesses (Westphal & Milton, 2000), hoping that board oversight and decision-making should be improved. Furthermore, based on the results of (Chiang & He, 2010; Rozaini Mohd Haniffa & Cooke, 2002), board members with higher academic backgrounds are anticipated to have better general knowledge, while those holding dual roles are anticipated to have better corporate understanding and experience and should, therefore, be prepared to guarantee greater disclosure of company information. Professional knowledge has been proved to provide better oversight, fair, and adequate levels of corporate disclosure data. Nevertheless, the influence of board diversity on disclosure practices still remains largely unexplored and requires further research since a firm disclosure strategy is critical in meeting the data requirements of its shareholders and thus reducing information asymmetries in capital markets (Chiang & He, 2010; Rozaini Mohd Haniffa & Cooke, 2002). This

issue is key for understanding the merits of board diversity as the prior literature largely assumes that voluntary disclosures help improve transparency and enhance company results and market efficiency.

In both developed and developing economies, disclosure of environmental accounting has become a significant problem. This is because statistics demonstrate that many organizations tend to reveal their data to achieve reputation, visibility, credibility, and legitimacy. Although recent studies have documented that firm-specific attributes such as ownership concentration, asset tangibility, and leverage are associated with environmental accounting disclosure, little is known about the board education diversity mechanism underlying the relations.

Literature Review

The previous study (Ajinkya, Bhojraj, & Sengupta, 2005; Cormier, Ledoux, & Magnan, 2011; Dunstan, 2008; Gul & Leung, 2004) has recognized the association of strong corporate governance with enhanced transparency and reliable disclosure. The corporate governance principles developed by the Organization for Economic Cooperation and Development (OECD) provide a framework for proper practice and represent a set of voluntary suggestions for corporations in all major business ethics fields, including environment and accounting disclosure. A corporation implementing OECD environmental disclosure rules should consider providing a certain quantity of environmental reporting (Abu-Tapanjeh, 2009). However, it has been argued that corporate governance (Gibbins, Richardson, & Waterhouse, 1990; Roszaini M Haniffa & Cooke, 2005) plays a significant role in determining the disclosure needed to meet the data requirements of different stakeholders as it is the board of directors that manages the disclosure of data in annual reports.

Nonetheless, (Gul & Leung, 2004) argued that failure to include features of corporate governance might account for the inconsistency and inconclusiveness that characterizes the outcomes of corporate social and environmental disclosure research. Furthermore, the primary objective of the present study is to empirically examine the effect of board education diversity on the environmental accounting disclosure of listed firms in the Nairobi Securities Exchange, while controlling for corporate size and board size. (Donald C Hambrick & Phyllis A Mason, 1984) Argued that a person's educational background suggests the knowledge and abilities of an individual. Moreover, Several scholars argue that education background is a pure reflection of information diversity (Dahlin, Weingart, & Hinds, 2005; Williams & O'Reilly III, 1998). Therefore, the board diversity in educational level can indicate the variety of knowledge and skills in the board of directors. (Cohen & Levinthal, 1990) Argued that the accumulation of knowledge enables a person to learn or develop problem-solving skills more rapidly.

Nonetheless, directors may not possess all the necessary knowledge and skills, yet as a group, they may since the board can gather perspectives, connections, and efforts (Kor & Sundaramurthy, 2009). Accordingly, extremely diverse board in terms of education levels offers a robust knowledge base and enhances the capacity to grow since the likelihood of finding familiar data is greater. Previously, scholars studied the educational level and prestige of academic organizations to examine the impact on behavioral values and directors' decision-making (Johnson, Schnatterly, & Hill, 2013). However, (Johnson et al., 2013) suggest that the variation in educational background characteristics may illustrate the presence of the fundamental social or cognitive construct. Consequentially, (Mahadeo, Soobaroyen, & Hanuman, 2012) found that the educational background has a significant impact on the disclosure levels.

Theoretical Review

This research was anchored on the theory of human capital. According to (Terjesen, Sealy, & Singh, 2009) argued that human capital theory is derived from the work of (Becker, 1964, 2009) that explores, how education, experience, and skills of people inside the company can positively influence the performance and disclosure practices of that corporation. Besides, the diversity of the members of the board of directors is linked to unique

human capital for the organization. The human capital theory adds to some of the concepts linked to the board diversity, which in its turn is derived from the resource dependence theory. One question raised by the fact that women and ethnic minorities have unique human capital is the assertion that women lack the right human capital for directorships. Consequently, the theory asserts that board diversity influences company efficiency hence influencing environmental disclosures.

According to (Hillman & Dalziel, 2003), board members' knowledge and abilities affect the efficacy of monitoring and resource delivery roles. The board members' knowledge and skills are also linked to the board members' human capital. Human capital is described as expertise, skills, competences, and other characteristics embodied in economically appropriate people (OECD & Innovation, 1998). Furthermore, (Becker, 2009), believes that the primary forms of human capital to be education and on-the-job training. Examples of human capital are the education and experience of board members possess. The board members bring distinctive human capital to the board because they have distinct educational levels and other experiences (Kesner, 1988). The board of directors is diversified by the unique human capital; however, due to distinctive new opinions and knowledge, decision-making will be enhanced (Fagan, Menéndez, & Ansón, 2012). Based on the human capital theory, the higher the board diversity in the organization, the higher the disclosure levels. Accordingly, the theory is relevant to the study because corporate disclosure of information such as environmental disclosure is influenced by the diversity of the board's unique human capital (Carter, D'Souza, Simkins, & Simpson, 2010).

Hypothesis Development

Board education diversity is viewed as an indicator of the director's knowledge, cognitive orientation, and skill base (Donald C. Hambrick & Phyllis A. Mason, 1984). Previous researches document that a high level of education among directors on the boards results in a greater ability to adopt new ideas and to accept innovations (Guthrie & Parker, 1990; Miller & del Carmen Triana, 2009; Wally & Baum, 1994), a broader view and larger breadth of understanding (Post, Rahman, & Rubow, 2011). More diverse boards possess a more diverse knowledge base and the perspectives necessary to develop and evaluate solutions to complex problems (Milliken & Martins, 1996; Van der Walt & Ingley, 2003; Van der Walt, Ingley, Shergill, & Townsend, 2006). An educated director can have a broader perspective and superior pattern of thinking and, thus, is more likely to understand the wider interests of various stakeholders (Welford, 2007).

According to (Donald C. Hambrick & Phyllis A. Mason, 1984) argued that the director's educational qualifications are indicative of their knowledge, cognitive orientation, and skill base within the organization. Research shows that directors who are more formally educated are likely to adopt new ideas, accept innovations (Guthrie & Parker, 1990; Wally & Baum, 1994) and entertain a broader view of ideas (Post et al., 2011). Board members with diverse educational qualifications can, therefore, evaluate a range of solutions to a given problem before making any decision (Donald C Hambrick & Phyllis A Mason, 1984; Milliken & Martins, 1996). However, there is a downside to having board members with diversity in education; it leads to greater turnover, and higher coordination and integration costs stemming from conflicts that can arise from this diversity (Milliken & Martins, 1996).

According to (Hafsi & Turgut, 2013), board diversity creates a crucial contribution to knowledge. Examining the impact of two-dimensional board diversity on the social performance of S&P 500 listed companies, they find that board diversity is statistically relevant and favorably linked to social disclosures, and that board diversity does not have a substantial impact on social disclosures. Equally, (Bear, Rahman, & Post, 2010; Fernandez-Feijoo, Romero, & Ruiz-Blanco, 2014; Post et al., 2011) documented the positive connection between disclosure (such as social and environmental disclosure or voluntary disclosure) and the board of directors' demographic characteristics such as gender diversity and education diversity (Akhtaruddin & Rouf, 2012). However, based on the theory of resource dependency, board members are important strategic resources for

an organization and contribute largely to corporate social disclosures. In the work of (Harjoto, Laksmana, & Lee, 2015; Katmon, Mohamad, Norwani, & Al Farooque, 2019), respectively, both reported a positive association between diversity at the educational level and disclosure of corporate social responsibility. Thus, the study hypothesized that;

Ho: There is no significant relationship between board education diversity and environmental accounting disclosure of listed firms in Kenya.

Control Variables

In various empirical financial research, firm size and board size appear as control variables. Several empirical research discovered substantial proof of a favorable link between the size of the business and the level of social and environmental disclosure (Milanés-Montero & Pérez-Calderón, 2011; Suttipun & Stanton, 2012; Zeng, Xu, Yin, & Tam, 2012). Again bigger firms are more prone to disclose environmental accountings than smaller firms to avoid punitive measures from regulators and reduce the danger of the regulation (Burgwal & Vieira, 2014). However, (Brammer & Pavelin, 2008) studied the quality of voluntary disclosures in the UK's industrial sector and analyzed the determinants of the disclosure. Findings showed that the quality of disclosures is influenced by larger companies and the nature of operations. However, previous literature has attempted to clarify why firm size is directly linked to the disclosure of the environment. The first rationale deals with the cost of generating environmental information. (da Silva Monteiro & Aibar-Guzmán, 2010) Argued that the cost of reporting environmental accounting is high, so that small business cannot afford it out of their restricted resources. Therefore, bigger businesses may have adequate funds to afford users of their annual reports the price of reporting data. However, (Patten, 2002) discovered that corporate environmental reporting might not be a critical determining factor in company size. The fundamental argument is that a favorable link exists between company size and the extent of disclosure of the environment.

Previous findings have shown inconsistency relationship between board size and environmental disclosure level (Mahmood, Kouser, Ali, Ahmad, & Salman, 2018), while some studies show a favorable association between board size and environmental disclosure level indicated that the rise in board size might involve extra costs, leading to communication difficulties between employees, and that weaker choice is generally linked with large corporations (Ienciu, Popa, & Ienciu, 2012; Mahmood et al., 2018; Trireksani & Djajadikerta, 2016; Victor Chiedu & Fodio, 2012). Additionally, the rise in membership includes a control weakness. This is due to differences of opinion between its members. According to (Htay, Rashid, Adnan, & Meera, 2012), indicated the absence of this relationship between environmental accounting disclosure and board size.

Research Methodology

The study used positivism, which according to (Zikmund, Babin, Carr, Adhikari, & Griffin, 2013), gives the researcher the freedom to choose techniques, methods, and procedures that best suit their needs and purposes. In this regard, the current study's knowledge about the phenomena under investigation, environmental disclosure, and corporate governance are gathered through quantitative measurement using content analysis of a sample of Kenya corporate annual reports. This study used a combination of explanatory and longitudinal research design. However, in this study, the accessible population comprised of 27 listed firms from Manufacturing, Agriculture sector, Constructions & Allied, Energy & Petroleum and Automobiles and Accessories listed in Nairobi stock exchange (NSE, 2017). The plausible explanation was that these firms are likely to pollute the environment. Therefore, the study's inclusion criteria were the 27 listed firms from 2008 to 2017. The data collection instrument used in this study is a document analysis guide.



Measurement of variables

However, the environmental disclosure score was determined by assigning dummy scores depending on the presence and specificity of the data based on the environmental disclosure index. If the company discloses information about the particular item, we assigned 1 or otherwise 0. Then we calculated each company's environmental disclosure score value as the ratio of total calculated disclosure scores to the maximum possible scores (total number of items included in the index). While board education, diversity was measured using the Herfindahl index. Table 1 presents the measurement of the study variables.

Table 1 - Measurement variables

Variable Name	Measurement	Author(s)
Dependent Variable		
Environmental Accounting Disclosure	Environmental accounting disclosures was measured by framing a list of items called environmental disclosure index (EDI) which is primarily based on the Global Reporting Initiative (GRI 2008)	(Ezhilarasi & Kabra, 2017)
Independent Variables		
Board of directors Education	For categorical independent variables, the Herfindahl index was used. The minimum value of the Herfindahl coefficient of variation indices equals (0) for all the diversity measures and maximum value equals (1). Herfindahl index is computed as follows: $H = 1 - \sum (p_i)^2$ Where: H is the diversity measure P _i is the percentage of board members in each category of (i) has worked within Ph.D., (ii) Masters, (iii) undergraduate, (iv) Diploma, and (v) certificate.	(Güner, Malmendier, & Tate, 2008)
Control Variables		
Board Size	Determined by taking the number of directors sitting on the board.	(Jehn & Bezrukova, 2004; Roberson & Park, 2007)
Firm Size	Measured as the log of total assets.	(Henry, 2010)

Data Analysis and Model Presentation

Data processing starts with data extraction and coding. In this study, the data were analyzed using both descriptive and inferential statistics. A panel data framework was used to test the hypotheses. Panel data was analyzed using a fixed-effect model and a random-effects model. Hausman test was performed to determine whether the fixed effect or the random effect is a suitable model to explain the relationship of the variables. The null hypothesis is that the random effect model is more suitable. However, if the null hypothesis is rejected, then the fixed effect model should be used. (Greene, 2008). Furthermore, if the test value of Chi-square is higher than the critical value, the null hypothesis is rejected, and the fixed effect is a better estimation method. The hypothesis used the following specified equation;

$$EAD_{it} = \beta_{0it} + C + \beta_{1it}BED_{1it} + \varepsilon$$

Where;

EAD; Environmental accounting disclosure

C; Control Variables (Board and firm size)

α ; Constant term or intercept

β_0 and β_1 ; Beta coefficients

BED; Board education diversity

ε ; Random error term

Results

Descriptive statistics for the dependent, independent, and test variables are presented in Table 2. Using a scoring system to develop an environmental accounting index (EDI), consistent with previous study findings, our results indicate that the mean value of environmental accounting disclosure ranged from a minimum of 0.06 to a maximum of 0.87. The average value for environmental accounting disclosure was 0.526. Although the level of environmental accounting reported during the period 2008 to 2017 is low on an aggregate basis, the extent of environmental disclosure has increased between 2008 and 2017 as well as the number of Kenyan companies disclosing environmental information. Indeed, despite the low average value of the environmental disclosure index, it has positively evolved, both overall and in each industry. Therefore, we can assert that the Kenyan firms' environmental reporting practices have improved over the studied time, although their level of environmental disclosure still lags behind those of other developed economies, such as Spain. On average, the board members had postgraduate education (mean = 4.188). The board had a minimum of 2 members and a maximum of 7. While, on average, the board is composed of 9 members (mean = 9.422).

Furthermore, the firm size was at a mean of 9.681, with a minimum of 8.25 and a maximum of 11.28. Also, board education had a positive and significant correlation with environmental accounting disclosure ($r = 0.302$). However, board size and firm size did not have a significant correlation with environmental accounting disclosure.

Table 2 - Descriptive and Correlation Results

Obs=270	Min	Max	Mean	Sd	Sk	Kur	EAD	BED	BS	fs
EAD	0.06	0.87	0.526	0.215	-0.694	1.747	1			
BED	2.36	5	4.188	0.521	-1.396	4.958	.302**	1		
BS	2	19	9.422	3.642	-0.234	1.876	-0.072	0.108	1	
FS	8.25	11.28	9.681	0.601	0.144	3.379	-0.039	-.124*	-0.028	1

** Correlation is significant at the 0.01 level (2-tailed).

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

Diagnostic Tests

To determine the normality of the research variables, the Jarque-Bera test for normality was utilized. Based on the Jarque-Bera test, if the significance level is lower than 5% (Sig < 5%), the null hypothesis is rejected at a confidence level of 95%. However, the chi (2) is 0.065 which is higher than 0.05 indicating that it is not possible to reject the null hypothesis, hence the data is normal. The implication is that there is no violation of the normal

distribution assumption of error terms as the residuals are coming out to be normal. However, to recognize the existence of heteroscedasticity, the White test, Wooldridge and Breusch, and Pagan Lagrangian Multiplier test can be used. In this research, Breusch and Pagan Lagrangian Multiplier tests were utilized. The null hypothesis for the test indicates the presence of homoscedasticity and alternative hypothesis suggest heteroscedasticity. Since the p values are 0.72, the null hypothesis is accepted. The model, therefore, does not suffer from the heteroscedasticity issue. The variance inflation factors (VIF) test was conducted in Stata in testing for the existence of multicollinearity. This test measures how the standard errors inflate the coefficients in the regression model, leading to a bias in the p-values. According to (Gujarati & Porter, 2008; Gupta & Nagar, 2018) argued that VIF score that exceeds 10 indicates the presence of multicollinearity. Therefore, based on the mean VIF (1.350) and the individual VIF of the independent variables as shown in Table 3, depicts no multicollinearity is present.

Furthermore, Wooldridge was used to evaluating autocorrelation; the results showed a p-value of 0.5652, so the null assumption of no autocorrelation could not be rejected at a significance level of 5%. In this study, Leven, Lin and Cho, and Harris-Tzavalis tests together with a Fisher-type unit-root test were used to determine the presence of unit root in panel data. As shown in Table 3, the significance level is less than 5% for stationary testing of all the variables. Therefore, it can be implied that the research variables are stationary at a confidence level of 95%.

Table 3 - Diagnostic Tests

Normality	Jarque-Bera: normality test	11.122
	Chi(2)	0.065
Heteroscedasticity	chi2(1)	0.130
	Prob > chi2	0.720
Multicollinearity	Mean VIF	1.350
Wooldridge test for autocorrelation	F(1, 18)	0.343
	Prob > F	0.565
Levin-Lin-Chu unit-root test	Statistic-Adjusted t*	-42.530
	p-value	.000

Discussion

The study conducted a Hausman test to determine the appropriate model for the study. Based on the Hausman test findings, the Chi-square test statistic of 34.60 was significant (p-value = .000), indicating that the fixed-effects model is appropriate to test the hypothesis. According to (Bickel, 2007), the fixed-effect model comprised of unique attributes that do not vary across times. In Table 4, the R-squared was .373 implying that that board education diversity, the board size, and firm size explained 37.3% variation of environmental accounting disclosure.

Furthermore, there was a positive ($\beta = 0.416$) and significant (p-value = $0.000 < 0.05$) relationship between board education diversity and environmental accounting disclosure of listed firms in Kenya. Based on this result, the study concluded that there is a significant relationship between board education diversity and environmental accounting disclosure of listed firms in Kenya. The findings are consistent with the argument of (Hafsi & Turgut, 2013) that board education diversity enhances strong voluntary disclosure. Also, board diversity is statistically substantial and favorably linked to social disclosures. Similarly, (Fernandez-Feijoo et al., 2014) argued that board education demographic attributes had a positive relationship between disclosure (such as social and environmental disclosure or voluntary disclosure). This is in line (Bear et al., 2010; Post et al., 2011) findings that board education diversity is key strategic resources for an organization and largely contributes to

corporate social disclosures. While, (Harjoto et al., 2015; Katmon et al., 2019), revealed a positive association exists between educational level diversity and disclosure.

Table 4 - Fixed and Random Effect

EAD	Random Effect			Fixed Effect		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>t
BED	0.383	0.034	0.000	0.416	0.035	0.000
BS	-0.080	0.087	0.359	-0.064	0.127	0.614
FS	0.298	0.648	0.646	0.473	0.845	0.576
_cons	-1.482	1.483	0.318	-1.943	1.898	0.307
R-sq:						
<i>Within</i>	0.373			0.374		
<i>Between</i>	0.014			0.011		
<i>Overall</i>	0.309			0.309		
<i>Wald chi2(3)</i>	128.730					
<i>Prob> chi2</i>	0.000					
<i>F(3,240)</i>				47.720		
<i>Prob > F</i>				0.000		
Hausman Test						
<i>chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)</i>						
= 34.60						
<i>Prob>chi2 = 0.0000</i>						

Conclusion

Evidence from the study suggests that educated boards are associated with better environmental disclosure. One possible explanation is that an educated and experienced board of directors can take advantage of the skills, expertise, and experience of its members, thereby engaging in strategic decisions that focus on quality in environmental disclosure, which helps to maintain a good corporate image. There are also limited instances of agency problems since there is better monitoring, which is in the best interests of the shareholders. The study has shown that the director's education and experience are positively associated with firm better environmental disclosure. It is therefore utmost necessary for firms to appoint directors that have served for more than nine years to the board and with high levels of education. Also, the presence of board members who are educated with experience will improve environmental disclosure. As such, having experienced board members should be a key priority for firms as it affects environmental disclosure positively or negatively.

Empirical findings support the literature related to the accepted hypothesis and providence evidence that there is a strong theoretical link between board education diversity and environmentally accounting disclosure, especially in developing country context. The findings also favor the literature that board education diversity has a significant impact on environmentally accounting disclosure. However, more educated board members are the likelihood of environmentally accounting disclosure increases to avoid agency problems. Thus, this study adds in the literature from an environmental accounting disclosure perspective and especially in developing countries' contexts. Additionally, it should be acknowledged that listed companies in Kenya lack bindings of environmentally accounting disclosure from regulatory agencies as the notion of environmentally accounting disclosure is somewhat new for corporate managers. From a practical implication perspective, findings reveal that educated board members are likely to predict environmentally accounting disclosure; however, from the resource dependence perspective only large firms can afford the luxury of large boards. To overcome the limitations in the study, there were several suggestions for future research.

First and foremost, future researchers could increase the scope by examining the study variables about unlisted firms. In other research studies, primary data can be used instead of secondary data obtained from audited financial reports. Lastly, board education diversity can be further analyzed basing on gender, working experience, professional, and academic areas of specialization. This might give a detailed overview while examining environmental accounting disclosure.

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References

- Abu-Tapanjeh, A. M. (2009). Corporate governance from the Islamic perspective: A comparative analysis with OECD principles. *Critical Perspectives on accounting*, 20(5), 556-567.
- Ajinkya, B., Bhojraj, S., & Sengupta, P. (2005). The association between outside directors, institutional investors and the properties of management earnings forecasts. *Journal of accounting research*, 43(3), 343-376.
- Akhtaruddin, M., & Rouf, D. (2012). Corporate governance, cultural factors and voluntary disclosure: Evidence from selected companies in Bangladesh. *Corporate Governance, Cultural Factors and Voluntary Disclosure: Evidence from Selected Companies in Bangladesh (June 1, 2012). Corporate Board: Role, Duties & Composition*, 8(1), 46-58.
- Bassey, B. E., Effiok, S. O., & Eton, O. E. (2013). The impact of environmental accounting and reporting on organizational performance of selected oil and gas companies in Niger Delta Region of Nigeria. *Research Journal of Finance and Accounting*, 4(3), 57-73.
- Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics*, 97(2), 207-221.
- Becker, G. S. (1964). Human capital theory. *Columbia, New York, 1964*.
- Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*: University of Chicago press.
- Beredugo, S. B., & Mefor, I. P. (2012). The Impact of environmental accounting and reporting on sustainable development in Nigeria. *Research Journal of Finance and Accounting*, 3(7), 55-63.
- Bickel, R. (2007). *Multilevel analysis for applied research: It's just regression!*: Guilford Press.
- Brammer, S., & Pavelin, S. (2008). Factors influencing the quality of corporate environmental disclosure. *Business Strategy and the Environment*, 17(2), 120-136.
- Burgwal, D. v. d., & Vieira, R. J. O. (2014). Environmental disclosure determinants in Dutch listed companies. *Revista Contabilidade & Finanças*, 25(64), 60-78.
- Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review*, 18(5), 396-414.
- Chan, J. C. h., & Welford, R. (2005). Assessing corporate environmental risk in China: an evaluation of reporting activities of Hong Kong listed enterprises. *Corporate Social Responsibility and Environmental Management*, 12(2), 88-104.
- Chiang, H. T., & He, L. J. (2010). Board supervision capability and information transparency. *Corporate Governance: An International Review*, 18(1), 18-31.
- Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, organizations and society*, 32(7-8), 639-647.



- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, 35(1), 128-152.
- Cormier, D., Ledoux, M.-J., & Magnan, M. (2011). The informational contribution of social and environmental disclosures for investors. *Management Decision*, 49(8), 1276-1304.
- da Silva Monteiro, S. M., & Aibar-Guzmán, B. (2010). Determinants of environmental disclosure in the annual reports of large companies operating in Portugal. *Corporate Social Responsibility and Environmental Management*, 17(4), 185-204.
- Dahlin, K. B., Weingart, L. R., & Hinds, P. J. (2005). Team diversity and information use. *Academy of management journal*, 48(6), 1107-1123.
- Debnath, S., Bose, S., & Dhalla, R. (2011). Environmental Management Accounting: An Overview of its Methodological Development. *International Journal of Business Insights & Transformation*, 5(1).
- Dunstan, K. L. (2008). The case for the use of international reporting standards in New Zealand: A briefing paper prepared on behalf of the New Zealand securities commission. Available at SSRN 1281656.
- Ezhilarasi, G., & Kabra, K. (2017). Factors influencing environmental disclosures: Evidence from India. *IUP Journal of Accounting Research & Audit Practices*, 16(1), 7.
- Fagan, C., Menéndez, M. G., & Ansón, S. G. (2012). *Women on corporate boards and in top management: European trends and policy*: Springer.
- Fernandez-Feijoo, B., Romero, S., & Ruiz-Blanco, S. (2014). Women on boards: do they affect sustainability reporting? *Corporate Social Responsibility and Environmental Management*, 21(6), 351-364.
- Garas, S., & ElMassah, S. (2018). Corporate governance and corporate social responsibility disclosures: The case of GCC countries. *critical perspectives on international business*, 14(1), 2-26.
- Gibbins, M., Richardson, A., & Waterhouse, J. (1990). The management of corporate financial disclosure: opportunism, ritualism, policies, and processes. *Journal of accounting research*, 28(1), 121-143.
- Greene, W. (2008). Functional forms for the negative binomial model for count data. *Economics Letters*, 99(3), 585-590.
- Gujarati, D., & Porter, D. (2008). *Basic Econometrics*, fifth ed: McGraw-Hill/Irwin.
- Gul, F. A., & Leung, S. (2004). Board leadership, outside directors' expertise and voluntary corporate disclosures. *Journal of Accounting and public Policy*, 23(5), 351-379.
- Güner, A. B., Malmendier, U., & Tate, G. (2008). Financial expertise of directors. *Journal of financial Economics*, 88(2), 323-354.
- Gupta, A. K., & Nagar, D. K. (2018). *Matrix variate distributions*: Chapman and Hall/CRC.
- Guthrie, J., & Parker, L. D. (1990). Corporate social disclosure practice: a comparative international analysis. *Advances in public interest accounting*, 3, 159-175.
- Hafsi, T., & Turgut, G. (2013). Boardroom diversity and its effect on social performance: Conceptualization and empirical evidence. *Journal of Business Ethics*, 112(3), 463-479.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of management review*, 9(2), 193-206.
- Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management. The Academy of Management Review*, 9(2), 193.
- Haniffa, R. M., & Cooke, T. E. (2002). Culture, corporate governance and disclosure in Malaysian corporations. *Abacus*, 38(3), 317-349.
- Haniffa, R. M., & Cooke, T. E. (2005). The impact of culture and governance on corporate social reporting. *Journal of Accounting and public Policy*, 24(5), 391-430.
- Harjoto, M., Laksmana, I., & Lee, R. (2015). Board diversity and corporate social responsibility. *Journal of Business Ethics*, 132(4), 641-660.
- Henry, D. (2010). Agency costs, ownership structure and corporate governance compliance: A private contracting perspective. *Pacific-Basin Finance Journal*, 18(1), 24-46.



- Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of management review*, 28(3), 383-396.
- Htay, S. N. N., Rashid, H. M. A., Adnan, M. A., & Meera, A. K. M. (2012). Impact of corporate governance on social and environmental information disclosure of Malaysian listed banks: Panel data analysis. *Asian Journal of Finance & Accounting*, 4(1), 1-24.
- Ienciu, I.-A., Popa, I. E., & Ienciu, N. M. (2012). Environmental reporting and good practice of corporate governance: Petroleum industry case study. *Procedia Economics and Finance*, 3, 961-967.
- Jehn, K. A., & Bezrukova, K. (2004). A field study of group diversity, workgroup context, and performance. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 25(6), 703-729.
- Johnson, S. G., Schnatterly, K., & Hill, A. D. (2013). Board composition beyond independence: Social capital, human capital, and demographics. *Journal of management*, 39(1), 232-262.
- Katmon, N., Mohamad, Z. Z., Norwani, N. M., & Al Farooque, O. (2019). Comprehensive board diversity and quality of corporate social responsibility disclosure: evidence from an emerging market. *Journal of Business Ethics*, 157(2), 447-481.
- Kesner, I. F. (1988). Directors' characteristics and committee membership: An investigation of type, occupation, tenure, and gender. *Academy of management journal*, 31(1), 66-84.
- Kor, Y. Y., & Sundaramurthy, C. (2009). Experience-based human capital and social capital of outside directors. *Journal of management*, 35(4), 981-1006.
- Lamberton, G. (2005). *Sustainability accounting—a brief history and conceptual framework*. Paper presented at the Accounting forum.
- Mahadeo, J. D., Soobaroyen, T., & Hanuman, V. O. (2012). Board composition and financial performance: Uncovering the effects of diversity in an emerging economy. *Journal of Business Ethics*, 105(3), 375-388.
- Mahmood, Z., Kouser, R., Ali, W., Ahmad, Z., & Salman, T. (2018). Does corporate governance affect sustainability disclosure? A mixed methods study. *Sustainability*, 10(1), 207.
- Milanés-Montero, P., & Pérez-Calderón, E. (2011). CORPORATE ENVIRONMENTAL DISCLOSURE AND LEGITIMACY THEORY: AN EUROPE PERSPECTIVE. *Environmental Engineering & Management Journal (EEMJ)*, 10(12).
- Miller, T., & del Carmen Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity–firm performance relationship. *Journal of Management studies*, 46(5), 755-786.
- Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of management review*, 21(2), 402-433.
- Nicholson, G. J., & Kiel, G. C. (2004). A framework for diagnosing board effectiveness. *Corporate Governance: An International Review*, 12(4), 442-460.
- OECD, C. f. E. R., & Innovation. (1998). *Human capital investment: an international comparison*: OECD, Paris, France.
- Ong, C., & Wan, D. (2008). Three conceptual models of board role performance. *Corporate Governance: The international journal of business in society*, 8(3), 317-329.
- Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: a research note. *Accounting, organizations and society*, 27(8), 763-773.
- Post, C., Rahman, N., & Rubow, E. (2011). Green governance: Boards of directors' composition and environmental corporate social responsibility. *Business & Society*, 50(1), 189-223.
- Roberson, Q. M., & Park, H. J. (2007). Examining the link between diversity and firm performance: The effects of diversity reputation and leader racial diversity. *Group & Organization Management*, 32(5), 548-568.
- Sahay, A. (2004). Environmental reporting by Indian corporations. *Corporate Social Responsibility and Environmental Management*, 11(1), 12-22.



- Suttipun, M., & Stanton, P. (2012). Making or not making environmental disclosures in Thailand. *International Journal of Business and Social Science*, 3(9).
- Terjesen, S., Sealy, R., & Singh, V. (2009). Women directors on corporate boards: A review and research agenda. *Corporate Governance: An International Review*, 17(3), 320-337.
- Trireksani, T., & Djajadikerta, H. G. (2016). Corporate governance and environmental disclosure in the Indonesian mining industry.
- Van der Walt, N., & Ingley, C. (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance: An International Review*, 11(3), 218-234.
- Van der Walt, N., Ingley, C., Shergill, G., & Townsend, A. (2006). Board configuration: are diverse boards better boards? *Corporate Governance: The international journal of business in society*, 6(2), 129-147.
- Victor Chiedu, O., & Fodio, M. I. (2012). Board characteristics and the quality of environmental reporting in Nigeria. *The Journal of Accounting and Management*(2), 33-48.
- Wally, S., & Baum, J. R. (1994). Personal and structural determinants of the pace of strategic decision making. *Academy of management journal*, 37(4), 932-956.
- Welford, R. (2007). Corporate governance and corporate social responsibility: issues for Asia. *Corporate Social Responsibility and Environmental Management*, 14(1), 42-51.
- Westphal, J. D., & Milton, L. P. (2000). How experience and network ties affect the influence of demographic minorities on corporate boards. *Administrative science quarterly*, 45(2), 366-398.
- Williams, K. Y., & O'Reilly III, C. A. (1998). Demography and. *Research in organizational behavior*, 20, 77-140.
- Zeng, S., Xu, X., Yin, H., & Tam, C. M. (2012). Factors that drive Chinese listed companies in voluntary disclosure of environmental information. *Journal of Business Ethics*, 109(3), 309-321.
- Zikmund, W. G., Babin, B. J., Carr, J. C., Adhikari, A., & Griffin, M. (2013). *Business Research Methods A South-Asian Perspective*: Cengage Learning.