



DO BOARD SIZE AND FIRM SIZE AFFECT ENVIRONMENTAL ACCOUNTING DISCLOSURE? EVIDENCE FROM SELECTED LISTED FIRMS IN KENYA

John Kipngetich Tarus

Department of Accounting and Finance, Moi University, Kenya

jktarus47@gmail.com

Abstract

The purpose of this study was to examine the effect of board size and firm size on environmental accounting disclosure in the Nairobi Securities Exchange, Kenya. The study's specific objectives were to determine the effect of board size and firm size on environmental accounting disclosure. The study was guided by the stakeholder's theory and longitudinal research design was adopted. The study targeted 27 selected listed firms from 2008 to 2017. The findings showed that board size had significant and negative impact on environmental accounting disclosure ($\beta = -0.328$, $p\text{-value} = 0.001 < 0.05$), while firm size had significant and positive impact on environmental accounting disclosure ($\beta = 1.164$, $p\text{-value} = 0.000 < 0.05$). This implies that firms with larger boards are less likely to disclose environmental accounting information while large firms have high reporting on environmental information. The study recommends that firms listed in the Nairobi Securities Exchange ought to decrease board size while improving on assets so as to increase the level of environmental accounting disclosure in Kenyan firms.

Keywords; Board Size, Firm Size, Environmental Accounting Disclosure, and Stakeholders Theory.

1. Introduction

The environmental accounting disclosure, as promoted by Bowen (2009), is based on the analysis of the document. Several studies such as (Gray 2002; 2006; Gray & Collison 2002; Sahay 2004; Byrch, *et al.*, 2007) demonstrate environmental sustainability issues through reporting or perhaps disclosure of the environmental information. Although environmental disclosure is already a popular trend in large, small and medium-sized enterprises, its reporting does not address social issues (Sahay, 2004; Chan & Welford, 2005). Indeed, it is a challenge for corporations with an environmental focus (Lamberton, 2005; Cho & Patten, 2007). Chan & Welford (2005) asserted that corporate accounting usually aims to reveal the good practices of the company to ensure the company's sustainability in order to contribute to the maximization of shareholder value, but nothing to do with the poor company practices of the

environment. However, there is a danger of a false image of company reports being transmitted, highlighting those that are managed favorably (Lamberton, 2005).

According to Bassey *et al.*, (2013), the motive of environmental accounting is to provide information for assessing the behavior of a company towards its environment and the economic impact of such action. Therefore, the environmental accounting system provides both financial information in financial units and non-financial information in physical units (Panigrahi, 2014). According to Ofoegbu, & Megbuluba, (2016), environmental accounting covers all environmental information that involves environmental spending, product environmental advantages, and viable operational details. While Yakhou & Dorweiler (2004) stated that the entire accounting field is covered by environmental accounting. Environmental accounting reports serve both inner and external information users. The information also enables managers to make pricing decisions, control overheads, and budgeting for capital. It offers the public and the economic community with information of interest (Beredugo & Mefor, 2012).

Firms are anticipated to devote their efforts in environmental accounting and reporting practices so as to guarantee the stakeholders of their commitment to environmental responsibilities, compliance with national environmental legislation, compliance with financial reporting frameworks, demonstration of environmental concerns and disclosure of information to a broad spectrum of stakeholders (Beredugo & Mefor, 2012; Ofoegbu, & Megbuluba, 2016). Previous empirical studies on variables influencing the magnitude and quality of corporate social and environmental disclosure focused mainly on the effect of corporate attributes in two folds; the micro factors (firm size, industry, and financial performance) and the macro factors or the general contextual factors (social, political and economic context), while relatively little previous research has looked at the internal contextual variables that influence disclosure practices (Adams, 2002). Therefore, this study determined the effect of firm size and board size on environmental disclosure in Kenyan firms.

Environmental disclosure is an expensive practice and therefore bigger organizations are more likely to willingly invest resources to prepare and disclose environmental accounting, compared to small and medium corporations (Da Silva Monteiro & Aibar-Guzmán, 2010). The assumption, suggested by Wong & Fryxell, (2014) underlies this positive relationship. Large firms are becoming aware of the benefits of building and maintaining a good corporate reputation and those firms try to disclose its environmental accounting to safeguard or expand reputation. Furthermore, because of the polluting characteristics of their activities, companies operating in environmentally sensitive industries such as manufacturing must comply with strict environmental regulations (Da Silva Monteiro & Aibar-Guzmán, 2010). According to (Cho & Patten, 2007; Clarkson *et al.*, 2008), companies operating in these delicate sectors

should, therefore, reveal their environmental concerns otherwise, the worst will be assumed by stakeholders and particularly investors.

The relationship between business organizations and their environment in contemporary times has witnessed drastic changes. Environmental and social issues over the years have not been seriously considered in management objectives (Pereira Eugenio *et al.*, 2013), this is simply because they were deemed to have no significant economic impact. But in a bid to gain legitimacy, most organizations have now embraced the relevance of their environment to their businesses and the need to safeguard it. Studies showed that many organizations failed not because they lack resources or because of defective products, but due to a complete loss or deterioration of their legitimacy (Díez-Martín *et al.*, 2013).

Environmental pollution has been a common problem in Kenya in the last few decades due to the growth of industries. However, the growth of industries can cause problems, particularly to the environment (Pratten & Mashat, 2009). This, in turn, leads to increasing demands for enhancing corporate accountability and social responsibility in business practices (Rahman, 2013; Byron, 2015). The need for companies to be socially responsible cannot be ignored and can be seen in the light of several benefits such as being a sustainable company, improving relations with governments and other regulatory bodies, improving reputation (World Business Council for Sustainable Development, 2012). However, despite social accounting and reporting being a new phenomenon and the lack of any mandatory regulation towards this disclosure in Kenya, companies are voluntarily engaged in reporting several social responsibility activities in their annual financial reports and it appears that companies have progressed substantially further than literature. While many studies on social and environmental accounting and reporting on corporate social responsibility have been carried out, few studies have been carried out to determine the impact of board size and firm size on environmental accounting disclosure among selected companies in the Nairobi Securities Exchange.

2. Theoretical Framework

The study was based on Stakeholder theory. Stakeholder theory has been commonly used in accounting literature as a powerful justification for corporate social and environmental disclosure methods as well as mechanisms for corporate governance. Stakeholder's theory encompasses recognizing and identifying the relationship between the conduct of the company and the effect on its stakeholders (Ansoff, 1965). Furthermore, the continued existence of the corporation needs stakeholder support and

its approval must be sought and the corporation's operations adjusted to obtain that permission. The stronger the stakeholders, the more the firm must adapt in society (Gray *et al.*, 1995).

The stakeholder theory's primary benefit is to provide a means to deal with various stakeholders with multiple conflicting interests. According to Freeman, (1984), indicated that the satisfaction of the various stakeholder's interests is accomplished through system-centered theory. In the context of corporate social responsibility research, stakeholder theory appears to offer a new perspective by suggesting that shareholder requirements cannot be met without meeting other stakeholder's needs (Foster & Jonker, 2005; Jamali, 2008). The stakeholder theory, therefore, offers a helpful mechanism for assessing social and environmental reporting practices of companies. (Snider *et al.*, 2003).

The stakeholder theory's fundamental proposition is that the result of the effective leadership of the company's interactions with stakeholders determines the achievement of the firm (Elijido-Ten, 2004). In this case, the stakeholders are identified by the organization of concern by a perceived strategic need to manage particular relationships to achieve their aims (Uwuigbe, 2011). A foundation for stakeholder theory is that businesses are so big and their effect on society is so persuasive that many more sectors of society should be held accountable than shareholders alone. Shareholders are not only influenced by businesses, but they also impact businesses in the same manner (Jill, 2007).

The stakeholder theory's policy view treats all the company's stakeholders equally and does not take into consideration each stakeholder's authority (Ali & Rizwan, 2013). In addition, the stakeholder theory argues that executives should work for the benefit of all stakeholders. With respect to the organizational viewpoint of stakeholder theory, it takes into account the needs of a limited number of stakeholders, who have a significant influence on the company. Furthermore, the strength of the business heavily relies on the nature of the shareholder's funds or resources (Deegan and Unerman, 2006).

The theory supports the idea that the behavior of various stakeholder groups is what encourages management to match corporate needs with their surroundings (Barako & Brown, 2008). The managerial branch of stakeholder theory provides a framework in which to analyze corporate social environmental disclosure in an organization centered way. The achievement of handling stakeholders properly through corporate environmental disclosure enables firms not only gain legitimacy but also credibility (Van Der Laan, 2009). According to stakeholder theory, the economic performance of a firm has a positive effect on voluntary environmental and social disclosure (Cormier & Magnan, 2003; Ho & Taylor 2007) and on investment in social responsibility (Cho & Patten, 2007).

2.1. Hypothesis Development (Literature Review)

Firm size and board size appear as control variables in various empirical finance studies. For example, they are used as control variables in default forecast models (Shumway, 2001). In this study, they were used to determine its effects on environment accounting disclosure in Kenyan firms. However, several empirical studies have found significant evidence that there is a positive relationship between company size and the level of social and environmental disclosure (Cowen *et al.*, 1987; Patten, 1992; Gray *et al.*, 1995; Hackston & Milne, 1996; Patten, 2002; Brammer & Pavelin, 2006; Milanés-Montero *et al.*, 2011; Suttipun & Stanton, 2012; Zeng *et al.*, 2012). These studies argued that bigger firms are visible and exposed because of their size and image. Therefore, larger firms are more willing to disclose information about the environment to satisfy their massive stakeholders. In turn, they are likely to seek out resources and thus reveal environmental information to alter the perception of society. Again bigger firms are more prone to disclose environmental accountings than smaller firms to avoid punitive measures from regulators and reduce the risk of the regulation (Burgwal & Vieira, 2014). Brammer & Pavelin, (2008) study the quality of voluntary disclosures in the UK's industrial sector and analyzed the determinants of the disclosure. Findings revealed that larger companies and the complexity of their operations affect the quality of disclosures.

Prior research has attempted to explain why firm size is directly related to disclosure of the environment. The first justification for this is the cost of producing environmental information. It is argued that the expense incurred in disclosing environmental accounting is high, that small company cannot afford with their limited resources (Da Silva Monteiro & Aibar-Guzmán, 2010). Therefore, larger companies might have sufficient resources to afford the cost of reporting information for the users of their annual reports. Secondly, agency cost is higher for large firms not to report on their environmental activities because their shareholders are widespread (Watts & Zimmerman, 1983; Zeng *et al.*, 2012; Christ & Burritt, 2013). Thus, disclosing more information reduces potential agency costs. Thirdly, the literature suggests that larger companies tend to disclose more environmental information than smaller companies in their annual reports due to their competitive cost advantage (Lang & Lundholm, 1993; Lobo & Zhou, 2001; Kolk, 2003).

The size of the firm is operationalized using a number of measures, such as sales, total assets, and the number of employees. The majority of the empirical studies have found significant evidence that there is a positive relationship between company size and the level of social and environmental disclosure (Cowen *et al.*, 1987; Patten, 1992; Gray *et al.*, 1995; Hackston & Milne, 1996; Patten, 2002; Brammer & Pavelin, 2006; Milanés-Montero *et al.*, 2011; Suttipun & Stanton, 2012; Zeng *et al.*, 2012). Therefore, a

positive relationship is predicted between firm size and the level of environmental disclosure. This is also consistent with the stakeholder theory, which claims that stakeholders have the opportunity to control the resources of a company. Larger organizations have more stakeholders and therefore they are more likely to satisfy their stakeholders, in order to keep them operating.

A number of studies over the past decades have successfully tested the influence of firm size on environmental disclosures. These studies have found that the overall level of social and environmental disclosure is positively associated with the size of the company (Patten, 1992; Gray *et al.*, 1995; Deegan & Gordon, 1996; Hackston and Milne, 1996; Choi, 1999; Al-Tuwaijri *et al.*, 2004; Freedman & Jaggi, 2005; Gao *et al.*, 2005; Brammer & Pavelin, 2008; Haddock-Fraser & Fraser, 2008; García-Sánchez, 2008; Stanny & Ely, 2008). However, Patten (2002) found that firm size may not be a critical determining factor in corporate environmental reporting. The underlying assumption is that there is a positive relationship between firm size and the level of environmental disclosure. Several reasons have been argued in support of this positive relationship. Firstly, according to Schipper, 1991; Deegan & Gordon, 1996), large companies are usually exposed to greater attention from stakeholders in relation to their environmental performance than smaller firms and, therefore, they face greater pressures to disclose more information than smaller firms.

Further, as suggested by Wong & Fryxell, (2004), as a result of the increased awareness and concern about environmental issues, large companies are interested in projecting an image of themselves as firms engaged in the protection of the environment and, in this sense, they consider the disclosure of environmental information as a way to enhance the company's public image and reputation. On the other hand, the preparation and disclosure of environmental information are costly and, in comparison to medium and small firms, larger companies can afford to spend the financial and technical resources that are necessary to prepare and disclose environmental information and, consequently, it is more likely that they provide such information (Wong & Fryxell, 2004).

Previous studies have indicated inconsistency results about the relationship between the board size and the level of environmental disclosure (Mahmood, *et al.*, 2018), while some studies indicate a positive relationship between the board size and the level of environmental disclosure (Ienciu, 2012; Bajahar & Al-Hajili, 2017; Mahmood *et al.*, 2018). Victor & Fodio, (2012) noted that the increase in board size may entail additional cost, which results in the difficulty of communication between members, and that weaker decisions are usually associated with large groups. In addition, the increase in the number of members involves a weakness in control. This is as a result of the differences of views among its

members. Since there are a number of studies that indicated the absence of this relationship (Ienciu, 2012; Htay *et al.*, 2012).

Recent empirical evidence from an emerging economy by Trireksani & Djajadikerta, (2016) examined the relationship between corporate governance variables and the extent of environmental disclosure. The study focused only on mining companies listed in Indonesia Stock Exchange and employed content analysis of the annual reports and documents a significant positive association between the board size and the extent of environmental disclosure. Osazuwa *et al.*, (2016) utilized a cross-section data of sample size of 116 firms in Nigeria and provided evidence that board size positively relates to the level of environmental disclosure. Further, the quality of climate change disclosure results showed a positive association between board effectiveness and the firm's decision (Ben-Amar & McIlkenny, 2015). Bridging the gap in knowledge about the relationship between corporate governance and corporate social responsibility (CSR) in the banking sector of the US, Jizi *et al.*, (2013) found a significant positive association between board size and corporate social reporting.

Jizi, *et al.*, (2015) used meta-analysis to a sample of 64 empirical studies to identify possible determinants to the relationship between the board, audit committee characteristics and voluntary disclosure. The study acknowledged that board size revealed a significant positive effect on voluntary disclosure. The large composition of the board is perceived to be capable of influencing the extent to which corporate entities disclose their activities in any environment (Haniffa & Cooke, 2005; Ntim & Osei, 2011). Bhagat & Bolton (2008) supported by agency theory (John & Senbet, 1998) argued that due to the diversity of expertise of members, environmental disclosure is expected to be high (Xie *et al.*, 2003; Sun, Salama, Hussainey, & Habbash, 2010; Allegrini & Greco, 2011). Some of the studies conducted in both developed and developing countries revealed a positive association between board size and environmental impact disclosures (Andrikopoulos & Krikiani, 2013; Khlif *et al.*, 2015) while some showed negative relationship Uwuigbe, (2011) and others insignificant results (Halme & Huse, 1997; Cheng & Courtenay, 2006).

The major criticism of previous literature on corporate environmental responsibility disclosures is that the results tend to be inconsistent and inconclusive. Inconsistency may be attributed to a lack of theory, diversity of empirical databases examined and the absence of a single conceptual framework to analyze the required relationships (Belkaoui & Karpik, 1989). In addition, the lack of any explicit comprehensive environmental responsibility theory underpinning the analysis performed and sufficient to explain why corporations engage in social responsibility endeavors (Roberts, 1992). The probability still insufficiently specified theories that exist (Gray *et al.*, 2001). Existing evidence regarding the influence

upon the propensity for firms to make voluntary environmental disclosures suffers from well-known limitations (Ullmann, 1985; Patten, 2002) that contribute to the inconclusiveness of existing findings (Gray *et al.*, 2001). These limitations concern the dimensions, types, and proxies of each of the dependent variables and independent variables, the different control variables and their proxies, the sample size and type, the years and time spans, and the method of estimating relationships. Prior studies examining the determinants of corporate environmental disclosure are mainly cross-sectional in nature investigating the relationship over one year only (Adams, 2002; Brammer & Pavelin, 2006) except for very few studies (Barako *et al.*, 2006; Campbell, 2004; Gray *et al.*, 2001). The current study contributes to the disclosure literature by hypothesizing that;

H1: Firms with large board size have a high probability of Environmental Accounting Disclosure

H2: Large firms have a high probability of Environmental Accounting Disclosure

3. Methodology

This study adopted a longitudinal research design where the observation of the same items are repeated over long periods of time (Sekaran, 1992). Furthermore, the study used a positivist approach (Saunders *et al.*, 2011; Kumar, 2019) while the document analysis guide was utilized as a data collection instrument. The study was conducted using secondary sources which were achieved by analyzing the content of financial reports of 27 selected firms quoted in NSE. This is suitable for this study because all the audited annual financial information about the companies is readily available for the public as mandated by the company's Act.

3.1. Measurement of Variables

Corporate environmental disclosure scores (EDS) are measured using a content analysis of the company's annual report for a period of 10 years from 2008 to 2017. An environmental disclosure index (EDI) is adapted from the Global Reporting Initiative (GRI, 2008) consisting of 22 items. The overall goal of the GRI is to develop a globally accepted reporting framework to enhance the quality, rigor, and utility sustainability reporting. It is argued that the GRI framework and its environmental dimension comprehensively enhance a better understanding of environmental disclosure in this vibrant economic sector (Clarkson, *et al.*, 2008; Dragomir, 2010).

Furthermore, based on the Global Reporting Initiative (GRI, 2008), environmental disclosure score (EDS) was calculated by assigning dummy scores depending on the existence and specificity of information. The value of the of 1 was assigned if the firm discloses information on the particular item or otherwise 0. In addition, the EDS value was determined for each corporation as the ratio of the

estimated total disclosure scores to the maximum possible scores (total number of items included in the index). In this study, board size was determined by taking the number of directors sitting on the board (Jehn & Bezrukova, 2004; Roberson & Park, 2007). While, the natural logarithm of total assets was used to measure firm size variable (Henry, 2010).

3.2. Analytic Model

The study employed a panel data framework to test the hypotheses. Panel data was analyzed using a fixed-effect model and a random-effects model. Hausman test was conducted to decide whether the fixed effect or the random effect is the appropriate model to explain the relationship between variables. The hypothesis was tested using a linear regression model as specified in the equation below;

$$EAD_{it} = \beta_{0it} + \beta_{1it}BS_{1it} + \beta_{2it}FS_{2it} + \varepsilon$$

Where;

EAD = Environmental accounting disclosure

β_0 = Beta coefficient

BS = Board Size

FS = Firm size

ε = Random error term

4. Findings and Discussions

Descriptive statistics for the dependent, independent and test variables are presented in Table 1. Using a scoring system to develop an EDI, consistent with previous studies, the results indicated 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. Despite the fact that the level of environmental accounting disclosed is low, the extent of environmental disclosure between 2008 and 2017 has increased 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, it can be asserted that the Kenyan firms' environmental reporting practices have improved over the studied period of time, although their level of environmental disclosure still lags behind those of other developed countries. The board had a minimum of 2 members and a maximum of 19. While, on average, the board 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. The correlation results showed that board size and firm size have a significant correlation with environmental accounting disclosure.

Table 1: Descriptive and Correlation Results

Stats	Obs	Min	Iqr	Max	Mean	SD	EAD	BS	FS
EAD	270	0.06	0.45	0.87	0.526	0.215	1		
BS	270	2	7	19	9.422	3.642	-0.32**	1	
FS	270	8.25	0.73	11.28	9.681	0.601	-0.40**	-0.39*	1

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

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

4.1. Testing for Hypotheses

The study utilized a random and fixed effect model to test the hypotheses as depicted in Table 2. Based on the Hausman test results, the study hypotheses utilized a random effect model. The random effect results were used in the final analysis to overcome the shortcomings associated with the fixed effect results (Wachira, 2017). As Kohler & Kreuter, (2009) suggest, the random effect estimator handles better models that contain time-invariant variables that are usually omitted by the fixed-effects model. The results of R-square of 0.188 reveal a strong strength of the relationship between the model and the study variables, indicating that approximately 18.8% of the variation in the output can be explained by the independent variables in the model. Furthermore, this relationship is statistically significant since the F value (Wald chi2 (2) = 61.98, p<0.05) of the model is significant at the 0.05 level.

Based on the statistical findings, board size revealed ($\beta = -0.328$, $p = 0.000 < 0.05$), implying that a large board decreases environmental disclosure in Kenyan firms. In addition, the results from a random effect model showed that firm size has a significant effect on environmental accounting disclosure of selected listed firms in Nairobi Securities Exchange ($\beta = 1.164$, $p = 0.000 < 0.05$), indicating that large firms are likely to improve their level of environmental disclosure.

Table 2. Fixed and Random Effect Models

EAD	Random Effect			Fixed Random		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>t
BS	-0.328	0.102	0.001	-0.412	0.155	0.008
FS	1.164	0.219	0.000	1.169	0.250	0.000
_cons	-2.529	0.622	0.000	-2.362	0.785	0.003
R-sq:						
Within	0.178			0.1784		
between	0.322			0.3221		
Overall	0.188			0.1875		
Wald chi2(2)	=	61.98*		F(2,241)	=	26.17**

Hausman test

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg
 Test: Ho: difference in coefficients not systematic

$$\text{chi2}(2) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 1.02$$
 Prob>chi2 = 0.6000

** Significant at the 0.01 level (2-tailed).

* Significant at the 0.05 level (2-tailed).

5. Conclusion and Recommendation

This study looked at the effect of board size and firm size on corporate environmental disclosure among firms listed in Kenya. The study came up with interesting findings that are of salient importance to scholars investigating corporate governance issues in the Kenyan context. In accordance with the first hypotheses, the study observed that larger board size in a firm had a negative impact on the level of environmental disclosure. This is consistent with the resource dependence theory, which posits that independent boards enhance corporate image and ensure shareholders' interest. In the second hypothesis, the study however observed that there is a significant positive relationship between firm size and the level of environmental disclosure. This result is however in line with the suggestions of the agency theory. That is, increasing the firm asset will lead to better corporate environmental disclosure. Finally, this paper, therefore, calls for further longitudinal studies that will provide insights into some reporting patterns among listed firms in the country.

6. Reference

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