International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. VII, Issue 9, September 2019
http://ijecm.co.uk/

THE RELATIONSHIP BETWEEN BOARD CHARACTERISTICS AND ENVIRONMENTAL SUSTAINABILITY DISCLOSURES

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Abstract

The study evaluates the relationship between environmental sustainability disclosures and board characteristics (board independence and qualifications) at the Nairobi Securities Exchange listed firms, guided by trinity theory. It employed a correlational survey research design covering the period of five (5) years (2013 - 2017). The population was 65 firms listed, with a sample size of 56 firms. The study utilised firms' annual reports, stand-alone reports, and website for secondary data. Pearson's correlation, Ordinary Least Square regression model and Environmental Disclosure Index were used in analysis. The findings indicated that board independence (β= .24, $p<.05$) and board qualifications (β= .07, $\rho<.05$) had a positive and significant effect on environmental sustainability disclosure. In conclusion, the study established that high degree of non-executive directors led to more disclosure of ecological activities.

Similarly, financially equipped directors led to disclosure of ecological information, though not to a great extent compared with board independence. It recommends environmental management skills to be part of board qualifications, more non-executive directors on board, and establishment of corporate environmental committee to spearhead ecological issues. Future studies need to focus more on directors qualifications such as directors' experience, age, nationality and environmental knowledge.

Keywords: Corporate characteristics, environmental sustainability disclosures, financial strength, listed firms, trinity theory

INTRODUCTION

For the past several decades, there has been witnessed global concern for the environment, due to the imminent dangers posed by the overemphasized increased the economy's growth and development at the expense of the environmental sustainability. Unprecedented climatic changes with severe impact on human, marine as well as other ecosystems have been witnessed (Akbas, 2016). To a large extent, this has been attributed to industry-related activities involving use of the raw materials extracted from the environment leading to their exhaustion, release of toxic waste into the environment. Conventional reporting together with the international accounting standards (Aburaya, 2012; Samuels, 1990) have not addressed environmental issues, but only embarking in lengthy on economic factors against social and environmental concerns, thus necessitating environmental sustainability disclosures (Saravanamuthu, 2004).

Listed firms at the Nairobi securities exchange are regulated by the Capital Markets Authority, through Capital Markets Authority Act, 2002 (cap. 485a) of the laws of Kenya (ICPAK, 2017). Several corporate environmental sustainability disclosure studies have given a lot of attention on corporate attributes (such as firm size, market capitalization, profitability, industry affiliation, leverage and systematic risk) (Musyoka, 2017; Mutiva, 2015; Ngatia, 2014; Barako, Hancock and Izan, 2006). However, few prior studies have evaluated the relationships between corporate characteristics and environmental sustainability disclosures (Aburaya, 2012; Adams, 2002).

The study looked at the association between corporate characteristics and environmental sustainability disclosures. Corporate governance system coupled with environmental sustainability information disclosures has a great significance for instance on emerging economies such as attracting foreign investment through cross-border share ownership (Bopkin, Isshaq and Nyarko, 2015).

LITERATURE REVIEW AND HYPOTHESIS

The board of directors is responsible for the management of any information reporting in a firm's end year reports. They play a paramount role towards corporate governance mechanisms which by extension may be linked directly with firm's ecological phenomenon (Aburaya, 2012; Bhagat and Bolton, 2008).

Hossain and Reaz (2007) established that the composition of the board in terms of the level of non-executive directors were not significantly related to the discretionary disclosure level. Lim, Matolcsy and Chow (2007) indicated that the structure of the board has no relationship with the monetary and non-monetary discretionary disclosure. Similarly, it was found that independent boards of directors disclosed more discretionary "forward-looking quantitative and strategic" information. Grüning and Bergerernst (2010) results showed a properly governed company tends to lean towards detailed disclosure policy as well as more disclosure form. A negative impact was observed on director and executive compensation. In form of Tobin's q companies' valuation method, a positive association between corporate governance and disclosure was noted. A study by Post, Rahman and Rubow(2011) indicated that a high number of outsider status board of directors is related with more favourable Environmental Sustainability Disclosures as well as higher Kinder, Lydenberg, Domini, Incorporation (KLD) strength scores. Further, it was observed that the board of directors age was averaging 56 years together with higher directors proportion possessing Western Europe educational level had a higher chance of implementing ecological governance mechanisms. Anazonwu, Egbunike and Gunardi (2018) findings indicated no significant positive influence of board member nationality, but a fraction of non-executive directors, together with multiple directorships was significant.

It is upon this backdrop that the study was tested using a hypothesis, in a null form, that:

H_{01}: *There is no significant relationship between board characteristics and environmental sustainability disclosure on firms listed at the Nairobi Securities Exchange, Kenya.*

Environmental Sustainability Disclosure

Simpson (2013) asserted the word disclosure to entail "sharing, releasing, and communicating some useful" and relevant information. Traditionally, disclosure in accounting had been linked to conventional financial reporting, which in recent years has been broadened to incorporate among others value disclosure, sustainability disclosure (Mahadeo, Oogarah-Hanuman, and

Soobaroyen, 2011; Farneti and Guthrie, 2009; Williams, 2008). Natural sustainability disclosure has two key implications: (i) creating reports yet likewise (ii) disclosure of data (Niemann and Hoppe, 2017).

The study applied the GRI (2011) in developing the environmental disclosure checklist consisting of various items as used in other studies (Odoemelam and Ofoegbu, 2018; Odoemelam, Ofoegbu and Okafor, 2018; Odoemelam and Okafor, 2018; Aburaya, 2012). These items are categorized under; ecological Policies, ecological Sustainability, ecological laws and standards adherence, ecological associated products and procedures concerns, and other information associated to ecology. Previous similar studies have utilized several theories in explaining the impact and relationship between CG and ESD (Mahmood and Orazalin, 2017; Hahn, Reimsbach and Schiemann, 2015). Among the theories applied are; legitimacy theory, stakeholder theory, and agency theory.

Legitimacy theory

According to Bhattacharyya (2014), Patten and Crampton (2004), Chen and Robert (2010), it is among the domineering theories on the field of societal reporting studies. The theory "stresses that an organization must be accountable for its actions" (Greiling and Grüb, 2014). Even though legitimacy theory is perceived as a most probable reason for the recent upsurge on ecological reporting, with corporate entities striving to be "greenish in their operations" (Prasad, Mishra and Kalro, 2017; Braam, Uit de Weerd, Hauck and Huijbregts, 2016; Lan, Wang and Zhang, 2013), this perception will only be right when the rule of law is strictly observed, as well as investors and citizen's entitlements to healthy ecology are enshrined in the Constitution (Odoemelam and Okafor, 2018). Thus, the legitimacy theory has not been able to provide attention towards conflict of interests of the various stakeholders, with the assumption that ecological sustainability disclosure is likely to be sufficient quantitatively and qualitatively, that is questionable since it may not actually be the matter.

Stakeholder theory

The theory put emphasis on the existing relationship between the firms' action and the resulting effects on their stakeholders. Firms cannot survive without the necessary support of the stakeholders with their back up required towards aligning its ways of operations to gain approval (Gray and Milne, 2002). The theory is an extension of the agency perspective as the role of the administrative organ is enhanced from ensuring the safeness of only the shareholder's interest in protecting all stakeholders' interests.

Agency theory

Agency Theory has been severally applied in the accounting literature in discussing and analysing corporate governance norms (Aburaya, 2012). The theory was put forward in the early 1970's by agency theorists such as Jensen and Meckling (1976), as a new economic firm theory, where the entity was defined as a nexus of agreements, in which the principal-agent agreements between shareholders and managers is a primary one. The theory seeks to examine the levels of agreements that would maximize the shareholder's utility.

RESEARCH METHODOLOGY

The study employed pragmatism philosophical approach grounded on the assumption that research starts with a problem, and aims to contribute practical solutions that inform future practice (Saunders, 2016). A panel research design within the domain of correlational survey design method was applied on a panel data over a period of 5 years (2013-2017). The period was chosen because it entails when the firms are required to transit from voluntary disclosure (traditional reporting framework) to mandatory disclosure (integrated reporting framework) with effect from 2014. This is after the adoption of integrated reporting in the year 2013. One year before (2013) the adoption and four years (2014 – 2017) after the adoption of the framework would help to facilitate comparison (ICPAK, 2017). Anazonwu, Egbunike, and Gunardi (2018) alluded that panel research designs are particularly stronger in addressing the "threats of unit heterogeneity and temporal instability" (Halaby, 2003; Hsiao, 2003) and thus deemed appropriate for cause and effect researches.

The study involved all 65 listed firms at the Nairobi Security Exchange (NSE) during the financial year 2017/2018 (Nairobi Securities Exchange, 2013; Cheruiyot, 2017). Purposive sampling method was used to determine the sample size. Data collection matrix developed was used on board characteristics data as well as the checklist that incorporates as much as possible all corporate ecological reporting ways in the end year reports. Annual reports were applied one of "the most reliable" medium of corporate ecological information disclosure (Aburaya, 2012). They represent one of the most appropriate media of communication to the stakeholders which lime with the stakeholder theory as espoused by Van der Laan Smith *et al.,* (2005).

Both parametric and non-parametric test techniques such as Jarque-Bera tests, Shapiro Wilk tests were used to test data normality. Pearson correlation was used in testing collinearity. Ordinary Least Squares (OLS) multiple regression was applied in hypothesis testing.

RESULTS AND DISCUSSIONS

Board Characteristics

The board is responsible for reviewing the performance of the firm and ensuring good management practices. As such, the study deemed it important to establish board characteristics. Emphasis was on board independence and board qualification. Table 1 indicates the findings. Evidently, in 2013, 68% of the members on the board were non-executive directors with board qualification at a mean of .26. In addition, in 2014, the board was composed of 8 members while board qualification was at a mean of .28. Furthermore, board independence was at 70% in 2015, board qualification was at a mean of .25. In 2016, the percentage of non-executive directors in the board was at 77% and board qualification at a mean of .33. Finally, in 2017, there were 8 members on the board with 79% of them being non-executive directors while the board qualification stood at a mean of .33. In a nutshell, there was a statistically significant difference in board independence between 2013 to 2017 for the firms listed in NSE ($F= 3.03$, $\rho=.02<.05$). However, the change in board qualification ($F= 1.60$, $\rho=.18>.05$) between 2013 to 2017 was not statistically significant.

Table 1 Board Characteristics

Year	Statistics	Board Independence	Board Qualification
2013	Obs	56	56
	Min	0.1	0.01
	Max	1	0.82
	Mean	**0.68**	**0.26**
	p50	0.8	0.21
	Skewness	-1.29	0.5
	Kurtosis	3.28	2.32
2014	Obs	56	56
	Min	0.1	0.01
	Max	0.92	1
	Mean	**0.68**	**0.28**
	p50	0.79	0.26
	Skewness	-1.3	0.65
	Kurtosis	3.44	2.79
2015	Obs	56	56
	Min	0	0
	Max	0.93	0.78
	Mean	**0.7**	**0.25**

Table 1…

	p50	0.8	0.26
	Skewness	-1.41	0.35
	Kurtosis	3.9	1.97
2016	Obs	56	56
	Min	0.13	0
	Max	1	0.89
	Mean	**0.77**	**0.33**
	p50	0.82	0.41
	Skewness	-1.74	-0.11
	Kurtosis	6.07	2.28
2017	Obs	56	55
	Min	0.2	0
	Max	1	0.89
	Mean	**0.79**	**0.33**
	p50	0.82	0.4
	Skewness	-1.63	-0.14
	Kurtosis	6.6	2.6
ANOVA	F	3.03	1.6
	Prob>F	0.02	0.18

Environmental Disclosure

The findings in Table 2 indicated that, between 2013 to 2015 environmental disclosure was at 43%. In 2016 there was an increase in disclosure to 47%. As of 2017, environmental disclosure of firms listed in NSE was at 48%.

Table 2 Environmental Disclosure

Year	**Obs**	**Min**	**Max**	**Mean**	**Sd**	**p50**	**skewness**	**Kurtosis**
2013	56	0.11	0.7	0.43	0.15	0.46	-0.76	2.57
2014	56	0.1	0.71	0.43	0.15	0.44	-0.64	2.49
2015	56	0.1	0.64	0.43	0.14	0.45	-0.88	2.92
2016	56	0.11	0.73	0.47	0.12	0.52	-1.03	4.38
2017	56	0.22	0.64	0.48	0.1	0.51	-0.79	2.9
F	*1.95*							
Prob>F	*0.1032*							

Findings from Table 3 showed that the environmental disclosure was at 47% among listed firms in NSE (Mean=.45, SD=.23). Results also showed that on average there are 9 boards of directors in listed firms (M=8.55, SD=2.67) with an average of 73% board members being non-executive directors (M=.73, SD=.24).There was 29% of qualified board of directors.

Table 3 Descriptive Statistics for Exogenous Endogenous and Control Variables

Obs	N	Min	Max	Mean	p50	Sd	Skewness	Kurtosis
Esd	280	0.1	0.73	0.45	0.47	0.13	-0.92	3.23
Bi	280	0	1	0.73	0.8	0.24	-1.6	4.73
bq	279	0	1	0.29	0.3	0.23	0.26	2.3
fs	280	0	8.81	6.49	6.83	1.47	-1.73	8.07

esd = Environmental sustainability disclosure, bi = board independence,

bq = board qualifications, fs = financial strength

Pearson correlation results in Table 4 showed that board independence is positively related to environmental disclosure with a Pearson Correlation coefficient of r= .600 which is significant at $p < .01$. Also, the correlation results indicated that board qualification is positively related to environmental sustainability disclosure, r = .322 which is significant at $p< .01$.

Table 4 Pearson Correlation between Environmental Sustainability Disclosure and Corporate Governance

	Esd	**Bi**	**Bq**	**fs**
esd	1			
bi	.600**	1		
bq	.322**	.300**	1	
fs	.445**	.592**	.321**	1

Note: ** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

N=56; Dependent variable, *esd = Environmental sustainability disclosure, bi = board independence, bq = board qualifications, fs = financial strength*

From the table 5, Fixed effect model findings on board independence showed a positive and significant effect on environmental sustainability disclosure (β= .24, ρ<.05). Specifically, an increase in the number of non-executive directors by .24 units leads to an increase in environmental sustainability disclosure by the same unit. The t-value = 8.90 which implies that it is more than the standard error. In agreement with the results are Anazonwu, Egbunike, and

Gunardi (2018) who found a positive and significant effect of non-executive directors on sustainability reporting (p-value 0.0031 < 0.05).

Moreover, board qualification showed a significant effect on environmental sustainability disclosure (β= .07, ρ<.05). As such, an increase in board qualification by .07 units leads to an increase in environmental sustainability disclosure by the same unit. The t-value = 2.49 which indicates that the standard error associated with it is more than it.

Table 5 Fixed Effect Model

	Number of obs	=	272
Fixed-effects (within) regression	Number of groups	=	56
Group variable: firmID	Obs per group: min	=	4
R-sq: within = .6399	Avg	=	4.9
between = .3940	Max	=	5
overall = .4872	F(9,207)	=	4.87
corr(u_i, Xb) = -.0775	Prob> F	=	.000

Esd	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Bi	.24	.03	8.90	.00	.18	.29
Bq	.07	.03	2.49	.01	.02	.13
_cons	.11	.03	3.74	.00	.05	.17
sigma_u	.08					
sigma_e	.06					
Rho	.65		(fraction of variance due to u_i)			

F test that all u_i=0: F(55, 207) = 7.67 Prob> F = .0000

esd = Environmental sustainability disclosure,

bi = board independence, bq = board qualifications

Hypothesis test findings showed that board independence had coefficients of estimate which was significant basing on β_{1a} = .24 (p-value = .000 which is less than α = .05). The null hypothesis was thus rejected and it was concluded that board independence has a positive and significant effect on environmental sustainability disclosure. This suggested that there was up to .24 unit increase in environmental sustainability disclosure for each unit increase in non-executive directors in the board. Consistent with the findings, Anazonwu, Egbunike, and Gunardi (2018); in Australia, Ong and Djajadikerta (2017). Lim *et al* (2007) indicated that independent boards of directors disclosed more discretionary "forward-looking quantitative and strategic" information. For Adeniyi and Fadipe (2018) study in Nigeria, the significant relationship lead to an assumption that non-whole time service directors aid by having great influence on sustainability disclosures in their firms.

Similarly, Post *et al.* (2011) indicated that a high number of outsider status board of directors is related to more favourable ESR disclosures. In addition, Jizi (2017) observed that higher board independence can enhance the corporate image of the firm by enhancing societal conscience. The most arguable reasons for the incorporation of non-executive directors on the firm board is that being non-whole time service directors, they have incentives to perform their monitoring activities and not to collude with top management (Onuorah, Egbunike and Gunardi, 2018). In buttress of the findings Liao, Luo and Tang, (2014) observed presence of a positive relationship between significant non-whole time service directors and comprehensive disclosure of Green House Gas (GHG) information in United Kingdom, applying univariate as well as regression models.

Furthermore, it is argued that as non-whole time service directors are less inclined towards management, they can be viewed as a balance mechanism in ensuring that firms act in the best interests of shareholders, other stakeholders as well as the general society (Sharif and Rashid, 2014). In effect, this encourages firms to disclose more information to outside stakeholders. However, Hossain and Reaz (2007) elucidated that the presence of non-executive directors on the board had no influence on discretionary environmental disclosure level. Also, in Australia, Rao and Tilt (2016b) found that the association between executive/non-independent directors and sustainability disclosure is unclear. Further, Said, Zainuddin and Haron (2009) found no association between board independence and sustainability disclosure.

Also hypothesis tests stipulated that board qualification has no significant effect on environmental sustainability disclosure. On the contrary, the regression findings indicated that board qualification was associated with an increase in environmental sustainability disclosure ($\beta = .07$, $\rho < .05$). As such, the null hypothesis was rejected. The implication is that an increase in board qualification by .07 units leads to an increase in environmental sustainability disclosure by the same unit. In line with the findings, Gul and Leung (2004) indicated that board of directors' composition and quality had an impact on managers' way of disclosing the voluntary information.

Discussion of Results

Regarding the board independence, the results are in agreement with the stakeholders' theory which buttresses the need for having non-whole time service directors in the board in order to protect the investors' interest (Arayssi, Dah, and Jizi, 2016). In support of this view as well is a meta-analysis approach adopted by García- Sánchez, Frías-Aceituno and Rodríguez-

Domínguez (2013) that documented that a positive and significant relationship between BI and ESD "only occurs in those countries having investor protection rights". Further, the theory is emphasized by Post, Rahman, and McQuillen (2014) that a higher degree of non-whole time service directors being on the board is expected to associate to extensive ecological effect reporting significantly.

For Ofoegbu, Odoemelam and Okafor (2018) study in Nigeria and South Africa, the board independence was statistically significant for the Nigeria sample (applying traditional reporting framework) but not significant for the South Africa sample (applying Integrated Reporting). For the Nigeria findings, they were attributed to strong corporate governance arrangements that may serve as bonding strategies in weak legal environments (traditional reporting framework), a suggestion of a substitutive association between corporate governance and the regulatory framework. It implied that the non-executive inclusive board acts as a dimension of a better-governed firm, thus ensuring the reduction of information asymmetry (Ernstberger and Grüning, 2013). This implies that South African legal and regulatory framework (IR) is strong which substituted the degree of South Africa ecological reporting while the non-executive board of directors in Nigeria listed firms compensated for the poor regulatory environment (Adegbite, 2015). In the same vein, Odoemelam and Okafor (2018) justified the stakeholder theory on the basis that in an ecology coupled with weak legal and institutions, more of whole-time service directors will ensure stakeholders protection of their interest. Contrary to the findings is by Akbas (2016), whose results found no statistically significant association between the degree of ecological reporting and board independence. This could be attributed to the use of a sample other than the entire population. In addition, the study was limited to non-financial firms. On board qualifications, Gul and Leung (2004) indicated that board of directors' composition and quality had an impact on managers' way of disclosing the voluntary information.

CONCLUSIONS

The study assessed the influence of board characteristics on environmental sustainability disclosure. The focus was on board independence and board qualification. With reference board independence, results have shown that having a large proportion of independent directors on the board lead the firms listed in NSE to increase their environmental sustainability disclosure. This implies that the more the firms have external directors, the more they participate in environmental disclosure. This is due to the fact that external directors are independent of management and are more effective in protecting the interests of shareholders and have an understanding of the external environment. A balanced board is therefore important for balanced board composition and enhanced environmental sustainability disclosure.

Further, board qualification was associated with an increase in environmental sustainability disclosure. The implication is that the quality of the board in terms of their professional qualification, experience and talents are key in enhancing environmental sustainability disclosure.

RECOMMENDATIONS AND SCOPE FOR FURTHER RESEARCH

On board qualification, additional aspects with regard to having environmental management skills could be incorporated as one of the board member data collection and measuring criteria. This study focuses on NSE listed firms in Kenya. Further studies can as well examine ecological sustainability disclosure issues for small-and-medium enterprises (SMEs), as they are also facing sustainable development issues, and dealing with them in an unobservable way. Studies on SMEs can add value to the contemporaneous ecological sustainability literature from a new dimension.

There are several opportunities for future studies. For example, future research can further explore the impacts of different industry-types. In order to more confidently generalize the findings, future research could investigate a larger scale of companies. This could be achieved by assessing the firms' annual reports as a survey form handed out to one of the people responsible for its preparation, rather than having the researcher examine all the annual reports. This would overcome the timely process of assessing each annual report.

Future research can be executed on two different time periods such as before the release of some new law or guideline pertaining to environmental disclosure and after its release. For instance, some years before the release of a particular environmental disclosure law and others after, such as the release of the International Financial Reporting Standards (IFRS) on new reporting framework, Integrated Reporting (IR) with effect from the year 2014, from the traditional reporting framework. The traditional reporting framework was based on voluntary ecological disclosure while integrated reporting is premised on mandatory ecological disclosure. The results of such research will generate an idea of how environmental disclosure laws are implemented in Kenya. Additional research could be conducted in other countries (emerging or developed) using the same tested variables. This would allow a cross-country comparison. Such additional studies would provide a cross-country comparison between an emerging market (Kenya) with that of a developed market to compare and contrast different behaviours by institutions with regard to enhancing environmental disclosure. Or, a cross-country comparison of two emerging markets to determine if similar results were generated.

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