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The Influence of Board Characteristics on Corporate Sustainability Disclosures in Sub-Saharan Africa

Emmanuel Christopher[1]
Assistant Lecturer, Department of Accounting, University of Dar es Salaam, Dar es Salaam, Tanzania

Judika King'ori
Senior Lecturer, Department of Accounting, University of Dar es Salaam, Dar es Salaam, Tanzania

Henry Chalu
Associate Professor, Department of Accounting, University of Dar es Salaam, Dar es Salaam, Tanzania

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Abstract
Despite acknowledging that corporate sustainability disclosures (CSD) are important in driving the sustainability agenda at a firm's level, there is limited research on the relationship between firm's highest governing organ and CSD, particularly in the context of developing countries. As such, this study contributes to empirical evidence by investigating the influence of board characteristics on CSD. The study used a panel dataset of 165 firms in 12 Sub-Saharan African countries for the 2015 – 2019 period, hence a total of 825 firm year observations. The study results show that board size has an inverted u-shaped relationship with CSD whereas board diversity in terms of gender and board committee have a significant positive influence on CSD. It was also found that the CEO power and board compensation have a significant negative influence on CSD while board diversity, independence and meetings do not have a significant influence on CSD. The study findings imply that, policy makers seeking to enhance the extent of CSD should consider it jointly with entity governance tools instead of treating it as an independent corporate activity. Particularly, it is recommended that, governments through their regulatory agencies such as security and capital markets authorities (and similarly shareholders) need to consider an appropriate mix of board characteristics towards the enhancement of CSD.

Keywords: Corporate Sustainability Disclosures, Board Compensation, Board Committee, CEO Power

[1] Corresponding Author: *imacris22@gmail.com*

Introduction

The last three decades has witnessed a rising trend towards the disclosure of not only economic but also environmental and social information among corporations (Agudelo, Jóhannsdóttir, & Davídsdóttir, 2019). These disclosures are termed as corporate sustainability disclosures (CSD) or sustainability reporting (Elkington, 1994; Gray & Milne, 2002). The rise in the undertaking of CSD has largely been attributable to both internal and external drivers. Internal drivers of CSD generally include perceived organisational benefits whereas external drivers include pressure from environmental groups and increased stakeholders' expectations (Christopher & Chalu 2020). The perceived benefits of CSD include the protection of firms' market share, creation of social bond as an asset in the future, and developing valuable organisational capabilities. CSD also promotes an effective engagement with stakeholders, a situation that legitimises company operations (Frías-Aceituno, Rodríguez-Ariza, & Sánchez, 2013). Through CSD, organisations communicate to their respective stakeholders how they manage and balance their productive efforts with those of the surrounding community. Indeed, CSD plays a crucial role in driving the sustainability agenda at firms' level (Pérez-López, Moreno-Romero & Barkemeyer, 2013). Moreover, CSD positions an organisation as a stakeholder with a potential to contribute to the sustainable development goals (Crifo, Escrig-Olmedo & Mottis, 2018).

Notwithstanding the relevance of CSD in engendering a firm's continuity, its application particularly in sub-Saharan Africa (SSA) is relatively low despite consequential environmental and social impacts from corporate actions (Tilt *et al.,* 2021). Moreover, there is a growing desire by governments, citizens and businesses to address inappropriate environmental and corporate actions (Tilt *et al.,* 2021). Even though this is the situation, the role that the board of directors (BoD) can play in influencing CSD remains largely untapped. Boards are entrusted with the governance function of the company, and ought to play an important role in overseeing the creation and execution of management plans to balance the interests of multiple stakeholders (Harjoto, Laksmana, & Lee, 2014). Michelon and Parbonetti (2012) contend that the enactment and overseeing of disclosure policies and strategies in corporate reports are among monitoring functions of the corporate board. Subsequently, boards have broadened their focus to addressing issues of ethics, accountability, transparency, and disclosure (Gill, 2008). Nevertheless, when it comes to disclosure policy of the firm, the corporate governance model that deals with the board of directors is relevant and imperative.

Even though some studies have tried to examine the relationship between board characteristics (BC) and CSD, they have not been exhaustive in terms of covering BC variables. They mostly focus on the board size, board independence, board diversity and CEO duality while ignoring variables such as board compensation, board meetings and board committees (Handajani *et al.,* 2014; Amran, Lee, & Selvaraj, 2013). Yet, the variables ignored in these studies have received much attention in financial performance and corporate governance studies; even then they have been rarely linked to social and environmental performance (Raithatha & Komera, 2016; Munisi & Mersland, 2016). As the Agency Theory stipulates, compensation serves a means through which shareholders can align their interests to those of the management. The expectation is that the increase in directors' compensation is likely to influence CSD. On the other hand, a board that meets frequently is expected to

have more time to supervise management and the more the board specializes in sub committees, the more efficient it is likely to become. In this regard, board compensation, board meetings and board committees among other BC variables are worth considering when it comes to CSD.

Even for the studies which had focused on limited BC variables and its relationship with CSD, evidence has remained largely inconclusive. Board size, independence, and diversity, for example, have been reported to have a positive relationship with CSD by Ntim and Soobaroyen (2013), and Jizi (2017) whereas Amran *et al.* (2013) found that board size has no influence on CSD. Meanwhile, Handajani *et al.* (2014) found that board independence negatively correlates with CSD. Such inconsistent results could partly be attributable to lack of consistence in measuring CSD. Conceptually, the CSD definition emphasises on three pillar approaches: economic, environmental, and social (Elkington, 1994; Bansal, 2005; Montiel & Delgado-Ceballos, 2014). However, most of the CSD studies do not apportion equal weight to CSD categories of measures in the operational definition.

The other possible reason for inconclusive findings could be lack of consideration on contextual factors. Most of the studies on BC and CSD are set in a single country, mostly from developed economies (Crifo *et al.,* 2018; Nguyen, 2020). Yet, little is known about the influence of BC on CSD in developing regions, particularly in Sub-Saharan Africa (SSA). A survey of 76 empirical research-related to CSD by Ali, Frynas, and Mahmood (2017) shows that there is a crucial difference between the determinants of CSD in developed and developing countries. The main determinants of CSD in developed countries, as identified by Ali *et al.* (2017), are the concerns of specific stakeholders such as regulators, shareholders, creditors, investors, environmentalists and the media. For developing countries, CSD is mostly determined by the external forces or powerful stakeholders such as international buyers, foreign investors, international media, and international regulatory bodies like the World Bank (Ali *et al.,* 2017). Hoje and Harjoto (2012) suggested a need for future studies aimed to examine the influence of governance mechanism on the CSD across nations to take care of contextual determinants of ethical decision-making and moral reasoning across cultures. Compared to developed regions, the SSA is vulnerable to external corporate governance challenges such as institutional inefficiencies and relatively less effective capital markets (Munisi & Mersland, 2016). Weak external governance mechanisms tend to make firm rely on internal governance mechanisms such as the BoD (Munisi, 2019).

This study, therefore, examines the relationship between board characteristics and corporate sustainability disclosures in SSA region. Specifically, it incorporates more BC variables to include board compensation, board meetings and board committees, which have attracted less attention in previous studies. Moreover, it operationalises the multidimensionality of CSD by giving equal weight to economic, environmental, and social aspects consistent with the ideas of the triple bottom line pioneered by Elkington (1994) and Bansal (2005). Furthermore, the study adopts an extended measure of CEO power that depends on CEO directorship, leadership position in board, and CEOs tenure rather than focus only on CEO duality, a recognition that is scarce in previous CSD studies. The rest of our paper is divided in the following sections: Literature review, methodology, results, discussion, and conclusion.

Literature

Overview of corporate sustainability disclosures

Even though a standardised definition of the term corporate sustainability disclosure (CSD) does not exist, the term is linked to sustainable development, an idea that became popularised globally in the aftermath of the Brundtland report of 1987 (Sharma & Henriques, 2005). The Brundtland report, defined sustainability as the development that meets the needs of the present society without compromising the ability of future generations to meet their own needs. For organisations, the sustainability idea was eventually customised as corporate sustainability, implying the need for organisations to achieve concurrently their economic objectives together with ecological and social objectives (Linnenluecke & Griffiths, 2010). Scholars such as Neubaum and Zahra (2006) as well as Funk (2003) consider corporate sustainability as a firm's ability to nurture and support growth over time by effectively meeting the expectations of diverse stakeholders. Implicitly, its disclosure should also meet the needs of stakeholders. Whereas Funk's (2003) and Neubaum and Zahra's (2006) perception of corporate sustainability underscores the importance of considering all the stakeholders', their perception does not broadly come up with the idea of the triple bottom line. Gray and Milne (2002) define CSD as an act of reporting the economic, social and environmental impact of company's operations to corporation's stakeholders mostly by profit making organisations. This definition is consistent with Elkington (1994) and Montiel and Delgado-Ceballos (2014), who emphasises on the CSD definition considering the three-pillar approach integrating the economic, ecological and social pillars.

Theoretical perspective

The Agency Theory and the Stakeholders' Theory inform our study. To begin with, the Agency Theory considers the separation of ownership from control as a potential source of agency problem since an agent who is more informed than the principal can act opportunistically (Jensen & Meckling, 1976). The agency problem is catalysed by information asymmetry because a more informed agent than the principal disadvantages the latter since the former can exploit the principal's resources (Alchian & Demsetz, 1972). After all, managers serve their own self-interest, which may directly conflict with the firm's best interests. In a bid effort to overcome the agency problem, principles incur agency costs to align management interests with the principals' interests. Since CSD is concerned with long-term firm's continuity and hence making it consistent with the principals' interests, expectedly, BoD possessing appropriate characteristics serve as a mechanism for aligning the interests of shareholders with those of management through CSD. In this regard, an appropriate mix of BC such as optimal board size, board diversity, board independence, the CEO power, board compensation, board meetings and number of board committees can enhance the capability of the board in integrating CSD.

On the other hand, the study adopted the Stakeholders' Theory because the Agency Theory mostly focuses on the shareholders while it ignores other types of stakeholders. Moreover, the Agency Theory treats shareholders as uniform without considering their power and urgency (Mitchell, Agle, & Wood, 1997). As such, the Stakeholders Theory compliments the Agency Theory by showing how the interest extends beyond ownership of the company when it comes to the sustainability of the company. Specifically, the Stakeholder's Theory works on the assumption that the firm ought to consider various groups with different interests in the

activities of the firm (Freeman, 1984). The theory assumes that directors, who wish to maximise their firm's continuity, will take a broader stakeholder interest in the account whereas the failure to do so limits future wealth generation capacity (Post *et al.,* 2002).

Board Size and CSD

Board size has been linked to the extent of managerial monitoring and quality of advice for management. Even though optimal board size is a function of the directors' and firm's characteristics (Raheja, 2005), it is generally agreeable that small boards suffer from workload and lack of diversity (Guest, 2009). On the other hand, large boards endure co-ordination and communication problems (Jensen, 1993). Empirically, a study by Ntim and Soobaroyen (2013) found that large boards have a weak relationship with sustainability index whereas Jizi (2017) found that boards with larger numbers of directors are more efficient in social and environmental issues than those with fewer. However, both studies did not clarify the possible diminishing returns that sets in as the board size increases beyond a certain optimal point. Since both large and small boards have disadvantages, the expectation is that, as board size increases up to a certain level, a positive relationship between board size and CSD ensues; on the other hand, increasing the board size beyond this level may result in a negative influence on CSD. This study, therefore, hypothesises:

H1*: There will be an inverted u-shaped relationship between board size and CSD, such that as board size increases up to a certain level, its positive effect on CSD diminishes.*

Board Diversity and CSD

Board diversity ensures that the board is balanced and minimises the chances of an individual dominating the board. Diversity brings about heterogeneity in the board and enables a wide range of practices in the board, leading to a better understanding of the stakeholders' needs (Carter *et al.*, 2003). This study focuses on two observable characteristics of diversity, which are gender and ethnicity due to availability of information on these variables and that they appear to be the most debated variables (Arfken, Bellar, & Helms, 2004). An empirical study by Landry, Bernardi and Bosco (2016) found a positive relationship between board diversity in terms of gender with corporate sustainability. Although their study did not specifically focus on CSD, an improvement in corporate social performance is expected to eventually improve its disclosures. Board diversity, particularly in terms of the presence of female directors on board, can enhance the consideration of firm's moral obligation in the decision-making process including CSD (Arfken, *et al.,* 2004). For ethnicity diversity, Haniffa and Cooke (2005) found its positive impact on CSD. Ethnicity as part of board diversity can bring about a better understanding of the stakeholders' needs (Harjoto *et al.,* 2014), a vital attribute in considering CSD. Thus, the current study hypothesises:

H2(a) *There is a positive relationship between board diversity in terms of gender and CSD.*

H2(b) *There is a positive relationship between board diversity in terms of ethnicity and CSD.*

Board Independence and CSD

An independent director holds no position of responsibility in the company with no direct affiliation to it (Clifford & Evans 1997). The presence of independent directors on the board helps to ensure efficacy of supervision and monitoring functions of the board as well as

strengthening the company's links with its stakeholders (Hermalin & Weisbach, 2003). This situation positions them to better clamp down on management excesses as they lack connection with the executives of the firm. Empirically, Hoje and Harjoto (2012), and Maas (2018) found independent boards to be positively related to CSD whereas Handajani *et al.* (2014) established that board independence does not necessarily have significant effect on corporate social disclosure. It is argued that independent directors are more interested in developing and maintaining the social responsibility of the company since doing so may enhance their prestige and honour in the society. Moreover, CSD is driven by external forces such as pressure from external groups and increased stakeholders' expectations, the presence of independent directors on board is therefore expected to consider CSD as a response to stakeholders' concerns consistent to the Stakeholders' Theory. Thus, this study, therefore, hypothesizes that:

H3*: There is a positive relationship between board independence and CSD*

The CEO Power and CSD

The CEO power generally varies depending on his/her membership in the board of directors, leadership position in the board as well as his/her tenure in the firm (Tien Chen & Chuang, 2014). While the CEO needs some power to exercise his/her functions, it is suggested that his/her power should be exercised in an environment with oversight (Tien *et al.*, 2014). Given the CEO's discretionary decision-making power and that the CEO's performance is mostly measured using accounting profit (Rashid, Shams and Bose, 2020), a powerful CEO may opt not to make high levels of CSD due to their discretionary nature and cost implication. Several empirical studies on CEO power have found a negative relationship between CEO power and voluntary disclosures (Allegrini & Greco, 2011; Samaha**,** Khlif, & Hussainey, 2015) while a study by Michelon and Parbonetti (2012) found an insignificant relationship. Most of these studies measure the CEO power as a dummy variable considering whether the CEO is a chairman or not. However, this approach has its own limitation because it is not only CEO duality that determines CEOs power, other factors such as directorship and tenure also matter (Tien, *et al.,* 2014). When a CEO is too powerful, he/she will have superior governing power which is likely to undermine the board's ability to objectively monitor top management including the CEO (Mallette & Fowler, 1992). Thus, this study hypothesizes that:

H4*: There is a negative relationship between CEO power and CSD.*

Board Compensation and CSD

Jensen and Meckling (1976) suggest that shareholders should compensate managers to align ownership interest with the interests of the controllers. Moreover, board compensation may influence the board members' fiduciary efforts (Munisi & Mersiland, 2016). Yet, generally, empirical studies linking board compensation to CSD are rare. Most studies link board compensation with financial performance albeit reporting contradictory findings. For instance, Aslam, Haron and Tahir (2019), and Raithatha and Komera (2016) found a relationship between board compensation and financial performance whereas other studies such as Munisi and Mersland (2016) found no significant relationship. A study by Hong, Li and Minor (2016) that had focused on executive compensation and CSD found a significant positive relationship. Even though their study links executive compensation and common

good, it ignored the compensation to non-executives, who ought to play an important role as far as strategizing on CSD is concerned. Since compensation is expected to align directors' interests with those of the owners to ensure the firms' long-term continuity. In other words, attractively compensated directors should enhance the extent of CSD. Thus, this study hypothesises:

H5*: There is a positive relationship between board compensation and CSD.*

Board Meeting and CSD

When board members meet regularly, their availability for consultation, supervision, and management increases (Vafeas 1999). Frequent meetings allow executives wishing to include CSD in their reports to access easily the board for consultation. Impliedly, the board would not only have enough time to review and monitor CSD related activities but also have time to address CSD-related issues. An empirical study by Naseem *et al.* (2017) found that board meetings have a significant influence on CSD in Pakistan. This finding is consistent with the findings by Ntim and Osei (2011), who had focused on the economic aspect of sustainability only. On the contrary, Ahmad, Rashid, and Gow (2017) and Haji (2013) noted that board meetings were not associated with CSR reporting in Malaysia. Their findings are at odds with the expectations of both the agency and stakeholders' theories primarily because when it comes to CSD, the board meets frequently to place its directors in a position to consider socially and environmentally-concerned stakeholders coupled with strategizing and supervising management on CSD. Therefore, we expected that there would be an improvement in the extent of CSD as the number of board meetings increases. This study, therefore, hypothesises:

H6*: There is a positive relationship between frequency of board meetings and CSD.*

Board Committees and CSD

BoD may delegate some of its work to a sub-group of board members known as board committee (DeKluyver, 2009). This arrangement brings about division of tasks and specialisations that allow the board to efficiently utilize directors' time and experience thereby maximising chances that the board will consider CSD (Chen & Wu, 2016). An empirical study by Nguyen (2020) that assessed the relationship between the board of directors and sustainability practices in Germany found a positive relationship between the number of board committees and CSD. Nguyen's (2020) study focused on large Germany firms, which have adopted GRI sustainability reporting structure. Amran, Lee and Selvaraj (2013) as well as Ntim and Soobaroyen (2013) found that the existence of corporate sustainability committee has a positive impact on CSD. Even though their studies focused on the presence of sustainability committee, the current study focuses on the number of committees since the board with more committees will not only relieve sustainability committee from other tasks but also likely to identify CSD within their scope. Committee arrangement results in the higher possibilities of members comprehending company operations and provide more appropriate advice in relation to CSD matters. This study, therefore, hypothesises:

H7*: There is a positive relationship between the number of board committees and CSD.*

Methodology

Data and Sample

This study used secondary panel data extracted from annual reports of 165 listed firms across SSA region for the 2015–2019 period making a total of 825 firm year observations. The sample covered firms from SSA Anglophone countries to avoid loss of meaning and information translation cost. Financial institutions were excluded since they are highly regulated and have an indirect impact on the environment. South African firms were also excluded since it is the only SSA country that has subscribed to King's reporting requirements that mandate CSD. Similarly, firms which had incomplete/no data for the panel duration were excluded to benefit from balanced panel data analysis. The distribution of study's sample country-wise is shown in Table I below.

Table I: Distribution of study's sample based on countries and industries

Country	Frequency	Percent
Nigeria	229	27.76
Zimbabwe	130	15.76
Kenya	121	14.67
Mauritius	100	12.12
Ghana	75	9.09
Botswana	40	4.85
Tanzania	40	4.85
Zambia	35	4.24
Malawi	25	3.03
Uganda	20	2.42
Namibia	5	0.61
Rwanda	5	0.61
Total	**825**	**100**

Study's variables

The measure of the study variables has been presented in Table II. Since this is a regional study, variables denominating in different currencies, which are director's compensation, assets and revenue, were converted to US dollar as a common currency to overcome the limitation of currency differences and to allow comparability during analysis. Current rate approach as clarified by Doupnik and Perera (2012) served as a conversion technique.

Table II: Measurement of study's variables

Variable	Measurement & source(s)
CSD index	A continuous index based on a checklist adopted from previous studies and also giving equal weights to economic, social and environmental indicators (Ahmad, Rashid, & Gow, 2017; Bansal, 2005; Kolk *et al* 2010).
Board size	Number of directors in the board (Galbreath, 2009).
Independence	Proportion of outside independent directors to total directors (Joseph & Taplin, 2011).

Board Diversity	Gender- proportion of female directors to total board size (Adams & Ferreira, 2004)
	Ethnicity- foreign directors on board to total board size (Galbreath, 2009).
CEO power	A continuum ranging from 0 to 3 depending on directorship, leadership role on board and tenure (Tien *et al.*, 2014).
Compensation	Natural log of total compensation to all directors divided by the total number of directors (Munisi & Mersland, 2016).
Board meetings	Number of the board meetings held throughout the financial year (Ntim & Osei, 2011).
Committees	Number of board committees (Nguyen, 2020)
Fin. Performance	Return on Asset, NP (Ntim & Soobaroyen, 2013)
Firm size	Natural log of firm's total revenue (Ntim & Soobaroyen, 2013)

Data analysis and model specification

This study investigates the relationship between BC and CSD. The dependent variable for the study (CSD) has been measured as an index that assumes continuous values. This makes regression analysis an appropriate technique to analyse data. The simple ordinary least square (OLS) is incapable of capturing heterogeneities surrounding firms such as future prospects and industry differences (Gujarati, 2009). To overcome this problem, our analysis is based on the panel data regression techniques that controlled for potential endogeneities that can result from a firm's specific heterogeneities. The first model is without control variables whereas the second one controls for firm size and firm financial performance. The third model was run as a further analysis to determine whether the influence of board size on CSD is an inverted u-shaped such that as board size increases up to a certain level whose positive effect on CSD diminishes. The fourth model represents a further analysis of various measures of CEO power:

Model 1: $csdindex_{it} = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \beta 5compns_{it} + \beta 6meetings_{it} + \beta 7comitt_{it} + \varepsilon_{it}$.

Model 2: $csdindex_{it} = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \beta 5compns_{it} + \beta 6meetings_{it} + \beta 7comitt_{it} + \boldsymbol{\beta 6revenue_{it} + \beta 9np_{it} + \beta 10roa_{it}} + \varepsilon_{it}$.

Model 3: $csdindex_{it} = \beta 0 + \boldsymbol{\beta 1size_{it}} + \boldsymbol{\beta 2sizesq_{it}} + \boldsymbol{\beta 3sizecub_{it}} + \beta 4fem_{it} + \beta 5nonssa_{it} + \beta 6ned_{it} + \beta 7compns_{it} + \beta 8meetings_{it} + \beta 9comitt_{it} + \beta 10revenue_{it} + \beta 11np_{it} + \beta 12roa_{it} + \varepsilon_{it}$.

Model 4:

a) $csdindex_{it} = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \beta 5compns_{it} + \beta 6meetings_{it} + \beta 7comitt_{it} + \beta 8revenue_{it} + \beta 9np_{it} + \beta 10roa_{it} + \varepsilon_{it}$.

b) $csdindex_{it} = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \boldsymbol{\beta 5ceobd_{it}} + \beta 6compns_{it} + \beta 7meetings_{it} + \beta 8comitt_{it} + \beta 9revenue_{it} + \beta 10np_{it} + \beta 11roa_{it} + \varepsilon_{it}$.

c) $csdindex_{it} = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \boldsymbol{\beta 5ceold_{it}} + \beta 6compns_{it} + \beta 7meetings_{it} + \beta 8comitt_{it} + \beta 9revenue_{it} + \beta 10np_{it} + \beta 11roa_{it} + \varepsilon_{it}$.

d) $csdindex_{it} = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \boldsymbol{\beta 5ceoyr_{it}} + \beta 6compns_{it} + \beta 7meetings_{it} + \beta 8comitt_{it} + \beta 9revenue_{it} + \beta 10np_{it} + \beta 11roa_{it} + \varepsilon_{i,t}$.

e) $csdindex = \beta 0 + \beta 1size_{it} + \beta 2fem_{it} + \beta 3nonssa_{it} + \beta 4ned_{it} + \boldsymbol{\beta 5ceopower_{it}} + \beta 6compns_{it} + \beta 7meetings_{it} + \beta 8comitt_{it} + \beta 9revenue_{it} + \beta 10np_{it} + \beta 11roa_{it} + \varepsilon_{it}$.

Analysis and Results

Descriptive statistics

As Table III illustrates, CSD had the mean score of 1.34 indicating that sustainability disclosures of firms in the SSA region are generally slightly below average. Regarding the board size, a mean of 8.58 was observed, implying that SSA firms have an average of about nine directors. Female directors had a mean ratio of 0.14, implying that on average, firm boards in SSA have low representation (14%) of female directors. Ethnicity shows the mean number of non-SSA directors is 21.7 percent, implying that on average, 78.3 percent of the board members came from the SSA region. Board independence had a mean of 0.75 and a standard deviation of 0.12. Directors' compensation had a mean of 4.49 and standard deviation of 0.75 whereas the frequency of board meetings had a mean score of 4.78 and standard deviation of 2.34. Board committees had a mean score of 2.92 and standard deviation of 1.25. The mean score for revenue was 7.66 where as its standard deviation was 1.03. The Mean net profit margin was 0.05 with a standard deviation of 0.1 whereas the return on asset had a mean ratio of 0.11 with a standard deviation of 0.37.

Table III: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Csdindex	825	1.335	.677	0	3
Size	825	8.581	2.582	4	25
Fem	825	.135	.125	0	.55
Nonssa	825	.217	.234	0	1
Ned	825	.757	.121	.286	1
Compns	825	4.49	.753	1.65	7.88
Meetings	825	4.779	2.371	0	19
Comitt	825	2.924	1.248	0	7
Revenue	825	7.662	1.027	3.429	10.475
Np	825	.054	.127	-.929	.45
Roa	825	.114	.368	-1.799	7.418

Multivariate Regression Analyses

The results for ordinary least squares (OLS) model and fixed effects model (FEM) are just presented as a robustness check. The discussion is based on random effect model (REM) results since the current study used a short panel that makes REM estimators more efficient (Gujarati, 2009). Country dummies, year dummies and industry dummies are also included in all models to control for unobserved heterogeneities. As per the results presented in Table IV below, all models yield a statistically significant result with a p-value of 0.000.

Table IV: Multivariate regression results, model 1 and model 2

Variables	OLS Model Robustness Csdindex	FE Model Robustness Csdindex	RE (Model 1) Without control Csdindex	RE (Model 2) With control Csdindex
Size	0.0372***	0.0255**	0.0413***	**0.0366*** **
Fem	0.612***	0.202	0.309**	**0.294** **
Nonssa	0.180	0.0484	0.164	**0.127**
Ned	0.154	0.119	0.118	**0.109**
Ceopower	-0.147***	-0.0395	-0.0478**	**-0.0535** **
Compns	0.0370	-0.0846***	-0.0453**	**-0.0649*** **
Meetings	0.0300***	0.00148	0.00474	**0.00547**
Comitt	0.0370	0.0419**	0.0528***	**0.0518*** **
Revenue	0.171***	0.0184	0.255	**0.0593** **
Np	-0.00757	-9.68e-05	0.133	**-0.000539**
Roa	0.0406	0.0192	-0.306	**0.0205**
Constant	-0.827***	1.050***	0.795***	**0.487** **
Observations	825	825	825	**825**
Number of co_id		165	165	**165**
R-squared	0.337	0.117	0.227	**0.263**
Rho		.864	.820	**.814**
Prob > chi2	0.0000	0.0000	0.0000	**0.0000**
Country dummies, year dummies and industry dummies included in all models				

*** p<0.01, ** p<0.05

As Table IV above illustrates, the results of hypothesis **(H1)** indicates that there is a positive significant relationship between board size and CSD (β = 0.0366, p< 0.01). However, to check whether the relationship is an inverted u-shaped one, a separate model entailing board size, board size squared and board size cubed was run. As Table V illustrates, further assessment of board size indicated that before squaring the board size, the coefficient was negative (β = -0.041) but after squaring it, the coefficient became positive (β = 0.004), and the cubed board size depicted a negative coefficient (β = -0.00004), implying that the relationship is an inverted u-shaped one. The findings, therefore, supported hypothesis (H1).

In relation to the hypothesis **(H2a)**, diversity in terms of the presence of female directors on board was found to have a positive and significant influence on CSD (β = 0.294, p< 0.05). On contrary, for **(H2b)**, diversity in terms of ethnicity was not found to have a significant influence on CSD. This imply that gender-based diversity has a significant influence on CSD while ethnicity-based diversity does not significantly influence CSD.

Hypothesis **(H3)** stated that there is a positive relationship between board independence and CSD. The results indicate that the coefficient of the board independence as measured by non-executive directors is positive but not significantly related to CSD and, therefore, evidence does not support the hypothesis. It seems that companies whose board of directors constitutes more independent directors would not disclose differently in terms of extent of sustainability information.

Hypothesis **(H4)** suggests that the CEO power is significant and negatively associated with corporate sustainability disclosures. This hypothesis is supported by (β = -0.0535, p< 0.05). Thus, the results suggest that companies in which the CEO has a greater power make less corporate sustainability disclosures.

The results for hypothesis **(H5)** indicate that the relationship between board compensation and corporate sustainability disclosure is significant at 10 percent significance level and it is also negatively related to CSD (β = -0.0649, p< 0.01). The results show that as directors' compensation increases, the extent of CSD decreases.

Concerning hypothesis **(H6),** our results show that the frequency of board meetings is positive but not significantly related to CSD. The implication here is that companies with frequent board meetings do not differently undertake CSD. The hypothesis was, therefore, not supported.

The results for hypothesis **(H7)** show that the number of board committees is significant and positively related to CSD at (β = 0.0518, p< 0.01), thus providing an empirical support to the hypothesis. The results imply that the company whose board is structured in committees discloses more CSD.

Further analysis

A further analysis on board size and the CEO power was conducted. The aim of further analysis on board size was to assess whether its relationship with CSD is an inverted u-shaped one whereas the aim of a further analysis of the CEO power was to observe how several measures of the CEO power have an influence on CSD.

Board size

Table V presents results for Model 3 that include board size squared and board size cubed to test for the inverted u-shaped relationship between board size and CSD. As discussed in hypothesis **(H1),** the findings indicate that the relationship is in an inverted u-shape.

Table V: A further analysis of board size, Model 3

Csdindex	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Size	**-.041**	.08	-0.51	.61	-.197	.116	
Sizesq	**.004**	.007	0.61	.54	-.009	.018	
Sizecub	**-0.00004**	0	-0.23	.822	0	0	
Fem	.433	.124	3.49	0	.19	.676	***
Nonssa	.162	.1	1.62	.104	-.034	.358	
Ned	.316	.157	2.01	.044	.008	.623	**
Ceopower	-.029	.022	-1.30	.193	-.073	.015	
Compns	-.075	.023	-3.31	.001	-.119	-.03	***
Meetings	.005	.008	0.72	.473	-.009	.02	
Comitt	.056	.017	3.33	.001	.023	.089	***
Revenue	.043	.024	1.82	.069	-.003	.09	
Np	0	.002	-0.11	.916	-.005	.004	

Roa	.016	.028	0.60	.549	-.037	.07	
Constant	.902	.328	2.75	.006	.259	1.545	***

Mean dependent var	1.335	SD dependent var	0.677
Overall r-squared	0.180	Number of obs	825.000
Chi-square	74.799	Prob > chi2	0.000
R-squared within	0.059	R-squared between	0.203

**** p<.01, ** p<.05*

CEO Power

As a further analysis of the CEO power illustrates, several measures of the CEO power were separately included in the model. As Table 6 further illustrates, when the CEO power is measured in terms of his/her membership in the BoD as well as in terms of his/her leadership position in the BoD, it does not have any significant bearing on CSD. However, when the CEO power is measured in terms of CEO tenure as well as in terms of composite variable, it becomes negative and significantly related to CSD at five percent significance level.

Table 6: Further analysis on CEO Power, Model 4

VARIABLES	**(Model 4a)** Without CEO power csdindex	**(Model 4b)** CEO power as a board member csdindex	**(Model 4c)** CEO power as board leader csdindex	**(Model 4d)** CEO power as his/her tenure Csdindex	**(Model 4e)** CEO power as composite measure Csdindex
Size	0.0266***	0.0266***	0.0267***	0.0292***	0.0270***
Nonssa	0.0403	0.0403	0.0387	0.0324	0.0350
Ned	0.177	0.177	0.173	0.118	0.134
Ceobd	**-**	**-0.00155**	**-**	**-**	**-**
Ceold	**-**	**-**	**-0.0164**	**-**	**-**
Ceoyr	**-**	**-**	**-**	**-0.00839****	**-**
Ceopower	**-**	**-**	**-**	**-**	**-0.0413***
Compns	-0.0837***	-0.0837***	-0.0836***	-0.0845***	-0.0839***
Meetings	0.00157	0.00156	0.00160	0.00114	0.00203
Comitt	0.0423**	0.0423**	0.0422**	0.0440**	0.0436**
Revenue	0.0152	0.0152	0.0155	0.0138	0.0192
Np	-1.69e-05	-1.81e-05	-5.21e-05	-0.000111	-0.000171
Roa	0.0164	0.0165	0.0163	0.0171	0.0202
Constant	0.987***	0.989***	0.988***	1.061***	1.042***
Observations	825	825	825	825	825
R-squared	0.109	0.109	0.109	0.116	0.114
Number of co_id	165	165	165	165	165
Country dummies, industry dummies and year dummies included					

*** p<0.01, ** p<0.05

Discussion

This study aimed at assessing the influence of board characteristics as measured by board size, board diversity in terms of gender and ethnicity, board independence, board compensation, board meetings and board committees on corporate sustainability disclosures in Sub-Saharan Africa. The study reveals that there is an inverted u-shaped relationship between the board size and CSD. Even though most of previous studies assumed a linear relationship (Ntim & Soobaroyen, 2013; Jizi, 2017), the current study extends the analysis to show that, beyond a certain level, board size will no longer positively contribute to CSD but rather its contribution will diminish. This relationship can further be supported by an argument that small board size may lack experts but again too large board size may result to inefficiency and bureaucracy in undertaking its functions (Guest, 2009). The average board size of 8.58 is within the range suggested by Ning, Davidson and Wang (2010). Our study's findings on board size and CSD cast no doubt to the ideas of Agency Theory that shows that, as the board size becomes optimal, the better-positioned it becomes in performing its monitoring and supervisory functions as far as CSD is concerned thereby supporting both the agency and the stakeholders' theories.

The findings that board diversity in terms of gender has a positive influence on CSD extends previous studies like the one by Adam and Ferreira (2009) by showing that, when environmental and social disclosures are considered as opposed to considering only financial disclosures, the presence of female directors exerts a significant influence on CSD. It is urgued that relative to men, women are more caring, compansionate and empathetic traits that enables them to reduce information asymmetry thus they are more likely to act consistent to the predictions of the stakeholders theory as far as CSD is concerned. Regarding ethnicity, the insignificant findings could be explained by possibilities that a non-SSA directors may focus more on profit and may lack context specific knowledge (Kang *et al.*, 2019). Similarly, insignificant findings of board independence which are similar to the findings by Handajani *et al.* (2014) could be explained by possibilities that independent directors could be more cost consious and may wish to acoid CSD related cost.

The significant negative relationship between CEO power and CSD are similar to Allegrini and Greco (2011). Powerful CEOs may opt not to make high levels of CSD due to their discretionary nature and cost implication. Consistent with the Agency Theory, the CEO may be induced to adopt short-termism and treat CSD initiatives as too costly for the organisations, especially when the CEO's compensation is tied to short-term measures of performance (Rashid *et al.*, 2020). The current study, therefore, extends the analysis to show that the CEO power is not only the function of CEO duality, but also membership on board, and similarly not only chairmanship but also any other leadership role on board and his/her tenure.

A significant negative relationship found regarding the director's compensation and CSD contradicts with the findings by Maas (2018). Although a positive relationship was initially expected, the board compensation mostly influences financial performance. Since environmental and social disclosures are detrimental to short-term profitability (Rashid *et al.*, 2020), compensation to directors may, therefore, not motivate them in ensuring the implementation of CSD by their firms. This situation is likely to be more visible when

directors' compensation is linked to financial disclosures rather than CSD. Moreover, Haque (2017) suggests that highly compensated executives may hesitate to engage in some corporate sustainability practices because such practices require a huge cash outflow amidst unpredictable business financial environment.

Moreover, our study finds an insignificant relationship between board meetings and CSD similar to Ahmad *et al.* (2017) and Haji (2013) but contradicting to Naseem *et al.* (2017). Even though the agency theory suggests that the attendance of board meetings as an indication of successful board monitoring activities, thereby expectedly to enhance CSD, it is possible that SSA boards do not prioritise CSD agenda in their meetings. This could further be explained by a low CSD-related pressure from the SSA public (Ali *et al.*, 2017).

Significant findings on the relationship between board committees and CSD are similar to the Nguyen's (2020) findings. Structuring the board of directors in sub-committees creates a high possibility for members of committees to comprehend the company's operations due to specialisation, thus maximising chances of providing more relevant advice concerning CSD. As each committee has specific specialism, a particular committee may eventually ensure disclosure of relevant issues falling within their scope of responsibilities (Chen & Wu, 2016). These findings are consistent with expectations of both the agency and the stakeholder's theory.

Conclusion

The study examined the predictive power of board characteristics as measured by board size, board diversity in terms of gender and ethnicity, board independence, board compensation, board meetings and board committees on CSD. The key question of the current study was whether board characteristics has an influence on CSD. The study was motivated by low levels of CSD across SSA despite acknowledging that CSD is vital in driving the sustainability agenda at the firm's level (Tilt *et al.* 2021). Moreover, the need to use more BC, which offer theoretical explanation of the relationship for which their empirical testing is scarce motivated our study.

Generally, the results indicates that BC influences CSD, thereby casting a considerable support to both agency and stakeholders' theory. In other words, the combination of appropriate BC is important in enhancing CSD. Our study contributes to the ongoing debate on CSD. Unlike most of the previous study and consistent to the triple bottom line, as Elkington (1994) argues, the current study has measured the CSD concept by giving equal weight to the three pillars of CSD, which are the economic, environmental and social pillars. Furthermore, it has attempted to assess the inverted u-shaped relationship between board size and CSD. Also, it focused on the context within which there is low levels of CSD due to the impractical and minimum theoretical foundations among other reasons.

The study findings also implore governments to come up with policies that could catalyse the sustainability agenda at firm level through CSD. Specifically, regulators and similarly shareholders need to note the importance of an appropriate mix of board characteristics in enhancing CSD. Although board size could differ based on size of the firm, having an optimal board size helps to enhance CSD. As such, regulators and shareholders ought to consider an indicative minimum and maximum number of board members. They also ought to advocate

gender consideration when formulating the board of directors. It is also important to institute mechanisms which regulates the CEO power and also advocates for the expected long-term benefits of CSD. Moreover, although significant efforts have been made in enforcing audit committee notwithstanding, the structuring of boards in other committees such as the sustainability committee also need to advance the CSD agenda.

Despite shedding a light on how board characteristics may influence CSD, the current study had some limitations including not considering the ownership structure and audit quality as potential intervening variables. Also, it did not examine the board committees in detail (by for instance considering other variables of board committees such as type of the committee, number of members and their qualifications among other issues) since this information was missing for some firms. Moreover, there is a need to examine an inverted u-shape relationship for not only board size as in the current study but also for other variables such as board compensation and board meetings. Future studies in this area may, therefore, consider ownership structure and other potential intervening variables such as audit quality in explaining this relationship. Also, it would be essential to examine board committees in detail and assess the non-linear relationship of other BC variables and CSD.

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