The Moderating Effect of Board Size on the Relationship between CEO Characteristics and Sustainability Disclosures

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Abstract
Purpose: The paper examined the moderating effect of board size on CEO characteristics (CEO power (shareholdings and tenure), CEO gender and expertise) and sustainability disclosures in Nigeria.
Design/Methodology/Approach: The research design was ex-post facto with data collected from the annual reports of 70 non-financial listed companies in ten industrial sectors of the Nigeria Stock Exchange from 2013 to 2017. The theoretical frameworks were the agency theories, social roles, resource dependence and managerial power theories. The data was analyzed using the multiple regression analysis.
Findings: The findings revealed that CEO gender, shareholdings and tenure had a positive and a significant relationship with sustainability disclosures, CEO expertise had negative and significant relationship with sustainability disclosures. Moreover, the board size had no moderating effect on the relationship between CEO characteristics and sustainability disclosures.
Research limitations: The use of 7 items, disclosure indices to measure sustainability disclosures and delimitation of the study to the non-financial sector.
Practical Implications: There should be policy to appoint more female directors and CEOs as well as highly skilled and experienced independent and non-executive directors to the board. This will help to curtail CEO power and positively impact on the sustainability disclosures.
Originality: The paper examined how the board size moderates the relationship between CEOs' characteristics (gender, expertise, power - shareholdings and tenure) and sustainability disclosures using evidence from an emerging market like Nigeria
Key Words: CEO power, CEO gender, CEO expertise, CEO shareholdings, sustainability disclosures, board size.
Article Classification: Research Paper

1.0. Introduction

There are increased discussions about the issues of sustainability because of the importance for modern corporations. The terms sustainable development goals (SDGs), sustainability reporting (SR), sustainable development (SD) and corporate social reporting (CSR) have become increasingly popular. Also, at various international fora like the 1997 Kyoto Protocol, Global initiatives for gas flaring reduction, Rio and Bali Declarations, Paris Agreement and the recent World Economic Forum all raised alarms and serious concerns on global environmental sustainability, climate change among many other issues. For instance, the pollutions, gas flaring and environmental degradation by oil companies in Niger Delta region of Nigeria have sparked up escalating agitations and protests by a vast group of stakeholders consisting of investors, shareholders, host communities, government, employees and customers (Bassey, Effiok & Eton, 2013; Odia, 2016).These stakeholders have raised concerns on the threats being created by several companies that were initially credited for their inputs to technological and economic growth (Abiola & Ashamu, 2012; Hackston & Milne, 1996), and have upped the need for better sustainable practices and subsequent disclosures. In response some of the oil companies like Shell petroleum have signed memorandum of understanding with the local communities on achieving the sustainable development goals (Allen & Eze, 2019).

Sustainability disclosures can be described as the willingness of a company to show accountability to its stakeholders. It requires that organizations find a way to control the negative impacts of their economic, social and environmental activities (Michael, 2013). Based on the legitimacy theory, sustainability disclosures can be used as a communication tool by the firms to shape the impression stakeholders have of the responsibilities of corporations, legitimate their operations and obtain license to operate, decrease information asymmetries between managers and investors and decrease agency problems and information costs in capital markets, enhance company's reputation, increase stock value and manipulate external opinion about firms (Jensen & Meckling, 1976; Jizi, 2017; Reverte, 2012).

Basically, the board plays major roles in corporate social responsibility (CSR) and sustainability reporting, and the allocation of resources to sustainability issues (Rao & Tilt, 2016). Strand (2013) asserts that a company's strategic decisions and directions are typically made by the board and the top management team. The recent Nigeria Code of Corporate Governance (NCCG, 2018), unlike the previous codes of 2003, 2006 2011 and 2014, mandates the board to pay special attention to sustainability because it can ensure successful long-term business performance and project the company as a responsible citizen. Jamali, Safieddine and Rabbath (2008) argued that corporate governance mechanisms drive managers and executives to set goals and objectives regarding CSR, and the board was key in the decisions regarding CSR disclosures. Gray, Kouhy and Layers (1995) suggested that an efficient board will support CSR reporting by companies whose objective is to legitimize their operations and send signal to all stakeholders and society that their needs are being met.

A key constituent of the board is the chief executive officer (CEO), who is the head of the management team. The board may delegate any of its power to the CEO for the smooth operation of the company; to influence the way and manner firms act in terms of their focus, priorities and decision making. As a critical member of the top management team, the CEO can take decisions that could influence organisational outcomes (Ben et al., 2014). Although, the CEO is primarily to generate economic returns or maximize shareholders' wealth, there is also the argument that the economic return should be pursued in a socially responsible manner (Quigley & Hambrick, 2015). According to the agency theory, CEOs may want to only invest in short-term projects with lower risks and quick returns. They may avoid or reduce investment in long-term sustainability projects because these investments will affect the bottom line in the short-term even though they could generate greater benefits to the firm later (Gracia-Sanchez et al, 2020). Admah, Rashid and Gow (2017) concluded that CEOs have little interest to promote CSR as it is not cost free and may lead to loss of individual wealth. However, García-Sánchez and Martínez-Ferrero (2019) found that CEO ability moderates the relationship between investment in CSR and financial performance.They found that whereas most able CEOs make investments in social and environmental practices that lead to greater financial performance, the less able CEOs can overinvest or underinvest in an opportunistic way for personal benefit at shareholders' expense.

Many recent studies especially from developed countries have showed that CEOs characteristics play key roles in the process of preparing quality financial information which greatly influences corporate transparency. The CEOs also play important roles in explaining the diversity of environmental practices (Delmas & Toffel, 2004; Lewis, Walls & Dowell, 2014; Li, Gong, Zhang, & Koh, 2018). Although prior studies have established that CEOs demographic and personal attributes such as gender, age, educational background, experience, personality, political ideology, religious beliefs, experience, leadership style, power, choices, motives, and values and media exposure affect firm's performance or value, CSR investment, CSR strategies and CSR disclosure policies (Nelson,2005; Lewis et al, 2014; Li et al,2018; Gracia-Sanchez et al, 2020), a gap exists in the Nigeria's context on the relationship between CEO characteristics and sustainability disclosures as most of these studies were carried in developed countries.

Long tenured CEO has been found to result in lower sustainability or CSR disclosures (Rashid, Sham, Bose & Khan, 2020). An effective board in terms of the size and presence of more non-executive directors could enhance the board's capacity to monitor and curtail CEO power, and propel CEOs to invest and report on sustainability matters with more long-term benefits (Williams, Fadil & Armstrong, 2005; Zeng & Tsai, 2019). But there is paucity of empirical studies in existing literature based on Nigeria's evidence. Hence a research gap exists on the moderating influence of board size on CEO characteristics (gender, expertise and CEO power proxy by CEO shareholdings and tenure) to engender more sustainability disclosures by firms listed in the Nigeria Stock Exchange. Therefore, the objective of the paper was to examine the relationship between CEOs characteristics (gender, expertise, power) and sustainability disclosures and show whether this relationship is moderated by board size using a sample of 70 firms list in the Nigeria Stock Exchange from 2013 to 2017 (350 firms' years).

This paper contributes to existing literature on SDG and sustainability disclosures in the following ways. First, by conducting and providing evidence from an emerging market and developing country setting such as Nigeria. Second, by considering CEO characteristics (gender, expertise, and delineating CEO power into tenure and shareholdings) and relating them to sustainability disclosures; moreover, it examined the moderating effect of board size on the relationship between CEO characteristics (gender, expertise, shareholdings and tenure) and sustainability disclosures. The results of the multiple regression analyses indicated that CEO gender, shareholdings and tenure had positive and significant relationship with sustainability disclosures, CEO experience reported negative and insignificant relationship. Moreover, the board size had weak, negative and insignificant moderating influence on the CEO variables with sustainability disclosures. Third, from a theoretical point of view, the study combined different theoretical frameworks: managerial power theory, resources dependence theory and social roles theory, in addition to the agency theory, to explain the influence of CEOs' characteristics (tenure, shareholdings, expertise and gender) on sustainability disclosures.

The rest of the paper is divided into four sections. The immediate section is the literature review, theoretical framework and hypotheses development. The theoretical frameworks of agency theory underling the study is first discussed and followed by the review of relevant literature on CEOs characteristics and sustainability disclosures and the research hypotheses. Section three dwells on the methodology comprising the research design, model specification. Section four is the data analysis and discussion of the results. Section five is the conclusion and recommendations.

2. Literature Review, Theoretical Framework and Hypotheses Development

2.1. Theoretical Framework

The study was anchored on the agency theory because of the conflict of interests and information asymmetries between the principal (shareholders) and the agents (CEOs) (Jensen & Meckling, 1976) in relation to sustainability disclosures. Some studies have also found that CEOs demographic and personal attributes significantly affect CSR investment, strategies and disclosure policies (Nelson,2005; Abatecola & Cristofaro,2019; Lewis et al, 2014; Li et al 2018; Gracia-Sanchez et al, 2020). Also, Lewis et al (2014) found that CEO characteristics of education and tenure affect the firms' likelihood to disclose environmental information. The CEO characteristics determine how external environmental pressures are responded to, interpreted and acted upon (Hoffman, 2001) and whether the disclosure of environmental information is seen as an opportunity or a threat (Sharma et al., 1999). As a critical member of a firm's management team and the board, the CEOs have the power and ability to make decisions which may ultimately influence organizational outcomes including sustainability disclosures.

The study employed social role theory, resource dependence and the managerial power (upper echelon) theories to explain the CEO characteristics. The social role theory posits that are certain character traits, interaction styles, and patterns of reasoning, speaking and communicating that are generally ascribed as feminine attributes (Boulouta, 2013; Eagly, 2009).These traits provide explanations to the emphasis on social and environmental issues which form the bedrock of sustainability disclosures by women directors and CEOs. The resource dependence theory (RDT) establishes the CEO experience in the board. The RDT recognizes the influence of external factors, skills, experiences and critical resources on organizational behavior. Normally, the board enables the firm to depend or gain access to these critical resources (Pfeffer, 1972).

We examined CEO power which was delineated to CEO tenure and shareholdings and explain how it influenced sustainability disclosures based on the upper echelon or managerial power theory. The managerial power theory suggests that the CEO possesses power to influence certain activities of the company like sustainability issues through dominance over the board of directors (Buchholtz et al., 1998; Finkelstein, 1992). The managerial power theory is used to explain the extent to which the CEO can utilise his or her will to influence the activities of the company (Buchholtz, Young, & Powell, 1998; Haynes & Hillman, 2010; Hickson, Hinings, Schneck, & Pennings, 1971). This theory invariably explains power tussle between the board of directors and the CEOs. It purports that the board could be likened to a submissive rubber stamp co-opted by management, which could be easily controlled by a connected CEO (Andriosopoulos, Andriosopoulos, & Hoque,2013).

2.2. CEOs Characteristics and Sustainability Disclosures

CEO Gender: More recently, there are evidences of a movement towards gender equality at top executive positions and corporate boards (International Finance Corporation [IFC], 2019). Adams and Ferreira (2009) found that boards around the world are under immense pressure to appoint female directors and even place them on top as CEO, as a number of proposals for corporate governance reforms have highlighted the need for board diversity in the board room. According to the social role theory, female leadership style and directorship are good drivers of increasing CSR matters and disclosure. According to the agency and stakeholder theories, the female directors are more sensitive, sympathetic, caring, attentive, engaging, democratic, prudent, conservative, responsible, multi-tasking, and sensitive to stakeholders needs than male directors. This implies that women directors are more oriented towards social and environmental matters and CSR disclosures. They are also more likely to influence other directors to become more engaged with social and environmental matters, thus increasing the reporting of CSR information.

Ben-Amar, Chang and Mcllkenny (2017) investigated the effect of female representation on the board on corporate response to stakeholders' demands for increased public reporting about climate change related risks of publicly listed Canadian firms from 2008 to 2014. The study found that the likelihood of voluntary climate change disclosure increases with women percentage on boards. The survey by the International Finance Corporation found that although there are dearth of female CEOs and women on the board in Nigerian listed companies, they tend to bring value beyond financial performance to the board; they are more trustworthy, collaborative and improve board dynamics than men. Other studies have found that board gender diversity or the proportion of female directors in the board had significant impact on philanthropy and CSR disclosures (Odia, 2009) and financial performance in Nigeria (Amake & Odia, 2019). As a result, we anticipate that firms with female CEOs will disclose more on sustainability issues. Thus, we hypothesize as follows:

H₁. There is a positive relationship between Female CEO and sustainability disclosures

CEO Expertise: Based on the resource dependence theory, expertise and knowledge are major sources of an integrator's effectiveness (Lawrence & Lorsch, 1967) which enables to build competence and bring together diverse knowledge domains. The CEO's functional background expertise is likely to determine his/her integrative capabilities and contribute to CSR and sustainability disclosures. García-Sánchez & Martínez-Ferrero (2019) argued that due to CEOs greater knowledge and skills, they will be able to choose better CSR projects that will maximise shareholders' wealth and allocate value resources to society. Prior researches suggest that an executive's background and education can have a significant effect on firm's behaviour, outcomes and corporate disclosure (Finkelstein, Hambrick & Cannella, 2009; Huang, 2013). For instance, Lewis, Walls and Dowell (2014) found that CEOs education and tenure affect firm's likelihood to voluntarily disclose environmental information, focusing on carbon disclosure project. They found that companies governed by newly appointed CEOs and CEOs with MBA degrees have a higher tendency to respond to the carbon disclosure project than those governed by CEOs with law degrees. Moreover, Gracia-Sanchez et al (2020) found that greater CEO ability increases both the socially responsible performance and the relevance with direct and indirect effect on CSR disclosures. Li, Lin and Zhan (2019) found that financial expertise, educational level, and tenure of CEOs were positively correlated with corporate environmental information by companies listed in the stock exchange of Thailand. Accordingly;

H₂. There is a positive relationship between CEO expertise and sustainability disclosures

CEO Power: CEO power refers to the potential for the CEO to leverage ownership or position to pursue her or his own goal. The proxies or indices for CEO power include tenure, board duality, status such as founder, insider or concentration of job titles (Hubbard, Christensen & Graffin, 2017; Huang, 2013). For CEOs, power comes with the job (Daily & Johnson, 1997) and the capacity to implement decisions based on their individual preferences (Haynes & Hillman, 2010). Finkelstein (1992) identified top management team power to include: structural power, ownership power, expert power and prestige power. There is evidence that powerful CEO tend to select fewer independent members on the board (Shivdasani & Yermack, 1999). Managers continue to dominate the board by selecting board members that are allegedly loyal to their style of governance, they grant packages and benefits and develop social relationships with them (Fracassi & Tate, 2012), leading to enfeebled monitoring. Power is a tool that can be used to influence others to do (or believe) something that they otherwise would not (Walls & Berrone, 2017). Powerful CEOs can affect the extent to which the organizations effect strategic change (Haynes et al, 2010), corporate performance (Adams, Almeida & Ferreira, 2005) invest and report on sustainability matters. They also use their advantage of having insider's knowledge of the company's activities to dominate the board who will always rely on them for basic information they need to carry out their duties. With this enormous capacity to exhibit both power and influence, the CEO can maximise personal gains and self-interest even when it contradicts or opposes the views of shareholders and the overall sustainability of the firm. In relation to CSR disclosures, Rashid, Sham, Bose and Khan (2020) have found that "CEO power is negatively associated with the level of CSR disclosure, and that the negative effects of CEO power on the level of CSR disclosure are attenuated by stakeholder influence" based on 986 Bangladeshi firm-year observations. This study concentrates on CEO shareholdings and tenure as sources of power.

The proponents of increased shareholdings for CEO argue that this is necessary in order to align top management incentives with that of shareholders. Shareholder CEOs have been purported to have enormous decision-making power and exert great influence over the entire organization. Proponents of the agency theory contend that a conflict of interest is bound to arise between the principals and agents (Jensen & Meckling, 1976) as the agents (managers) might attempt to pursue their interests at the expense of the principal. Armstrong, Jagolinzer and Larcker (2010) have argued that through the equity holdings by the CEOs may alleviate certain agency problems between executives and shareholders, concerns have arisen amongst researchers, regulators and the business press that high-powered equity incentives might also motivate executives to focus on boosting the reported earnings as against other social and environmental responsibilities.

The relationship between managerial ownership and corporate disclosures has been found to be positive (Chau & Gray, 2002; Jain & Habis, 2009) and also negative

(Eng & Mak,2003; Ullah et al, 2019). Odia (2013) examined the determinants and consequences of corporate social and environmental disclosures quantity and quality by companies listed in the Nigeria Stock Exchange after country signed into the United Nations Global Compact and global reporting initiative (GRI) in 2006. The governance variables examined included CSR committee, directors' ownership, substantial shareholdings, shareholders power among others. The study found CSR committee was more significantly associated with quantity than quality of CSED, directors' shareholdings and the shareholders' power have positive and not significantly associated with the quantity and quality CSED while substantial shareholdings was negatively associated. The study concluded that the increase in directors' shares ownership could help to reduce the agency conflicts between management and shareholders by aligning directors' interest with stakeholders through the disclosure of more corporate social and environmental disclosures. Hence, we anticipate that CEOs with share ownership will be more disposed to sustainability disclosures or activities (Kim & Kim, 2020). Therefore, our hypothesis is stated:

H_{3a} There is a positive relationship between CEO shareholding and sustainability disclosures

Stewardship theorists have argued that long tenured CEO may have greater commitment and firm-specific expertise, leading to enhanced performance with respect to their duties (Cook & Buress, 2013). In addition, long-tenured CEOs who have dedicated their careers to shaping the firm and its strategy may identify their personal success and satisfaction with the success of the firm. Donaldson and Davis (1991) suggest long tenure promotes a merging of individual ego and the corporation, thus melding individual self-esteem with corporate prestige. Huang (2013) carried out a study on the impact of CEO characteristics on corporate sustainable development. The study focused on a large sample of 661 firm-year observation. The results indicated that CEO tenure affects CSR performance. Similarly, Hubbard et al. (2017) provided evidence that CEO power proxy by CEO tenure could influence the boardroom decisions. With regard to CSR disclosures, McCarthy, Oliver and Song (2017) also found a positive relationship between CSR and the CEO tenure in Australia. Lewis et al (2014) also found that CEO characteristics such as education and tenure influenced firms' likelihood to voluntarily disclose environmental information. Nevertheless, Mohd-Saleh et al. (2012) and Ahmad et al (2017) found that long tenured CEOs have negative impact on CSR disclosures. Therefore, given the mixed results as well as the length of CEOs in Nigeria, it is hypothesized as follows:

H_{3b} There is a positive relation between CEO tenure and sustainability disclosures

2.3. Moderating effect of Board Size on CEO characteristics

According to agency theory, CEOs are self-interested, risk averse, and possess goals that diverge from those of shareholders. Thus, CEOs will engage in self-serving actions at shareholders' expense when given an opportunity (Jensen & Meckling, 1976). Thus, CEOs may not want to invest or disclose on sustainability matter except it will positively affect their performance evaluation or their compensation is linked to CSR practices. Boards dominated by outside or independent directors (i.e. directors that are affiliated with the firm only through their board membership) are thought to help protect shareholders from CEOs' self-serving behaviour by monitoring CEOs and offering them incentives to act in shareholders' interests (Fama & Jensen, 1983). Such boards are more concerned with the firm's CSR and less oriented towards economic performance. Post *et al*. (2011) found that firms with higher proportion of outside or non-executive directors and with three or more female directors tend to have higher Kinder Lydenberg.

Basically, firms with powerful CEO's power (in terms of long tenured or shareholdings) have negative (lower) CSR disclosures (Mohd–Saleh et al, 2012; Rashid et al, 2020) because there is a decrease in level of commitment to CSR activities as CEO power increased (Li, Li & Minor,2016). The presence of board with strong leadership structure and more independent directors has the tendency to make firms engage in CSRD practices; a submissive board would lead to diminished transparency and disclosure, resulting in fewer CSR efforts. Larger boards can reduce managerial domination and are effective in mitigating potential conflicts of interest. From the agency theory perspective, where the interests of shareholders and managers are different, agency problem may be more pronounced in a large board. Wang et al. (2018) suggested that the agency problem is correlated to the board's size. However, companies can reduce information asymmetry through voluntary disclosures, thereby protecting stakeholders' interests with lower agency costs incurred (Cormier, Magnan &Van Velthoven, 2005). An increase in the share ownership by board members, directors and CEOs can also lead to increased sustainability disclosures (Kim & Kim, 2020). Therefore, the study proposes the following hypotheses:

***H$_{4a}$*.**There is a positive moderating effect of board size on the relationship between CEO's shareholdings and sustainability disclosures

***H$_{4b}$*.**The moderating effect of board size on the relationship between CEO's tenure and sustainability disclosures is positive

When viewed from the resource dependence theory, a large board may be advantageous as it increases the firm' ability to link with other firms and tap resources, skills, experiences that could boost their productivity and development (Wang et al, 2018). Larger boards possess more interlocking directorships with other firms and boards which can assist their external connectivity to obtain critical resources from the external environment that can be used to check the CEO. Large boards instead of smaller boards are more likely to bring in experience and knowledge, not only to monitor but also to advice the CEO on sustainability issues and facilitates inter-organizational imitation of strategies and practices. Large boards are likely to have more members with knowledge, experience and motivations for sustainability issues and reporting. Such boards are likely to support the CEO towards greater sustainability disclosures because they are abreast with the latest sustainability reporting through director network. Thus, it can be stated that:

H$_5$. Board size positively moderates the relationship between CEO's expertise and sustainability disclosures

From the social role theory, women are likely to encourage greater sustainability. More women on the board will likely have greater influence on board decisions relating to CSR activities and reporting, charity initiatives and higher environmental CSR. While smaller boards are unlikely to have a larger number of female directors, a large board with more female directors will tend to engage in more CSR disclosures and more commitment towards social and environmental disclosures. Post et al (2011) found the boards with three or more female directors tend to have higher Kinder Lydenberg. Thus, we anticipate that a board with more female directors and female CEO will positively affect sustainability disclosure. Hence the hypothesis is stated as follows:

H₆. There is a positive moderating effect of board size on the relationship between CEO's gender and sustainability disclosures

3.0. METHODOLOGY

3.1. Research Design and Data Collection

The population comprised all companies quoted on t the Nigeria Stock Exchange (NSE) for the periods 2013 to 2017. The period is selected following the increased call for sustainability by various stakeholders in recent times. The Nigeria Stock Exchange was chosen considering the size of companies that are found there, and such large firms are often expected by stakeholders to perform well thus facing greater stakeholder pressure (Barbu et al., 2014). They are therefore expected to be have a stronger need for sustainability disclosure than smaller unquoted companies and companies in the alternative securities market, that fail to meet the listing requirements of the main stream exchange. The sample size was determined after excluding financial firms due to the extra regulations governing them (Haniffa & Cooke, 2005), and companies with unavailable annual reports for the period under study. The study arrived at a sample of seventy (70) firms for the five (5) year period resulting in three hundred and fifty (350) firm-year observations. The five-year period (2013-2017) was selected in order to provide for the use of panel data regression (Clarkson, Fang, Li & Richardson, 2013).

The study utilised the company's annual report as its instrument of data collection due to the degree of reliability and the credibility it exhibits. The annual reports are widely accepted by a variety of users (Abdul Rahman, 2001; Deegan & Rankin, 1997). Besides, the annual reports are statutory reports. They can be accessed more easily than other sources of company information (Suttipun & Stanton, 2012), are more frequently produced (Wilmshurst & Frost, 2000) and are the most reliable place stakeholders often extract information (Choi et al., 2013). Data was obtained from the statement issued by the chairman, the profile of the serving directors, the report of the directors, the CEO, the report of director's shareholdings, statistics of shareholders, financial statements and notes to the account. Specifically, data on the chief executive officer's characteristics was collected from the report of directors, CEO statement and corporate governance report. Data on board size was obtained from the board profile and corporate governance report while data on sustainability reporting was extracted from the corporate social responsibility report, environmental reports, chairman's statement, and corporate governance report. Finally, data for the control variables were collected from the final accounts and Nigeria Stock Exchange fact book. The unit of analysis was the firm.

3.2. Measurement of Variables

Sustainability Disclosures: Sustainability disclosure in this study was operationalized using the social, environmental and governance dimensions of sustainability report**.** Content analysis was adopted in assessing the social and environmental items in the annual reports to arrive at a disclosure index. This approach is selected because it is a valuable research technique for gathering and analysing social and environmental data. It measures the quality of disclosure from the volume of disclosure reported on specific topics or categories (Beattie, Mcinnes & Fearney, 2004). Content analysis allows corporate social and environmental information to be determined systematically, classified and compared. It also allows for the measuring of reported items in terms of themes and evidence (Beattie et al., 2004). The study utilized unweighted disclosure index which incorporates a nominal coding scheme in measuring the disclosure of social and environmental information in the annual reports (Haniffa & Cooke, 2002, 2005). This approach has been adopted because it allows narrative text of the annual report to be scrutinized for the presence of social and environmental items and ignore the non-social and environmental items according to specified areas. To enable the replication of content analysis, a checklist was used and applied. The sustainability disclosure index contained 7 items which are believed to adequately capture the major aspects of sustainability disclosures (See Table 1). Where a firm report on a particular item, a score (1) is given. A maximum score of 7 is given to a company that reports on all 7 sustainability items and a minimum score of 0 to a company that did not report on any item.

Table 1: Sustainability Disclosures Checklist

Social Dimension
CSR disclosure policy
Gifts and donations
Employee disclosures
Complaints disclosure
Environmental Dimension
Environmental disclosure policy
Sustainability disclosure policy
Health and safety

Source: Adapted from Haniffa and Cooke (2005)

CEO Gender: CEO gender is operationally defined as the presence of female directors on the board. In the course of this study, CEO gender is measured using a dummy variable of "0" and "1", with 1 indicating the presence of a female as CEO and 0 indicating otherwise (Ben-Amar, Chang & Mcllkenny, 2017; Gracia-Sanchez et al, 2020).

CEO Expertise: Based on prior studies like Li, Lin and Zhang (2019), CEO expertise is defined as the proportion or percentage of CEOs having specific knowledge of environment or having a strong background in accounting and finance. CEO Expertise was measured using a dummy variable of "0" and "1" with 1 being having having a strong background in accounting and finance or 0 otherwise

CEO Shareholdings: CEO shareholdings is defined as the number of shares owned by the CEO. The study adopted this measure of CEO shareholdings following prior studies (Westphal, 1999). CEO shareholdings was measured as the number of ordinary shares owned by the CEO divided by the total ordinary stock outstanding.

CEO Tenure: CEO power is operationalized using the tenure of the CEO. The study measures CEO tenure as the number of years the CEO has served in the company (Hubbard et al. 2017; Huang, 2013)

Board Size: Board size as a mediating variable was measured as the total number of directors in the board (Zeng Tsai, 2019).

Based on previous studies on CEO characteristics and sustainability disclosures, we include a number of variables such as firm size, profitability, leverage, board size, board independence, institutional shareholdings, sustainability/ CSR committee and industry type to avoid bias.

Firm size: According to the agency theory, the firm size is found to be positively related to disclosure because large firms faces greater public scrutiny as well as stakeholders' responsibility pressures and higher litigation risks. They often require external capital which has a ripple effect on the potential agency cost that results from the conflict of interests existing between management, providers of debt capital and shareholders (Setyorini & Ishak, 2012).The firm's size is proxied by turnover, company's average market value, total assets and number of employees (Kansal et al., 2014; Setyorini & Ishak, 2012). Barbu et al. (2014) provided evidence showing that large firms are likely to comply more with environmental IAS/IFRS than smaller firms in order to reduce societal and political pressure related with environmental issues. In a similar vein, Buniamin (2010) argued that companies that are always in the public view when you consider their size have a higher tendency to provide more disclosures in order to boost their image. Following its extensive use in the prior literature, the logarithm of total assets was used to capture the size of the firm (Ashton et al. 1989).

Profitability: Profitability has been found to have significant effect on voluntary disclosure (see Ahmad et al., 2003; Alarussi, Hanefah, et al., 2009; Haji, 2013; Haniffa & Cooke, 2005; Uwuigbe & Egbide, 2012). It has been captured using a number of measures like return on assets (Setyorini & Ishak, 2012; Uwuigbe & Egbide, 2012), earnings per share (Alarussi, Hanefah, et al., 2009) profit after tax and return on capital employed (Kansal et al.,2014). A good number of the studies found profitability was positively related to disclosure. For instance, Haniffa and Cooke (2005) argued in line with legitimacy theory that there is a tendency for companies with high profit to engage in more disclosures to please their shareholders. Profitability is operationally defined as the return on assets (ROA). The ROA was measured as net profit after tax divided by total assets.

Board independence: From the perspective of agency theory, and in order to reduce opportunism and agency costs of CEOs, the boards should comprise a greater proportion of outside directors. Again, from a resource dependence theory, the outside and independent directors respond more to/promote social and environmental issues due to their long-term benefits. Basically, because of the significant influence of CEOs, a CEO whose power remains unchecked by outside directors is more likely to take self-serving actions that decrease shareholder wealth (Dunn, 2004; Frankforter et al., 2000, Combs et al 2007). The board independence was measured as the proportion of non-executive directors on the board.

Leverage: There are mixed results for leverage with regard to CSR disclosure. It is measured as the ratio of total liabilities to the total assets (Barnea & Rubin, 2010)

Sustainability Committee: The sustainability/CSR committee positively influences the disclosure of CSR/sustainability information. It was measure using a dummy of 1 and 0 with 1 being presence of sustainability or CSR committee or 0 otherwise

Institutional Shareholdings. The presence of institutional investors can enhance and drive CSR disclosure. They have more incentives to demand and monitor information on sustainability issues, and also manage CSR activities than individual investors. Institutional shareholdings were measured as total percentage of shareholdings of 5% and more of the issued share capital.

Industry type: Industries like basic materials, industrial, utilities or nor-cyclic consumer goods and services, and environmental sensitive are considered as high impact to stakeholders and more likely report on CSR to stakeholders (Young & Marais,2012).The ten industry sectors were: agriculture, conglomerates, consumer goods, construction/real estate, industrial goods, ICT, health care, oil and gas, natural resources and services

*3. **Model Specifications***

The model of the effect of CEO characteristics on sustainability reporting is anchored on the managerial power theory which purports that the characteristics of the CEO will have an influence on the decision of the firm to engage in sustainability reporting. The study adapted the model of Herda et al (2013) that focused mainly on board characteristics.
The adapted models are presented in the equation below:

$$SD_{it} = \beta_0 + \beta_1 FSIZE + \beta_2 PROF_{it} + \beta_3 LEV + \beta_4 BIND + \beta_5 INSHD + \beta_6 INDTYP + \beta_7 SUBCOM + \varepsilon_{it} \quad \ldots 1$$

$$SD_{it} = \beta_0 + \beta_1 FSIZE + \beta_2 PROF_{it} + \beta_3 LEV + \beta_4 BIND + \beta_5 INSHD + \beta_6 INDTYP + \beta_7 SUBCOM + \beta_8 CEOGEN_{it} + \beta_9 CEOEXP_{it} + \beta_{10} CEOSHARE_{it} + \beta_{11} CEOTENURE_{it} + \varepsilon_{it} \quad \ldots 2$$

$$SD_{it} = \beta_0 + \beta_1 FSIZE + \beta_2 PROF_{it} + \beta_3 LEV + \beta_4 BIND + \beta_5 INSHD + \beta_6 INDTYP + \beta_7 SUBCOM + \beta_8 CEOGEN_{it} + \beta_9 CEOEXP_{it} + \beta_{10} CEOSHARE_{it} + \beta_{11} CEOTENURE_{it} + \beta_{12} BSIZE + 5\beta_{13} CEOEXP_{it} * BSIZE_{it} + \beta_{14} CEOEXP_{it} * BSIZE_{it} + \beta_{14} CEOSHARE * BSIZE_{it} + \beta_{16} CEOTENURE * BSIZE_{it} + \varepsilon_{it} \quad \ldots 3$$

Where:

SD=Sustainability disclosures; CEOGEN=CEO gender; CEOEXP= CEO expertise; CEOSHARE=CEO shareholdings; CEOTEN=CEO tenure; BSIZE=Board size; BIND=Board independence; FSIZE = Firm size; PROF=Profitability; LEV=Leverage; INSTSHARE= Institutional shareholdings; SUSTCOM= Sustainability committee; INDTYPE= Industry type, $CEOEXP_{it}*BSIZE$ = Interaction of CEOEXP with board size
B0= Constant term, $\beta 1 - \beta 15$ = Coefficients; Ɛ = Error term

Our *a priori* expectations are as follows: $\beta1>0$, $\beta2>0$, $\beta3>0$, $\beta4< 0$, $\beta5>0$, $\beta6>0$, $\beta7>0$, $\beta8>0$, which means we expect a positive relationship between all our variables and sustainability disclosures. The pooled regression model assumes that there is homogeneity between the intercepts (Hendersen & Kaplan, 2000). The multiple regression analysis was used to perform the analyses of the moderating effect of board size on the relationship between CEO characteristics and sustainability disclosures.

4.0. Results

4.1. Descriptive Statistics

The descriptive statistics for sustainability disclosures index, CEO characteristics which comprises four variables (CEO gender, CEO expertise, CEO shareholdings and CEO power) as well as the moderating variable board size and control variables profitability and firm size are reported below in Table 2.

Table 2 Descriptive Statistics of Variables

VARIABLE	OBS	MIN	MAX	MEAN	STD. DEV
SD	350	0	9.000	5.173	1.575
CEOGEN	350	0	1	0.04	0.196
CEOEXP	350	0	1	0.56	0.497
CEOSHARE	350	0	0.240	0.006	0.029
CEOTEN	350	1	33	6.146	5.644
BSIZE	350	4	17	8.98	2.47
BIND	330	2	12	5.64	1.907
PROF	350	-0.526	0.540	0.030	0.108
FSIZE	350	5.400	9.220	7.153	0.797
LEV	350	0.000	1.085	0.907	0.227
INSTSHD	330	0.000	98.25	57.563	27.28
SUSCOM	346	0	1	0.07	0.259
INDTYP	340	0	1	4.15	2.600

SD=Sustainability disclosures; CEOGEN =CEO gender; CEOEXP= CEO expertise; CEOSHARE= CEO shareholdings; CEOTEN= CEO tenure; BSIZE= Board size; BIND= Board independence; FSIZE=firm size; PROF= Profitability; LEV=Leverage; INSTSHD= Institutional shareholdings; SUSCOM= Sustainability committee; INDTYP= Industry type.
Source: Researchers' compilation (2020).

Table 2 shows the description statistics. The average sustainability disclosure index for Nigerian quoted companies of 5.173 during the sample period showed that on the average, more Nigerian companies are reporting sustainability issues in the course of their operations. The mean for CEO gender that only about 4% of the sampled companies had female CEOs. The mean of 0.56 for CEO expertise indicates that at least 56% of the CEOs of the sampled companies had a background in accounting and finance, and advanced degree. The CEO shareholdings revealed a minimum value of 0 and a maximum value of 0.240. On the average, the CEOs own about 6% of the shareholdings, indicating that most of the CEOs had stakes in their companies' shareholdings. The CEO power was measured based on tenure and shareholdings of CEO. The CEO tenure showed period ranging from one (1) year to a maximum of thirty-three (33) years. On the average the CEOs tenure of the sampled firms was about 6.146 years. The average CEOS's shareholdings was about 0.06 %. The board size had between 4 and 17 board members. The mean of 8.91 for board size indicated an average of 9 directors on the companies' board. For the control variables, the firm size measured using the natural logarithm of total assets shows a minimum value of 5.4 and a maximum of 9.22 and the mean value was 7.15. Profitability measured using the return on asset had a minimum value of -0.526 and a maximum value of 0.540. The mean value for profitability was 0. 030. The result shows that while some companies made losses, on the average the companies were profitable. The result for leverage showed the companies are highly geared. The average institutional shareholdings were 57.6% and about 7% of the listed companies in the non-financial had sustainability committee.

4.2. Correlation analysis results

Table 3 shows the correlation analysis for all the variables. The results show there was a negative and significant correlation between CEO gender and CEO expertise with sustainability disclosure r= --0.122 and r= -0.124 respectively. There were positive and insignificant correlation for CEO shareholdings (r= 0.041) and CEO tenure (r=-0.0147) with sustainability disclosures. Board size (r=0.355), board independence (r=0.285) and profitability (r=0.i62) had positive and significant correlation with sustainability disclosures (r=-0.1589). Firm size, leverage, institutional shareholdings and sustainability committee were positive and insignificantly correlated with sustainability disclosures. However, the result shows a weak negative relationship for industry types and sustainability disclosure (r=-0.-0.122). The results generally suggest that there is absence of multicollinearity and that the variables are not measuring the same thing. This is also confirmed with the variance inflation factor (VIF) which is below the threshold value of 10

Table 3. Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
SD (1)	1.00												
CEOGEN (2)	$-.122^{b}$	1.00											
CEOEXP (3)	$-.124^{b}$	.034	1.00										
CEOSHARE (4)	.041	-.030	$.122^{b}$	1.00									
CEOTEN (5)	.011	$.109^{b}$	$.146^{c}$	-.036	1.00								
BSIZE (6)	$.355^{c}$	-.047	-.107	$-.127^{b}$	-.045	1.00							
BIND (7)	$.285^{c}$	-.886	$-.094^{a}$	-.072	$-.151^{c}$	$.837^{c}$	1.00						
FSIZE (8)	.302	.168	.054	-.109	-.126	.426	.324	1.00					
PROF (9)	$.162^{c}$	$-.135^{b}$	.034	.018	$-.211^{c}$	.065	$.103^{a}$	$.193^{c}$	1.00				
LEV (10)	.109	.060	.136	.008	-.041	.090	.090	.119	.043	1.00			
INSTSHARE (11)	.060	-.102	.028	.062	-.145	.146	.207	.326	-.051	.279	1.00		
SUSTCOM (12)	.311	.169	.090	-.048	-.057	.132	.139	.092	.158	.078	-.092	1.00	
INDTYPE (13)	-.122	.113	.000	-.052	.250	-.197	-.153	-.103	.055	.043	-.279	.102	1.00

Note: $^{*\ **\ ***}$ $^{(a,b,c,)}$ significant at 10%, 5% and 1 % respectively

4.3. Multivariate Regression Results

In Table 4, we present the results of the multiple regression analyses used to test the proposed relationships. The coefficient, t-values and the probability values. Model (1) shows for the control variables, FSIZE (β=0.545, p< 0.001), LEV (β=3.621, P<0.05), BIND (β=0.120, P<0.001) and SUSCOM (β=1.514, P<0.001) had significant positive effect on sustainability disclosures, INDTYP (β= -0.083, p<0.001) and INSTSHD (β= -0.005, P<0.1) had significant negative effect on sustainability disclosures. Model (2) shows that CEOGEN (β = 1.116, p< 0.001), CEOSHARE (β = 7.205, p<0.05) and CEOTEN (β = 0.035, p <0.05) had positive and significant relationship with sustainability disclosure whereas CEOEXP (β = -0.653, p<0.001) was negative and significantly related with sustainability disclosures. Therefore, H_1, H_{3a} and H_{3b} were supported Model (3) presents results for the relationship between control variables and sustainability disclosures and the moderating variable (BSIZE).It showed when BSIZE entered the regression equation, the influences of CEOGEN (β= -0.304, p>0.10), CEOEXP (β= -0.099,p>0.10) and CEOSHARE (β = -0.789,p >0.10) were now negative and insignificant. CEOTEN (β = 0.002, p>0.01) was positive but insignificantly relate to stainability disclosures.

Table 4: CEO Characteristics, Board Size and Sustainability Disclosures

Variables	*Model 1*	*Model 2*	*Model 3*
Constant	-2.348	-1.792	-2.271
	(-1.117)	(-0.865)	(-1.074)
FSIZE	0.545**	0.605***	0.554***
	(5.013)	(6.608)	(4.704)
PROF	1.143	1.039	1.231*
	(1.549)	(1.416)	(1.653)
LEV	3.621*	2.323	2.755
	(1.747)	(0.140)	(1.344)
BIND	0.120***	0.117***	0.038
	(2.752)	(2.799)	(0.513)
INSTSHD	-0.005*	-0.005	-0.004
	(-1.702)	(-1.594)	(-1.127)
INDTYP	-0.083***	-1.108***	-0.111***
	(-2.688)	(-3.546)	(-3.428)
SUSCOM	1.514***	1.576***	1.648***
	(5.024)	(5.363)	(5.518)
CEOGEN		1.116***	3.609**
		(2.897)	(1.726)
CEOEXP		-0.653***	0.246
		(-0.423)	(0.311)
CEOSHD		7.205**	26.465
		(2.802)	(1.044)
CEOTEN		0.035**	0.018
		(2.461)	(0.304)
BSIZE			0.132*
			(1.694)
*CEOGEN*BSIZE*			0.304
			(-1.235)
CEOEXP BSIZE*			-0.099
			(-0.417)
*CEOSHD*BSIZE*			-0.789
			(-0.777)
*CEOTEN*BSIZE*			0.002
			(0.291)
R	0.501	0.572	0.594
R^2	0.252	0.327	0.341
Adj R^2	0.235	0.304	0.318
F-Statistics	15.408***	14.032***	10.111***

Note: * $p < 0.10$, ** $p < 0.05$; *** $p < 0.001$ N= 350

Sensitivity Analysis

The presence of more non-executive directors could enhance the board's capacity to monitor and curtail CEO power, and direct CEOs to invest and report on sustainability matters with more long-term benefits (Zeng & Tsai, 2019). Nevertheless, other studies have also found that board independence has negative relationship with sustainability disclosures. To provide more validity to the results obtained in the previous analysis, we proceeded to examine how the board independence moderates the relationship the CEO characteristics and sustainability disclosures. The results presented in Table 5 showed that board independence had weak and not significant influence on CEO characteristics.

Table 5: Robustness Test on CEO characteristics, Board independence and sustainability disclosures

Variable	Statistic
Constant	-1.231
	(-0.575)
Control Variables	
FSIZE	0.576***
	(4.826)
PROF	0.997
	(1.247)
LEV	1.951
	(0.931)
BSIZE	0.099*
	(1.638)
INSTSHD	-0.004
	(-1.205)
INDTYP	-0.110***
	(-3.420)
SUSCOM	1.648***
	(5.225)
Independent variables	
CEOGEN	0.391
	(0.391)
CEOEXP	0.006
	(0.013)
CEOSHD	-10.63
	(-0.385)
CEOTEN	-0.013
	(-0.294)
Moderator Variable	
BIND	0.023
	(0.230)
Interaction variables	
*CEOGEN*BSIZE*	0.152
	(0.063)
CEOEXP BSIZE*	-0.112
	(-1.324)
*CEOSHD*BSIZE*	3.676
	(0.643)
*CEOTEN*BSIZE*	0.009
	(1.036)
R	0.583
R^2	0.340
Adj R^2	0.318
F-Statistic	10.062***

Note: * $p < 0.10$, ** $p < 0.05$; *** $p < 0.001$ N= 350

4.4. Discussion

The results of the regression results showed that CEO gender had a t-value of 1.116 with a probability value of 0.00. This result showed there is a significant positive effect of CEO gender on sustainability disclosures. Therefore, hypothesis one (H_1) is supported. The results of the multiple regression estimations, the effect of CEO gender on sustainability disclosure is positive and statistically significant which implies that the presence of a female CEO leads to more sustainability disclosures by the firms support the social role theory which argues that there are certain character traits, interaction styles and patterns of reasoning that are generally ascribed as female attributes which provide explanations to the emphasis on social and environmental issues which form the bedrock of sustainability disclosure by women (Boulouta, 2013; Eagly,2009). The result is also in tandem with prior empirical studies such Odia (2009), Lewis et al (2014) who found female CEO positively relate to sustainability disclosures; and Ben-Amar et al. (2017) that found the likelihood of voluntary climate change disclosure to increase with percentage of women on the boards.

Results show that CEO expertise has a significant negative relation with sustainability disclosure. The finding does not support the resources dependence theory which suggest the extent to which the CEO can utilize his or her will, skills to influence the activities of the company (Buchholtz, Young & Powell, 1998; Finkelstein, 1992; Haynes & Hillman, 2010; Hickson, Hinings, Schneck & Pennings, 1971). The negative and significant effect on sustainability disclosure implies CEOs expertise and knowledge on financial matters did not lead to improved sustainability disclosures. The result is also not in tandem with prior studies like Finkelstein et al (2009), Huang (2013), Lewis et al (2014), Li, Lin and Zhan (2019), García-Sánchez & Martínez-Ferrero (2019), Gracia-Sanchez et al (2020) which found that CEOs education background and financial experience have a significant effect on firm's behavior and outcomes. Therefore, our hypothesis two (H_2) of positive relationship between CEO expertise and sustainability disclosures is not supported.

CEO shareholdings was positive and statistically significant at the 5% level. The result agrees with prior studies such as Chau and Gray (2002); Jain and Habis (2009), Kim and Kim (2020) and Odia (2013) of a positive relation between directors/ managerial ownership and CSR disclosures. As distinct from managerial power theory, the result supports the agency theory that CEOs' shareholdings will help to reduce the information asymmetries between the shareholders and managers as a result of increased sustainability disclosures which can help to protect stakeholders' interest. Thus, hypothesis H_{3a} is supported.

The CEO tenure had a positive and significant effect on sustainability disclosures. This indicates that that the longer tenured CEO leads to increase in sustainability disclosures. The result is at variance with the position of the stewardship theorists and managerial power theory that long-tenured CEOs will lead to lower sustainability disclosures. The results agree with McCarthy, Oliver and Song (2017) and Lewis et al (2014) who found a positive relationship between CEO tenure and CSR disclosure but contradict the findings of Mohd-Saleh et al. (2012) and Ahmad et al (2017) that long tenured CEOs have negative impact on CSR disclosures. Thus hypothesis (H_{3b}) is supported.

The negative and insignificant results showed that board size failed to moderate the relationship between CEO characteristics of gender, expertise shareholdings on sustainability disclosures. Therefore, hypotheses H_{4a}, H_5 and H_6 are not supported. The negative results may be due to the presence of powerful CEO with a submissive and weak board thereby leading to diminished transparency and sustainability disclosure. However, board size has a positive but not a significantly moderated relationship of CEO tenure on sustainability disclosures. This indicates that as the tenure increases, and CEO become more powerful, the presence of a large board is still vocal enough to curtail decisions and policies that are not geared towards improving sustainability disclosures. Thus, hypothesis H_{4b} is not supported. The results do not agree with previous studies that have found board size to positively influence sustainability disclosures (Zeng & Tsai, 2019; Wang et al. 2018; Haji, 2013; Ajibolade & Uwuigbe, 2013).

5.0. Conclusion and recommendations

5.1. Conclusion

The study examined the moderating role of board size on the relationship between CEO characteristics and sustainability disclosures in Nigeria. The overall results from the multiple regression analyses revealed that CEO gender, shareholding and tenure were positive and significantly related with sustainability disclosure supporting the social role theory and prior studies; CEO expertise had negative and significant relationship with sustainability disclosures. The results also revealed board size failed to moderate the relationship between CEO and characteristics of gender, experience, shareholdings and sustainability disclosure unlike the relationship between CEO shareholdings and sustainability disclosure.

5.2. Implications

The results of the study add to the growing body of corporate governance, CEO characteristics and sustainability literature within an emerging economy. The study offers some practical suggestions to various stakeholders, in particular to the firms, shareholders and policy makers in ensuring that their investments are managed by the CEOs as powerful figures in the board in a manner that will ensure a sustainable future. First, the results confirm that CEO gender or the presence of a female CEO can increase sustainability disclosures. Therefore, there is need for policy makers to facilitate the appointment of more female CEOs and directors to drive the board and firm towards a sustainable future. Second, since CEOs' shareholdings showed positive and statistically significant effect on sustainability disclosures, it is recommended that the CEOs should be compensated with more than share ownership as this can help to align their interests with other stakeholders by reducing the information asymmetry between them and the shareholders and by positively influencing sustainability disclosures. Third, the negative effect of CEO expertise on sustainability disclosures bring to the fore the need to re-oriented CEOs and board members with the requisite skill and experiences on corporate sustainability in order to engender improved sustainability disclosures. Lastly, board size was found to have no effect on the relationship between CEO characteristics and sustainability disclosure. The study recommends that companies should be increase the number of female directors in their board, with the necessary experience, skills and education considering such vast boards can re-direct and control even a long serving CEO.

5.3. Limitations and directions for future studies

This study's results should be interpreted carefully because this research is subject to certain limitations. First, we measure sustainability disclosures using only seven indices which may not capture the whole area of sustainability reporting. Future studies should use a more detailed measure to test the robustness of our findings. Second the measure of CEO experience using the possession of accounting or finance knowledge. This may have affected the results. Future studies could consider using other measures like formal and profession education. Third, this study recommends the investigation of SMES and companies in the financial sector of the Nigeria Stock Exchange. Future studies might consider examining these sectors to bridge the gap in knowledge. Lastly, the current study examined four CEO characteristics; CEO gender, CEO expertise, CEO shareholdings and CEO power. Future studies may consider other CEO characteristics such as the CEO age, insider CEO etc and also examine the moderating effect of other corporate governance mechanisms on sustainability disclosures.

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