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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

# Board structure and the likelihood of financial statement fraud. Does audit fee matter? Evidence from manufacturing firms in the East Africa community

Lucas Ekiru Kaituko<sup>1\*</sup>, Peter Nderitu Githaiga<sup>1</sup> and Stephen Kimutai Chelogoi<sup>1</sup>

**Abstract:** This study examines the moderating effect of audit fee on the relationship between board structure and the likelihood of financial statements fraud (LFSF). The study uses the logistic regression and a sample of 15 manufacturing firms listed within the East African Community partner states from 2007 to 2021. The Beneish M-Score is used a proxy measure of the likelihood of financial statements fraud. The findings of this paper revealed that board gender diversity, board financial expertise, board independence, frequency of board meetings, audit fee are significant variable in reducing the likelihood of financial statements fraud. The result further demonstrated that the impact of board structure on LFSF is significantly influenced by audit fee. The findings of this study provide valuable information for investors and regulators in the EAC and other regions with similar legal and institutional environment on the nexus between board structure, audit fee and LFSF. The current study contributes to the board structure and LFSF literature by assessing whether audit fee moderates the relationship among listed manufacturing firms in the EAC. Like prior studies on financial statements fraud, the main limitations of this study is the measurement of LFS. Hence, the study wholly inherited the limitations of the Beneish M-Score.

**Subjects:** Finance; Business, Management and Accounting; Forensic Science - Law;

**Keywords:** Likelihood of financial statement fraud; board structure; audit fee; East Africa community

### 1. Introduction

Over the last decades, regulators, professionals, and scholars across the globe have paid close attention to a number of incidents of financial statement fraud involving Enron, Parmalat, Global Crossing, and WorldCom, and their subsequent collapse. Earlier studies attribute these largescale financial reporting scandals to weak corporate governance mechanism (García Lara et al., 2009). According to Diouf and Boiral (2017), financial statement reporting is one of the essential information standards that publicly traded companies are required to prepare to comply with legal requirements. In general, a publicly traded company functions as an information provider so that investors, who are the primary information recipients, can use the information for their

decision-making processes. Financial statements, according to the existing literature (Epstein & Jermakowicz, 2008), give useful information on a company's financial health, performance, cash flows, and other matters that aid in decision-making. Information value is highly dependent on the accuracy of financial data (Ball & Shivakumar, 2005).

Strong corporate governance mechanisms can mitigate corporate fraud, according to empirical evidence (Girau et al., 2022; Nasir et al., 2019; Wang et al., 2022). Cadbury (1992) defines corporate governance as the system by which a corporation is directed and controlled. Darko et al. (2015) cite board structure, ownership structure, and corporate control as the three essential dimensions of corporate governance. Board structure refers to the characteristics of the board, such as its size, independence, expertise, gender diversity, and meeting frequency, that determine its effectiveness (Gafoor et al., 2018) (Kouaib & Almulhim, 2019). Board structure influences the board's ability to provide appropriate guidance and mitigate managerial opportunism. In addition, research demonstrates that board composition influences firm performance and firm value (Berezinets et al., 2017; Lei & Song, 2012). While, Nguyen et al. (2022) report that the frequency of meetings of the board, board expertise, and board independence positively influence the truthfulness of the financial reporting. Despite the importance of board structure in reducing managers' opportunistic tendencies, financial statement fraud continues to threaten shareholders' interests due to managerial discretion in financial reporting.

In the agency theory developed by Jensen and Meckling (1976), conflicts of interest between the management as agent and the management as principal can lead to financial statement fraud. Because of this, management can commit fraud by hiding information from the principal. Fraud is defined by the Association of Certified Fraud Examiners (ACFE) as an action taken with the intent to defraud or violate the law (Association of Certified Fraud Examiners Indonesia, 2019). Fraud is an illicit act committed with the intent to obtain personal benefits. Unknowingly, fraud can diminish a company's good name or reputation in maintaining its business continuity (Sari & Nugroho, 2021). In order to safeguard shareholders from management's exploitative use of accounting information, attention has been directed toward the company's governance in the hopes of bolstering the director boards' supervisory role and allowing them to exercise their competencies and powers independently of executive management. They've both stressed the need of boards of directors' autonomy. The board of directors is responsible for exercising oversight over the company's financial reporting process, internal processes, and external elements (Beasley, Carcello, Hermanson, & Neal, 2009).

Inconsistent results have been found in studies that have looked at the role of board structure in preventing financial statement fraud (Chalaki et al., 2012; Kamarudin et al., 2018; Owens-Jackson et al., 2009; Park & Shin, 2004; Salleh & Othman, 2016; Wu & Li, 2015). In light of these conflicting findings, it is important to investigate moderating factors including board structure and financial statement fraud. It is also necessary to examine the relationship in different institutional settings due to the fact that corporate governance legislation varies.

There is a correlation between board composition and audit fees. The audit fee "is the compensation for the efforts that auditors apply in the audit engagement and the risks that auditors take regarding misreporting by the client," write Li et al. (2020). According to Carcello et al. (2002), an efficient board would rather pay a higher audit charge in order to improve the quality of audits and financial reporting. According to Nekhili et al. (2020), an increase in the number of women serving as independent directors and on audit committees has been shown to increase the effectiveness of board monitoring, which in turn affects the auditor's assessment of audit risk and results in lower audit fees. In a similar vein, Yatim et al. (2006) state that more robust internal governance mechanisms result in cheaper external audit fees for the company. In past audit fee studies, auditors' effort was frequently estimated based on audit fees (Hribar et al., 2014; Lobo & Zhao, 2013). Low-cost audits may indicate a reduced level of auditor effort, which may increase the likelihood of financial statement fraud. After fraud restatements, auditors face much more severe

consequences, such as litigation and damage to their reputation. Eshleman and Gou (2014) hypothesized that higher audit fees are indicative of more auditor labor and, consequently, a higher quality audit. Higher audit expenses are the result of the auditing firm spending more time on the audit and/or charging a higher rate because it is a superior auditor. Low audit fees, on the other hand, indicate less audit labor and, consequently, lower audit quality. However, the impact of auditor characteristics on the quality of financial statements is not entirely obvious due to the following issues: First, financial statement quality is difficult to define and even more difficult to measure. Second, it is unclear how audit firm characteristics affect audit quality. The empirical research continues to yield inconsistent results. For instance, Mohammed et al. (2018) found contradictory results regarding the impact of audit fees on financial report quality. Mixed outcomes can be attributed to the fact that research assesses specific aspects of financial statements with the expectation that these aspects will determine the quality of financial statements (Van Beest et al., 2009). Thirdly, reports include both financial and non-financial disclosures necessary for decision making.

While the number of empirical studies on financial statement fraud is growing, the majority of studies are either from a single country or are based on data from a single organization. The studies also centered on developed or developing economies, but not less developed nations. Little research has been conducted on developing nations, particularly in East Africa. This study aims to bridge that divide by focusing on listed firms in the manufacturing sector in Kenya, Tanzania, and Uganda, three East African nations. These nations constituted the original East African Community block and have economic, political, and monetary policies outlined in treaties. The issue of financial statement fraud is of great importance in the East African region since the number of reported financial statement fraud has increased. Therefore, this study aims to draw connections between these strands of research by investigating the connection between board composition, audit costs, and the potential for financial statement deception. This research looks at the East African Community (EAC), an area with a stagnating manufacturing sector that contributes around 12% to GDP, to determine if audit fees moderate the association between board structure and financial statement fraud.

This study makes several contributions to the current literature. First, the study sheds light on the inconclusive association between board structure, audit fees and financial statement fraud. As far as we are aware, this is the first study to aggregate and compare data on the prevalence of financial statement fraud in the East African manufacturing sector. Second, our study provides additional aspect of not only demonstrating the existence of financial statement fraud, but also highlighting the role of audit fees in financial statement fraud. Third, the study adds to the literature of financial statement fraud in different ways which include: provision of evidence through empirical study that financial statement fraud is also persistent in less developed countries and more so in East Africa. Furthermore, several manufacturing firms within the EAC, for example Mumias Sugar Company have experienced severe corporate governance lapses and subsequent insolvency. Additionally, a number of listed firms in other sectors, including Express Kenya, Sameer Africa Plc, Athi River Mining, EA Cables Ltd, East Africa Portland Cement, Home Africa Ltd, Olympia Capital Holdings Ltd, Kenya Airways, and Eveready East Africa Uganda Clays Limited (UCL) are experiencing financial distress. The remainder of the paper proceeds as follows. The next section discusses the background of the study. The Section 3 provides theoretical underpinning. The fourth section discusses the empirical literature and hypotheses development presents the research design. Section 4 presents and discusses the findings. In the last section, we conclude, provide the implications, limitations and suggestions for further studies.

## 2. Background

### 2.1. East Africa community listed manufacturing firms

Manufacturing drives EAC productivity, formal employment, innovation, technology, and exports. Kenya, Tanzania, Rwanda, and Uganda have 11.0%, 10.1%, 6.6%, and 8.6% manufacturing GDP

shares respectively. EAC partner states' manufacturing policies are founded on factors that have made manufacturing the foundation of economic development. Despite extensive regulation and standards governing financial reporting, corporate collapses and prior studies have strongly indicated that financial statement fraud is becoming a regular business practice in most manufacturing firms listed at the East African Securities Exchange Association. The board of directors is the highest decision-making body in an organization, and as such, it is charged with ensuring the company's long-term viability and success by effective leadership, initiative, honesty, and sound judgment. According to recent events in the business sector, however, boards' lack of independence, lack of financial specialists, and lack of diligence in their day-to-day monitoring and control functions mean that this responsibility is far from being realized. Due to the severe risk they pose to a company's continued existence, these weaknesses often lead to instances of corporate fraud. Because of its low competitiveness, regulatory constraints, taxes, and high cost of production, the EAC's manufacturing sector is also susceptible to significant competition from Asian countries, particularly China. Furthermore, certain EAC-based manufacturers like Mumias Sugar Company have faced major corporate governance problems, leading to their eventual insolvency. Express Kenya, Sameer Africa Plc, Athi River Mining, EA Cables Ltd., East Africa Portland Cement, Home Africa Ltd., Olympia Capital Holdings Ltd., Kenya Airways, and Eveready East Africa Uganda Clays Limited (UCL) are only some of the companies listed across industries that are in trouble.

As of 2022, the EAC had 117 companies listed across five functioning securities/stock exchanges: 60 companies at the Nairobi Securities Exchange, 28 companies at the Dar es Salaam Stock Exchange, 18 companies from the Uganda Securities Exchange, and 10 companies at the Rwanda Stock Exchange. Only 18 of these are considered manufacturing enterprises. In addition, the EAC partner states seems to have adopted relatively similar corporate governance codes and financial reporting standards. The Kenyan Companies Act of 1948 governs listed company corporate governance. The 2002 Kenyan Companies Act borrows from England and was recently amended in 2015. The Capital Markets Authority (Kenya) published corporate governance (CG) guidelines for publicly listed businesses in 2002. The standards recognize business performance, capital formation, shareholder value maximization, and investor rights (CMA, 2002). The Banking Act (revised 2015), State Corporations Act, and "Guidelines on Corporate Governance Practices," Gazette Notice No. 3,362, issued in 2002 and replaced in 2015, summarize the key issues on good CG practices and recommended best practices for listed companies. The recommended Guidelines for Corporate Governance for listed companies in Uganda were issued in 2001. However, the Capital Markets Authority (Uganda) issued the Capital Markets Corporate Governance Guidelines (2003) for firms trading on the Uganda Securities Exchange (USE). These Ugandan Corporate Governance Guidelines set the minimal bar for excellent corporate governance for public enterprises and corporate debt issuers. Capital Markets Corporate Governance & Guidelines (2003) established governance frameworks that encourage local and regional capital market growth.

The Companies Act (CA) 2002 governs the formation and management of corporate entities in Tanzania. The Steering Committee and Capital Markets and Securities Authority (2002) issued the first CG recommendations. These rules, like Kenya's, stressed the board of directors' involvement in corporate reporting (Waweru & Prot, 2018). The Companies Act 2009 of Rwanda governs corporate governance, including director duties, shareholder rights, minority shareholder protection, capital preservation, and reporting requirements such as yearly returns and external audits. Corporate governance requirements are in the Capital Market Corporate Governance Code No. 9, 2012. All listed companies follow the code. The financial institution corporate governance regulation (No. 06/2008) requires shareholders to approve board members, internal audits, board meetings, board committees, management responsibilities, and a code of conduct.

Along with the adoption of CG codes, the rise in corporate scandals has prompted the creation and use of stricter financial reporting standards (Viana et al., 2022). In addition, IFRS proponents think that widespread adoption of a standardized financial reporting language will increase capital market liquidity and encourage consumer trust, both of which will ultimately improve financial

performance. According to Epstein (2009), the adoption of IFRS boosts market liquidity, lowers transaction costs for investors, lowers the cost of capital, and makes it easier for capital to form and move internationally. Numerous studies on IFRS adoption at the national level show that IFRS-adopted nations have experienced sharp gains in FDI (Irvine & Lucas, 2006). According to Outa, Ozili, and Eisenberg (2017), the EAC partner states have fully accepted IFRS and formed professional bodies entrusted with establishing and enforcing accounting standards. IAS/IFRS were implemented in Kenya by the Institute of Certified Public Accountants (ICPAK) in 1999, without changes to the effective date or other elements. All non-publicly accountable entities, as defined by ICPAK, may choose to use either full IFRS or IFRS for SMEs. Additionally, a framework that exempts SMEs from audits was introduced by the Companies Act of 2015. The Companies Act defines a small firm as one with a net asset of Ksh 20 million, a gross turnover of Ksh 50 million, and 50 workers. However, the Act does mandate that they prepare financial reports and submit them to the register as returns at the end of each reporting period.

The Companies Act of 2012 and the Accountants Act of 2013 in Uganda set down the requirements for corporate accounting, auditing, and financial reporting. All entities must prepare financial statements in accordance with the Fifth Schedule of the Companies Act, according to the law. The Institute of Certified Public Accountants of Uganda (ICPAU), which has previously embraced IAS/IFRS, is given additional authority to establish accounting standards by the Accountants Act (2013). The Institute of Certified Public Accountants Uganda (ICPAU) is in charge of establishing Uganda's relevant private sector accounting standards in compliance with the Accountants Act of 2013. The Institute approved the IFRS as published by the IASB (without changes) in 1998. It is a requirement for all public interest entities (PIEs) to use IFRS. However, other companies are permitted by the Institute to use IFRS or IFRS for SMEs (approved in 2015 and implemented in 2017). The Bank of Uganda, the Uganda Stock Exchange, the Uganda Retirement Benefits Regulatory Authority, and the Insurance Regulatory Authority work with the Institute to further enforce the implementation of IFRS by businesses that fall under their purview.

According to Tanzania's Companies Act of 2002, all corporate bodies have to prepare financial statements in accordance with the guidelines issued by the National Board of Accountants and Auditors (NBAA) or the Ministry of Finance and Planning of Tanzania (MoFP) (NBAA). The NBAA was created by the Auditors and Accountants (Registration) Act (1972). Tanzania adopted the entire set of IAS/IFRS Standards as published by the IASB in a technical statement issued by the NBAA in 2004. The NBAA announcement also applies to any upcoming IASB standards, changes, and interpretations that are released. The statement also lists the entities that may use IFRS for SMEs and those that must use full IFRS. However, all Public Interest Entities (PIEs), which include listed companies and financial institutions, are required to utilize Full IFRS in all their financial reporting. The Rwandan Companies Act of 2018 outlines the steps for generating and presenting financial statements and requires that they be prepared in conformity with international accounting standards (IAS). The Institute of Certified Public Accountants (iCPAR) has the authority to develop IFRS-compliant accounting standards. The iCPAR was founded as the nation's accounting and auditing standard-setter in accordance with Article 3 of the iCPAR Law (2008). iCPAR adopted the entire IAS/IFRS in 2009 for use by businesses with public accountability, and IFRS (SMEs) for use by all other businesses. Without making any changes, iCPAR adopted the ISA as it was published by the IAASB. A licensed member of iCPAR is additionally required by the firms Act to annually audit the financial statements of all firms, with the exception of tiny private ones.

## **2.2. Financial statement fraud**

According to the Association of Certified Fraud Examiners (2011), financial statement fraud occurs when an organization willfully misrepresents its financial status by making a material falsification of fact or failing to disclose a material fact. According to Albrecht et al. (2015), financial statement fraud occurs when company officials commit fraud on the company's behalf in order to make a reported financial statement appear more favorable than it actually is. Financial statement fraud, as defined above, is the deliberate misrepresentation or misclassification of items in



a financial statement with the purpose to mislead users into making a different choice. Those in high-ranking management positions who have access to and authority over a company's financial data are the most likely perpetrators of fraud (Bishop, Dezoort, & Hermanson, 2017). Over the last decades, regulators, professionals, and scholars across the globe have paid close attention to a number of incidents of financial statement fraud involving Enron, Parmalat, Global Crossing, and WorldCom, and their subsequent collapse. Earlier studies attribute these largescale financial reporting scandals to weak corporate governance mechanism (García Lara et al., 2009). According to Priantara (2013), financial statement fraud is any scheme to deceive investors or creditors by falsifying information in financial statements. The tampered report is useless for making decisions because of the false information it contains.

Globally, corporate fraud has significant financial and non-financial effects on businesses. Annually, the Association of Certified Fraud Examiners (ACFE) conducts a global survey on fraud. This survey provides a comprehensive examination of occupational fraud's costs, methods, victims, and perpetrators. The 2018–2019 survey examined 2,504 cases in 125 nations. It was determined that an average company loses 5% of its annual revenue to fraud. As an illustration of the extent of this estimate, applying this percentage to the estimated gross world product for 2019 of \$90.52 trillion would result in a global fraud loss of approximately \$4.5 trillion (The Association of Certified Fraud Examiners, 2018).

### **2.3. Board structure**

The term “corporate governance” refers to the structure put in place to guide and monitor the actions of a corporation (Cadbury, 1992). Darko, Aribi, and Uzonwanne (2015) identify board structure, ownership structure, and corporate control as the three most important aspects of corporate governance. The size, independence, expertise, gender diversity, and frequency of board meetings are all aspects of board structure that affect the board's efficiency (Gafoor et al., 2018). Experts agree that a lack of independent directors (Beasley, 1996), financial expertise (Agrawal & Chadha, 2005), management dominance (Dechow et al., 1996), and board meetings (Xie et al., 2003) are all signs of a dysfunctional corporate governance mechanism. How effective a board is at guiding the company and preventing managerial opportunism can be affected by the way it is structured (Kouaib & Almulhim, 2019) (Berezinets et al., 2017; Lei & Song, 2012) and other research suggest that board size and composition affect company performance and value. Managerial discretion in financial reporting continues to harm shareholder interests through financial statement fraud, despite the crucial function of board structure in limiting managers' opportunistic tendencies.

Growing recognition has been given to the significance of corporate governance and, in particular, its function in ensuring accurate financial reporting and preventing fraud. Good governance has long been regarded as essential to assuring that stakeholders continue to recognize a company's worth. According to Levitt and Securities, U. S. (2000), effective corporate governance is an essential element of market discipline rather than a mere business practice for companies. In order to maintain managerial stewardship, corporate failures have underscored the importance of accountability, both from corporate boards and auditors. In response to numerous high-profile corporate failures, many nations have enacted corporate governance reforms designed to protect investors' interests. Regulators have enacted rules aimed at enhancing the character of corporate governance measures implemented by businesses. (Farber, 2005) The majority of regulatory reforms are predicated on the notion that stronger governance is associated with more credible financial reporting. However, the majority of these disclosures are voluntary, and those that are mandatory carry minimal penalties. This circumstance frequently results in feeble corporate governance structures, especially in developing economic contexts such as East Africa.

### **2.4. Audit fees**

Due to several highly publicized financial reporting fraud cases (e.g., Enron, Tyco International, and WorldCom), the function of external audit in assuring the quality of financial statements has come

under intense scrutiny. Earlier studies associate audit fee to audit quality (Hoitash et al., 2007; Krauß et al., 2015). Rusmanto and Waworuntu (2015) defines audit fee as “the cost incurred by the company to pay a public accounting firm in order to audit the financial statements of the company.”

In past audit fee studies, auditors' effort was frequently estimated based on audit fees (Hribar et al., 2014; Lobo and Zhao, 2013). Low-cost audits may entail a reduced level of auditor effort, which may increase the likelihood of restatements. Although it compensates the financial auditor for the services he provides within the scope of his mission, audit fees pose a threat to the auditor's compliance with the fundamental ethical principles of independence, objectivity, and professionalism (Wines, 2011). Consequently, Cobbin (2002) asserts that a high level of audit fees can be caused by a high level of client-associated risk, which will compensate for the additional work volume or potential additional costs incurred by the auditor as a result of potential litigation. In light of the agency theory, Jensen and Meckling (1976) consider audit fees to be shareholder-supported monitoring costs. In this circumstance, auditors must verify the activity in order to determine if the conduct is in the best interests of the company and its shareholders. Thus, one can conclude that an appropriate level of audit fees will contribute substantially to a reduction in fraud risk. The relationship between audit fee and the credibility of financial reports has been a subject of numerous and contradictory arguments. According to DeAngelo (1981a, 1981b), Magee, and Tseng (1990), economic rents from audit fees can strengthen the link between client and auditor, supporting the SEC's main contentions. An audit firm is more motivated to give in to client demand as the economic bond grows. In this regard, when the audit fee imposed by the auditor is high compared to the size of the company, investors would view the auditor's independence to be compromised and the firm's financial statements to be less dependable. Instead, Carcello et al. (2002) propose that numerous independent boards invest in more extensive audits to provide greater oversight. In this case, a firm's financial statement should be considered reliable if the audit fees is considerably high. According to Carcello et al., audit fees are positively correlated with the proportion of outside directors on the board and the total number of board meetings held annually. These options give rise to opposing hypotheses regarding the relationship between audit fees and the cost of debt. High audit fees might be a message to lenders that financial statements are trustworthy and that the risk of default is low, as suggested by Carcello et al. (2002). Therefore, audit fees ought to bringing down the cost of debt. On the other hand, if large audit fees erode auditor independence and strengthen the client-auditor economic relationship, there should be a higher cost of debt that accounts for the higher risk of relying on financial statements. The link between the financial statement information and the cost of capital is also affected by these alternate explanations. The relationship between accounting information and the cost of debt will be more significant if audit costs boost the credibility of financial statements. This implies that the relationship will be weaker if audit fees reduce the credibility of financial reports.

Theoretically, audit effort (as measured by audit fees) and financial report restatements should have a negative relationship, as an increase in audit effort implies that auditors are more likely to identify errors or other issues that could lead to a restatement (Shibano, 1990; Matsumura and Tucker, 1992; Lobo and Zhao, 2013). Other studies, however, have found either a positive correlation or no correlation between audit fees and restatements (Kinney et al., 2004; Stanley & DeZoort, 2007; Cao et al., 2012; Hribar, Kravet, and Wilson, 2014). The relationship between theory and empirical findings in this field remains inconsistent (Lobo and Zhao, 2013)

### 3. Theoretical framework

Agency theory has been described as the cornerstone of corporate governance studies (Thrikawala, 2016; Alhossini et al., 2021). According to the agency theory (Jensen & Meckling, 1976), an organization is a contract between the owners of economic resources (principals) and the managers (agents) responsible for controlling those resources. There are competing goals play in this contractual arrangement. Managers work for the owners, but they have their own goals



in mind when it comes to compensation (Jensen & Meckling, 1976). Role conflicts often emerge when there is an imbalance of information between two parties (Chrisman, Chua, & Litz, 2004). In other words, when it comes to making important strategic and operational decisions, agents have greater knowledge than principals do (Ross, 1973). Manawaduge (2012) echoes this sentiment, stating that the principal-agent relationship is fraught with difficulties due to information asymmetry, moral hazards, and adverse selection. By bringing principals and agents closer together, agency theory hopes to lessen the potential for agency conflicts and the expropriation of shareholders. Executive directors are accused of taking advantage of their access to confidential information for personal gain in the existing literature (Black, Jang, & Kim, 2006; Chalevas, 2011; Jensen & Meckling, 1976) and of taking advantage of shareholders' wealth by receiving excessive compensation in the form of bonuses and salaries (Berle & Means, 1932; Ntim, Opong, Danbolt, & Thomas, 2012). Corporate governance procedures have been proposed by academics as a way to reduce agency costs and prevent financial statement fraud. According to Solomon (2010), it is possible to use legal contracts to keep managers in check thanks to agency theory.

Throughout the East African region, many manufacturing firms have majority share ownership, which gives those shareholders increased authority but also increases the risk of corruption due to lax oversight. The expropriation of minority shareholders is possible due to the highly concentrated ownership structure of enterprises, which allows them to dominate shareholders and make choices that favor them (Manawaduge, 2012). Regulation authorities in East Africa have implemented corporate governance regulation reforms to help manufacturing enterprises overcome the aforementioned challenges. In order to level the playing field between managers, owners, and other stakeholders, businesses must provide data pertaining to corporate governance. In summary, good governance is thought to reduce agency costs in accordance with agency theory (Arslan & Alqatan, 2020). Successful corporate governance frameworks can prevent opportunistic managerial conduct, which can be studied using the framework provided by agency theory. According to agency theory, corporate governance reduces the possibility of financial statement fraud by making disclosures about company governance more credible and transparent.

#### **4. Literature review and hypotheses development**

##### **4.1. Board independence and financial statements fraud**

Based on the concept that managers have self-interests, the agency theory proposes that independent directors are an efficient monitoring tool for protecting shareholders, discouraging managers from acting in their own best interests, and decreasing principal-agent conflict. In light of this, it has been found that boards with a higher number of independent directors are better able to carry out monitoring functions and support improved business performance (Fama & Jensen, 1983; Jensen & Meckling, 1976). There is conflicting evidence in the empirical literature about whether or not an independent board can prevent corporate fraud.

Wu and Li (2015) used data on Chinese stocks from 1999 to 2005 and found that as board independence increased, the chance of financial statement fraud decreased. Research conducted by Busirin et al. (2015) using information gathered from 372 Malaysian publicly traded businesses between 2010 and 2013 revealed a negative correlation between board independence and earnings manipulation. According to the findings, a lower propensity for earnings manipulation is associated with a greater proportion of independent directors. The effects of corporate governance procedures, financial incentives, and capital structure on fraudulent and honest businesses were studied by L. Chen and Lin (2007). The authors looked at a cross-section of Chinese public companies that went public between 2001 and 2005. The authors discovered that businesses with a lack of independent directors and chief executive officer duality were more likely to falsify their financial statements. Using data from 2000–2016 on a sample of fraudulent firms in Malaysia, Girau et al. (2022) discovered that increasing the size of the board of directors and increasing the salary of senior directors helped reduce corporate fraud. However, no correlation between board independence, board meeting frequency, CEO duality, CEO age, or share ownership owned by directors and the CEO and corporate fraud was found by the authors. Using

a sample of 111 fraud firms and 111 non-fraud firms, Persons (2005) found that the likelihood of fraud decreases when the audit committee consists entirely of independent directors and when members of the audit committee serve on the boards of fewer companies. Additionally, the study did not find any statistically significant correlation between board independence, audit committee expertise, or nominating committee independence and the chance of fraud. Using a sample of 78 Australian enterprises that fell prey to fraud between 1988 and 2000, Sharma (2004) looked into the effect of institutional ownership and the BOD characteristics (independence and CEO duality). This study found that having a CEO who is also a board member increased the chance of fraud, but that this risk was reduced when there was a significant number of independent board members and a large number of institutional shareholders. Corporate governance attributes such as board size, board independence, ownership concentration, institutional ownership, and financial reporting quality were found to have no correlation in a study conducted by Chalaki et al. (2012) using a sample of 136 firms listed on the Tehran Stock Exchange (TSE) between 2003 and 2011. Our study presupposes that:

**H1:** *board independence has a negative effect on the likelihood of financial statements fraud*

#### **4.2. Female directors and financial statements fraud**

Gender diversity is now recognized as a key component of good corporate governance (Sultana et al., 2020). Some countries' governments have mandated gender quotas for corporate boards (Reddy & Jadhav, 2019) to ensure that boards are as diverse as possible. In the context of financial reporting decisions, having a woman on the board has been shown to increase the quality of accruals and reduce the number of accounting restatements (Al-Absy, 2022). In a similar vein, Maulidi (2023) argues that more women on the board increases its ability to oversee managerial actions since female board members are more likely to use high-quality disclosures. Ghaleb et al. (2021) assert that gender diverse boards are effect in monitoring earnings manipulation. According to Garcia-Sanchez et al. (2017), the conservativeness, risk aversion, and ethical behavior of female directors affects the quality of financial reporting. Accounting and Auditing Enforcement Releases (AAERs) from 2011 to 2021 were used to compile a sample of 24,080 firm-year observations from fraud firms that Maulidi (2022) evaluated. According to the author's research, female corporate leaders are less likely to commit corporate fraud in the setting of non-state-owned firm environments. However, the authors found that female corporate leadership roles remain underrepresented in the boardrooms of enterprises with a history of state ownership. Wang et al. (2022) used a sample size of 20,662 observations from Chinese listed businesses between 2007 and 2018 to make their conclusion that the presence of women on corporate boards enhances the likelihood of fraud detection. Capezio and Mavisakalyan (2016) used a sample of 128 Australian publicly listed businesses to analyze the relationship between the number of women on corporate boards and the incidence of fraud. According to the research, lower fraud rates are shown in companies where there are more women on the board of directors. Wahid (2019) looked into how having women on the board could prevent financial mismanagement. An uneven panel of 38,273 firm-year data was produced from the sample of 6132 US-listed enterprises from 2000–2010. Financial reporting errors and fraud are found to be lower in companies with gender-diverse boards. Kamarudin et al. (2018) looked into whether or not board dynamics affect financial statement fraud. Among Malaysian public-listed companies, the study found no indication that board gender diversity was associated with misleading financial reporting. A total of 124 businesses were examined (including 62 fraudulent businesses and 62 legitimate ones) between 2007 and 2010. No correlation was discovered between the number of women on boards and reduced instances of financial misrepresentation. Hence, the study hypothesizes that:

**H2:** *Board gender diversity has a negative effect on the likelihood of financial statements fraud*

#### **4.3. Board financial expertise and financial statements fraud**

The possibility of financial statement fraud is related to the level of financial skill on the board of directors. In order to detect fraudulent activity and improve the quality of financial reports, directors need to have a firm grasp of accounting principles and practices. Knowledge of finance

is crucial in evaluating the reliability of a financial report. For firms to succeed, boards need the authority to question management's decisions, contribute to formulating corporate strategy, monitor risk management, back up CEO succession plans, and establish and meet financial and operational targets. Only if the board has the resources to take on these responsibilities will this be possible. Anisykurlillah et al. (2020) find that fraud in Indonesian Islamic banks may be mitigated by the presence of accounting and finance professionals on their boards of directors. These researchers looked at 11 Islamic financial institutions from 2014–2018. From 2013–2019, Rostami and Rezaei (2022) studied 187 businesses trading on the Tehran Stock Exchange. The results of the study indicated a negative correlation between board financial expertise and financial statement falsification. Owens-Jackson et al. (2009) looked at a sample of companies referenced in SEC accounting and auditing and enforcement releases from 1994 to 2001 and found no correlation between board financial expertise and the risk of misleading financial reporting. For their study, Nasir et al. (2019) used data from a sample of 76 FSF and 76 non-fraud listed companies in Malaysia spanning the years 2001 to 2008. According to the findings, fraud is less likely to occur in businesses if there are more audit committee members with accounting and financial experience, more audit committee meetings per year (AMEET), and higher directors' remuneration per year (DREMUN). Subair et al. (2020) studied financial information from the 2013–2019 fiscal years for a subset of 39 manufacturing companies listed on the Nigerian Stock Exchange (NSE). The results show that financial statement fraud is drastically reduced when boards are independent, knowledgeable, and diligent. Using Canadian data, Park and Shin (2004) revealed that dissuading earnings management depends on the financial expertise of the outside directors. While Alzoubi (2014) revealed that the board's financial knowledge has a negative effect on earnings management for a sample of 86 industrially listed businesses on the Amman Stock Exchange (ASE) for the years 2008–2010. We propose that:

**H3:** *board financial expertise has a negative effect on the likelihood of financial statements fraud*

#### **4.4. Frequency of board meetings and financial statements fraud**

The incidence of corporate fraud is related to the extent of involvement and effort on the part of the board. There is a higher chance that problems facing the company will be solved appropriately if the board meets often (Lipton & Lorsch, 1992). Conger et al. (1998) argue that the success of the board's monitoring function increases as the frequency of board meetings does. The authors show that fewer board meetings than necessary reduce value for companies. Infrequent board meetings, according to Xie et al. (2003), can lead to issues like earnings management being overlooked. The board's function is diminished to that of a rubber stamp for management's proposals under these conditions. If the board of directors is meeting regularly, it may be a sign that the company's upper management is being actively monitored. However, when times are tight financially or when the board is facing contested choices that could involve unethical or illegal action, the frequency with which it meets may increase. An increase in the frequency of board meetings has been linked to improved profitability, as noted by Vafeas (1999). Comparing 99 fraudulent corporations with another 99 non-fraudulent public listed companies in Bursa Malaysia from 2000 to 2010, Salleh and Othman (2016) evaluated the impact of board structure (size, board meetings, and board duality) on corporate fraud. The study concluded that more frequent board meetings were associated with less corporate fraud. Neither the number of board members nor the presence of board duality were found to have any bearing on the prevalence of corporate fraud. Using a sample of 124 firms, Kamarudin et al. (2018) found that companies that committed financial statement fraud were more likely to have frequent board meetings and a larger number of independent directors than companies that did not. G. Chen et al. (2006) analyzed 169 regulatory enforcements against Chinese listed companies between 1999 and 2003 and found that the number of board meetings, the length of the chairman's tenure, and the percentage of non-executive directors were all significantly correlated with the prevalence of fraud. This study hypothesizes as follow:

**H4:** *frequency of board meetings has a negative effect on the likelihood of financial statements fraud*

#### **4.5. Audit fee and likelihood of financial statements fraud**

The link between auditor independence and an auditor's ability to conduct high-quality audits has been thoroughly investigated by regulators, lawmakers, users of financial statements, and researchers. There are two potential ways in which auditor fees could compromise an audit's integrity: To begin, auditors may be more motivated to put in extra effort if they are paid more, which could lead to a higher quality audit. Second, auditors become more financially dependent on their customers due to the high rates they charge for non-audit services, as well as for traditional auditing services. This financial reliance may make the auditor reluctant to ask the proper questions during the audit for fear of losing highly profitable fees. However, if the audit were to fail, the auditor would face catastrophic financial consequences (DeAngelo, 1981a; Simunic, 1984). Audit risk, audit effort-quality, the information spillover effect, and economic bonding are the four opposing views Markelevich and Rosner (2013) construct to explain the correlation between audit fees and fraud. The first school of thought holds that when an external auditor perceives a higher level of audit risk, they will charge more for their services and put in more effort. According to the second viewpoint, auditors charge high rates since they perform more audits for their clients. The third theory proposes that an audit's quality can be improved by increasing the number of non-audit services (NAS) purchased from the same audit company, due to knowledge spillover effects from NAS to an audit. According to the last viewpoint, an auditor's independence is jeopardized when he or she earns a lot of money from providing services to clients. The connection between audit fees and financial statement fraud has also been the subject of several empirical research. Markelevich and Rosner (2013) used data from 286 fraud firm-year observations from 121 distinct fraud firms to conclude that fraud firms typically pay much higher NAS and total audit costs. Gandía and Huguet (2021) found a negative correlation between audit fees and earnings management using data from a sample of 6,997 Spanish SMEs from 2009–2018, yielding 30,548 observations. Hsiao et al. (2012) analyzed 69 AAER fraud firms between 2000 and 2003 and found no correlation between fraud reporting and audit fees for a variety of services. Thus, this study hypothesizes as follows:

**H5:** *audit fee has a negative effect on the likelihood of financial statements fraud.*

#### **4.6. The moderating role of audit fee**

Typically, shareholders nominate auditors and determine their fees at the annual meeting. However, as Macdonald and Beattie (1993) point out, these duties are actually carried out by company directors. The authors also expressly warn against the risk that directors will accept "an excessively inexpensive offer from an audit firm knowing that a proper audit cannot be conducted for that fee," resulting in a decline in audit quality. This issue was also raised in the Cadbury Report (Cadbury Committee, 1992), which noted that price competition among audit firms may place shareholder requirements last. The enhancement of the ethical guidance on predatory pricing suggested by the Chartered Accountants Joint Ethics Committee (CAJEC) demonstrates the profession's recognition that audit quality may be compromised in this manner. In a 1993 report, the Public Oversight Board of the United States noted that if the audit fee is too low, there will be pressure to make corners and save money, which may compromise the audit's quality. This issue was also recognized in the United States. Academic research demonstrates that board characteristics such as independence, financial expertise, gender, and meeting frequency influence audit fees (Johl, Subramaniam, & Zain, 2012; Afenya et al., 2022; Kalia et al., 2023; Yatim et al., 2006). Through its audit committee, the board is responsible for selecting auditors and negotiating audit scope and intensity. Therefore, a board intent on improving the firm's governance is likely to select a high-quality auditor and contract the auditor to perform an intensive service to enhance the financial statements' accuracy and dependability. Several studies (Carcello et al., 2002; Lai et al., 2017) provide evidence of a correlation between corporate board size and the selection of the

auditor. Due to the incentive to protect board reputational capital, reduce board litigation risks, and protect shareholder interests, an independent and diligent board will typically demand a high-quality audit service (Carcello et al., 2002; Fama & Jensen, 1983). There are two ways in which increased audit fees are associated with improved audit quality. First, auditors charge higher audit fees in exchange for more extensive audit work, which may result in higher-quality audits. The increased risk auditors perceive provides incentives to perform a quality audit that outweigh the potential benefits of client retention when independence is reduced (Ashbaugh et al., 2003). Greater earnings-management risk, as measured by accruals, is associated with higher audit fees in nonregulated public BigN-audited firms, according to Abbott et al. (2004). They also attribute their findings to the auditor's perceived risk of litigation resulting in a conservative bias. Other studies (Craswell et al., 2002; DeFond et al., 2002; Geiger & Rama, 2003) have not discovered an association between audit fees and the riskiness of a company. Second, clients are willing to pay more for an audit that they perceive to be of higher quality. Large audit firms are commonly believed to provide superior audit quality (DeAngelo, 1981b). There should be a positive correlation between audit fees and audit quality in both scenarios. According to Basioudis et al. (2008), Srinidhi and Gul (2007), and Kinney et al. (2004), a higher audit fee is significantly associated with a higher audit quality. Carcello et al. (2002) discovered that a board that is more independent, diligent, and knowledgeable is more likely to select higher audit quality and pay higher audit fees, as indicated by the significant positive correlation between audit fees and board characteristics. Kinney and Libby (2002) contend that higher audit fees do not result in economic bonding because, prior to SOX, audit fees were more regulated, subject to greater competition, and represented a required service. This theory is anticipated to hold true in the post-SOX era, as SOX did not restrict audit services. Further empirical research demonstrates a correlation between audit fees and the integrity of financial reporting. According to Stanley and DeZoort (2007), audit fees are positively correlated with restated earnings, indicating that auditor independence is not compromised because there is no reluctance to challenge managers to revise their financial reports if accounting standards were violated to inflate earnings. Consequently, the high risk of future earnings revisions may be accompanied by high audit fees (Ettredge et al., 2007). Similarly, Antle et al. (2006) suggest that audit quality (at Big N audit firms) is positively related to earnings management (abnormal accruals), indicating that Big N auditors have a higher tolerance for earnings management than auditors from other audit firms. In addition, they find that high audit fees can introduce bias into the audit process, as high audit fees tend to positively influence auditor independence, leading to a higher tolerance for earnings management (i.e., anomalous accruals), although they note that this effect may not be intentional. Extensive research has been conducted on the relationship between audit fees and financial statement fraud; however, empirical literature reveals conflicting results.

Sitanggang et al. (2020), who employed a sample of UK manufacturing companies for the period 2010–2013, found that the manufacturing sector in the United Kingdom experienced a decline in productivity. The authors discovered a negative correlation between audit fees and abnormal operating cash flows. In contrast, audit fees are positively correlated with anomalous discretionary expenses, so fraud firms paid substantially higher total, audit, and NAS fees. From 1996 to 1998, Ferguson et al. (2004) examined a sample of British companies. The authors discover a significant and positive relationship between earnings management and NAS. Mironiuc and Robu (2012) analyzed New York Stock Exchange-listed companies from 2001 to 2002. The authors discovered that low audit fees and high non-audit fees increased the likelihood of fraud. Gul et al. (2003) found a correlation between DAs and audit fees using a sample of 648 Australian companies. The following set of hypotheses examines the impact of audit fees on the association between board structure and the probability of financial statement fraud. We postulate that:

- a. *Board gender diversity and the likelihood of financial statements fraud.*
- b. *Board independence and the likelihood of financial statements fraud.*
- c. *Board financial expertise and the likelihood of financial statements fraud*

d. *frequency of board meetings and the likelihood of financial statements fraud*

**H6:** *Audit fees moderates the relationship between:*

## 5. Research design

### 5.1. Data

The sample for the study is comprised of fifteen manufacturing companies listed on the stock exchanges of the respective East African nations between 2007 and 2021. Companies that lacked financial information, had insufficient information on their board of directors, or lacked annual statements were also excluded. To be included in the study's final sample, listed firms had to satisfy two main criteria: access to a corporation's complete 15-year annual reports from 2007 to 2021, inclusive, and access to a corporation's corresponding accounting and financial data for the same period. The criteria were established for multiple purposes. First, and consistent with previous research (Barako et al., 2006; Eng & Mak, 2003), the criteria assisted in reaching the requirements for the panel data analysis, the benefits of which have been extensively discussed (Gujarati, 2022; Petersen, 2009). Second, the sample begins in 2007 because data coverage on East African manufacturing firms listed prior to 2007 was extremely limited. The cohort concludes in 2021, the most recent year for which data is available. The sample selection is shown in Table 1.

### 5.2. Variables and measurement

The dependent variable in this study was the likelihood of financial statement fraud. This variable was measured using the Beneish M-Score model developed by Beneish (1999). Though the model is comparable to the Altman Z score, it is optimized to estimate the probability of manipulation rather than bankruptcy. The Beneish M-Score Model is computed from eight different ratios. The eight variables are then weighted together according to the following formulae

$$M - \text{Score} = -4.84 + 0.92 * DSRI + 0.528 * GMI + 0.404 * AQI + 0.892 * SGI + 0.115 * DEPI - 0.172 * SGAI + 4.679 * TATA - 0.327 * LEVI. \quad (1)$$

Where DSIR= Days Sales in Receivables Index GMI= Gross Margin Index (GMI), AQI= Asset Quality Index, SGI= Sales Growth Index, DEPI= Depreciation Index, SGAI= Sales General and Administrative Expenses Index, TATA= Total Accruals to Total Assets, LEVI= Leverage Index

When applying M-score model, if the predictive score is greater than -2.22, it gives way to a red flag, indicating that there is a possibility of manipulation occurring in the organization, or it could also indicate a strong likelihood of the firm being a manipulator. Therefore, using this model, the likelihood of financial statement fraud in an organization could be determined. Based on the model, a value equal to or less than -2.22 is scored as "0" and a value greater than -2.22 is scored as "1", this makes the outcome variable binary.

**Table 1. Sample selection**

	No. of firms	%	firm-year
Total population	18	100.00	270
Newly listed	1	5.556	10
Cross listed	2	11.111	20
Suspended	0	0.00	0
Final sample	15	83.333	225



The study further included a set of control variables that have been associated with manipulation of financial statements. These variable include firms size (Lee et al., 2014; Rahman & Ali, 2006), firm age and firm (Githaiga et al., 2022, 2022). The measurement of the variables are shown in Table 2.

### 5.3. Model specification

This study employed the logistic regression analysis since the dependent variable is the likelihood of financial statement fraud is a dummy variable (0, 1). Logistic regression is used to estimate the association of one or more independent (predictor) variables with a binary dependent (outcome) variable (Schober & Vetter, 2021). The further adopted a hierarchical multiple regression model to test for moderation (Baron & Kenny, 1986). The following sets of equation were used.

Model 1. Testing the effect of predictor variables on outcome variable.

$$LFSF = \beta_0 + \beta_1FA_{it} + \beta_2FS_{it} + \beta_3FP_{it} + \beta_4BGD_{it} + \beta_5BFE_{it} + \beta_6BIN_{it} + \beta_7FBM_{it} + \varepsilon_{it} \quad (2)$$

Model 2. Testing the effect of the moderating variable on the outcome variable.

$$LFSF = \beta_0 + \beta_1FA_{it} + \beta_2FS_{it} + \beta_3FP_{it} + \beta_4BGD_{it} + \beta_5BFE_{it} + \beta_6BIN_{it} + \beta_7FBM_{it} + \beta_7AF_{it} + \varepsilon_{it} \quad (3)$$

Model 3. Testing the moderating effect of audit fee

$$LFSF = \beta_0 + \beta_1FA_{it} + \beta_2FS_{it} + \beta_3FP_{it} + \beta_4BGD_{it} + \beta_5BFE_{it} + \beta_6BIN_{it} + \beta_7FBM_{it} + \beta_7AF_{it} + \beta_9BGD * AF + \beta_{10}BFE * AF + \beta_{11}BIN * AF + \beta_{12}FBM * AF + \varepsilon_{it} \quad (4)$$

**Table 2. Measurement of variables**

Variable	Measurement	Acronym
<i>Dependent variable</i>		
Likelihood of financial statement fraud	Beneish M-Score	LFSF
<i>Independent variables</i>		
Board gender Diversity	The proportion of female directors to the total number of directors on the board (percentage)	BGD
Board financial expertise	The proportion of directors with finance and accounting to the total number of directors on the board (percentage)	BFE
Board independence	The proportion of independent directors to the total number of directors on the board (percentage)	BIN
Frequency of board meetings	The number of the board meetings in a year	FBM
<i>Moderator</i>		
Audit fee	Natural log of audit fees paid for auditing annual accounts of parent companies and consolidated account	AF
<i>Control variable</i>		
Firm age	Logarithm of number of years since incorporation	FA
Firm size	Logarithm of the total firm's assets	FS
Firm performance	Return on Asset	FP

Source (Authors, 2023)

**Table 3. Descriptive statistics**

Variable	N	Mean	Std. Dev.	Min	Max
LFSF	225	0.417	0.494	0.000	1.000
FA	225	1.323	0.379	0.000	1.792
FS	225	7.027	1.104	4.915	9.942
FP	225	0.389	0.280	.0217	1.848
BGD	225	0.317	0.197	0.000	0.667
BFE	225	0.603	0.174	0.250	0.900
BIN	225	0.629	0.235	0.200	1.600
FBM	225	5.435	1.526	3.000	9.000
AF	225	15.345	1.175	12.365	17.932

Source: Authors compilation (2023)

## 6. Empirical results and discussions

### 6.1. Descriptive statistics

The descriptive statistics of the variables in this study are presented in Table 3. The mean likelihood of financial statements fraud (LFSF) is 0.494. The standard deviation of 0.494 shows a high variability in LFSF among the selected companies. The mean for board gender diversity (BGD) of 0.319 shows that the selected firms have low female representation in the board, while the low value of standard deviation is an indicator of low variability in gender diversity. Board financial expertise had a mean of 0.603 implying that a high proportion of board members had knowledge in accounting and finance. In terms of board independence (BIN), the mean for selected companies is approximately 62.9%. In terms of the age of the average firm age is 1.323. The average frequency of board meetings was 5.435, implying that boards meet at least 5 time a year. The average firm size is 7.027, while the standard deviation of 1.104 shows low variability in firm size. The mean financial performance (measured by return on assets) is 0.389 and the standard of 0.280 suggest high performance variability. The mean audit fee is 15.345 and the low standard deviation confirms a low disparity for fee paid to external auditor

### 6.2. Correlation analysis

The correlations coefficient between each pair of variables is used to explore the interrelationship between two variables negatively or positively at a certain level of significance. Table 4 shows that likelihood of financial statements fraud (LFSF) is negatively related to board gender diversity, board financial expertise, board independence, frequency of board meetings, audit fees, financial performance, while positively associated with the size of the firm. However, there is no significant association between firm age and the likelihood of financial statement fraud.

The study further tested for multicollinearity among the explanatory variables using the variance inflation factor (VIF). VIF measures how much a variable coefficient has been inflated because of the association with other explanatory variables, aims to find collinearity problems. Any value more than 10 is regarded as having been inflated according to the VIF's judgment rule (Hair et al., 1984, 1995). Because all values are determined to be below 10, our finding clearly demonstrates the lack of inflated coefficients. Therefore, we may conclude that our explanatory variables do not suffer from multicollinearity.

### 6.3. Regression results

The results of the panel probit regression analysis are presented in Table 5. Model 1 shows the regression results for the direct effect, model 2 the effect of audit fee on the outcome variable while model 3 tests for moderation. The Pseudo R2 is a measure of the closeness of fit of the regression model as shown in Table 5, the Pseudo R2 is satisfactory with values of 0.5901, 0.7618 and 0.8930 for the three models respectively. The Wald Chi2 values for the three models were

178.78, 230.80 and 270.55 respectively, with a significance of  $p < 0.001$  for all models, which indicates statistically significant components of the variation in the dependent variable LFSF. H1 stated that, board gender diversity has a negative effect on the likelihood of financial statements fraud. In Table 5, board gender diversity is found to be negatively and significantly related to the likelihood of financial statements fraud with the coefficients of  $-4.495$  ( $p$ -value  $< 0.05$ ). Therefore, the null hypothesis, H01, is accepted. This result is consistent with the findings of Beasley (1996). The result implies that companies who intend to have a higher number of female directors sitting on the board are less likely to commit corporate fraud than companies who intend to have few. H2 states that board financial expertise has a negative effect on the likelihood of financial statements fraud. The logistic regression results coefficient  $-9.106$  ( $p$ -value  $< 0.05$ ), demonstrates that the proportion of directors with skills in finance and accounting lessens the likelihood of financial statements fraud, therefore H2 is accepted and the results agree with those of earlier studies (Nasir et al., 2019; Rostami & Rezaei, 2022). H3, states that, board independence has a negative effect on the likelihood of financial statements fraud. The probit regression results coefficient  $-4.571$  ( $p$ -value  $< 0.05$ ), revealed that board independence has a negative effect on the likelihood of financial statements fraud and the findings relate with Wu and Li (2015) and Busirin et al. (2015). These findings implies that the existence of independent directors may help in preventing the occurrence of financial statements fraud among manufacturing companies in EAC. The fourth hypothesis stated that frequency of board meetings has a negative effect on the likelihood of financial statements fraud, the coefficient of  $-14.318$  ( $p$ -value  $< 0.05$ ), confirm that firms with a high frequency of board meetings have few cases of financial statements fraud. Thus, H4 is accepted and the results agree with Salleh and Othman (2016). The findings suggests that board meetings have an influence in mitigating the occurrence of corporate fraud. H5 was stated as audit fee and has a negative effect on the likelihood of financial statements fraud. Based on the regression coefficient  $-2.820$  ( $p$ -value  $< 0.05$ ), H5 is accepted and the results agree Gandía and Huguet (2021). In line with Egbunike et al. (2023) this study argues that high audit fee is an indicator of audit quality, thus reducing the LFSF. We use the logistic regression results in Model 3

**Table 4. Correlation matrix**

	LFSF	FA	FS	FP	BGD	BFE	BIN	FBM	AF	VIF
LFSF	1.0000									
FA	-0.0178	1.0000								1.28
FS	0.3903*					-0.1389*	1.0000			
			1.67							
FP						-0.1664*		-0.3655*	0.0405	1.0000
					1.16					
BGD						-0.3681*		-0.1433*	-0.2051*	0.0212
1.0000					1.18					
BFE						-0.5418*	-0.0567	-0.2640*	-0.0084	0.2673*
1.0000				1.43						
BIN						-0.3264*	0.2183*	-0.3720*	-0.0374	0.2168*
0.0396	1.0000			1.29						
FBM						-0.4312*	-0.0286	0.0715	-0.0310	0.1201
0.3328*	0.0723	1.0000		1.19						
AF						-0.1931*		-0.1613*	0.4537*	0.0308
-0.0320	0.1543*	-0.2740	0.1132	1.0000	1.43					

\* $p < 0.05$

Source: Authors compilation (2023)

**Table 5. Logistic regression results**

LFSF	Model 1	Model 2	Model 3
CONSTANT	18.226(4.099)**	17.262(6.123)**	21.910(12.313)
FA	-1.950(0.833)**	-3.156(1.220)**	-1.804(2.26)
FS	.743(0.265)**	3.439(0.718)**	5.355(1.625)**
FP	-4.718(1.176)**	-6.304(1.701)**	-7.507(2.790)**
BGD	-4.495(1.345)**	-5.308(1.718)**	-5.831(2.772)**
BFE	-9.106(1.871)**	-12.161(3.140)**	-20.848(7.295)**
BIN	-4.571(1.432)**	-6.971(2.227)**	-11.142(4.532)**
FBM	-14.318(2.646)**	-15.358(3.641)**	-22.745(7.239)**
AF		-2.820(0.568)**	-4.561(1.232)
BGD*AF			-5.678(2.629)**
BFE*AF			8.686(4.324)**
BIN*AF			-6.070(2.402)**
FBM*AF			-6.589(3.336)**
LR chi2(12) =	178.78	230.80	270.55
Pseudo R2 =	0.5901	0.7618	0.8930
Δ Pseudo R2 =	-	0.1717	0.1312
Prob > chi2 =	0.0000	0.0000	0.0000

\*\*p < 0.05; standard errors (Std Err.) in parentheses

Source: Authors compilation (2023)

to test the moderating effect of audit fee on the relationship between board structure and LFSF. There are four moderating sub-hypotheses: H6a, H6b, H6c and H6d. H6(a) stated that audit fees moderates the relationship between board gender diversity and the likelihood of financial statements fraud. The results show that -5.678 (p-value <0.05), and the hypothesis is supported. H6 (b) state that audit fees moderates the relationship between board financial expertise and the likelihood of financial statements fraud. The results show that 8.686 (p-value <0.05), and the hypothesis is supported. The interaction between the proportion of directors with financial and accounting knowledge with audit fees leads to increased financial statement fraud. According to this study, firms that have a high percentage of board members who are knowledgeable in finance and accounting are likely to pay less audit fees because they are better at keeping an eye on the financial reporting environment. Low audit fees, however, may impair the audit's quality, particularly for fraud firms. H6(c) stated that audit fees moderates the relationship between board independence and the likelihood of financial statements fraud. The results show a beta coefficient of -6.070 (p-value <0.05), and the hypothesis is accepted. Therefore, independent directors are more effective in mitigating financial statements fraud if the audit fee is high. H6(d) state that, audit fees moderates the relationship between frequency of board meetings and the likelihood of financial statements fraud. The results show that -6.589 (p-value <0.05), and we fail to reject the hypothesis. This findings suggests that the frequency of board meetings is effective in lessening LFSF under high audit fee, relationship but not statistically significant with fraud occurrences; thus, it failed to reject the null hypotheses. The pattern of the results for the control variables are similar across the three models, except for firm age that is not significant in model 3.

## 7. Summary and conclusion

The prevalence of financial statement fraud among listed manufacturing companies in the EAC suggests that listed companies must urgently improve their board effectiveness and audit quality. The purpose of this paper was to examine the relationship between board structure, audit fees, and instances of financial statement fraud in the context of the EAC. The study utilized a sample of 15 listed manufacturing companies and data from 2007 to 2021. The results indicated that board

**Table 6. OLS regression results**

<b>LFSF</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
CONSTANT	1.945 (0.301)	1.873 (0.261)**	1.692(0.255)**
FA	-0.118 (0.070)**	-0.148(0.061)**	-0.107 (0.057)
FS	0.106 (0.025)**	.196 (0.061)**	0.148 (0.026)**
FP	-0.360(0.091)**	-.381(0.078)**	-.180 (0.075)**
BGD	-0.420(0.131)**	-0.418 (0.113)**	-0.459 (0.102)**
BFE	-0.707 (0.164)**	-0.436(0.146)**	-0.316 (0.102)**
BIN	-0.302(0.113)**	-0.390 (0.099)**	-0.291 (0.092)**
FBM	-1.725 (0.215)**	-1.630 (0.186)**	-1.529 (0.180)**
AF		-.167(0.020)**	-.131(0.320)**
BGD*AF			-0.173 (0.073)**
BFE*AF			0.322 (0.105)**
BIN*AF			-0.348(0.079)**
FBM*AF			-0.375 (0.107)**
R-squared	0.5149	0.6379	0.7174
Adjusted R-squared	0.4991	0.6243	0.7013
Δ R-squared =	-	0.1230	0.0795
F-values	32.61	47.12	44.43
Prob > chi2 =	0.0000	0.0000	0.0000

\*\*p<0.05; standard errors (Std Err.) in parentheses

\*\*p < 0.05; standard errors (Std Err.) in parentheses

Source: Authors compilation (2023)

gender diversity, board financial expertise, board independence, board meeting frequency, and audit fees discourage financial statement fraud. The audit fee moderates the relationship between board structure and the likelihood of financial statement fraud, the study found. Consequently, listed manufacturing firms in the EAC should consider board dimensions that enhance the effectiveness of boards in averting managerial opportunistic behaviors related to earnings manipulation. This study contributes to the reduction of the knowledge deficit in board structure and corporate fraud issues by examining the influence of factors such as audit fees on the association. The findings of this study may assist publicly traded companies in designing their board structure and external auditors' compensation so as to prevent financial reporting misconduct. In addition, the findings of this study could serve as a foundation for future research aimed at enhancing the formulation of corporate governance policies to reduce financial statement fraud. This research has a number of limitations. First, the sample was restricted to listed manufacturing firms only; therefore, the findings may not apply to other sectors, such as highly regulated financial institutions. The Beneish model was then used to quantify financial statement falsification. Future research may take into account firms designated as "fraud firms" by the relevant capital market authority or securities commission. In addition, corporate culture and management style were not quantified because they are challenging to measure quantitatively and out of the study's control. Thirdly, the audit fee was calculated based on the sum total of the amount reported in the financial statements. Future research could examine the specific impact of audit and non-audit service expenses. Future research may incorporate additional board structure variables, such as the tenure of directors and managerial ownership structures. Inclusion of additional corporate governance variables, such as CEO dimensions, in the moderation analysis may yield a comprehensive comprehension of the relationship between board structure and financial statement fraud.

## 8. Robustness test

Additionally, we conduct a series of robustness tests to guarantee the consistency of our findings. Outliers are one of the most prevalent methodological challenges in empirical research, as even a small number of outliers can distort research results (Cousineau & Chartier, 2010) or lead to false acceptance or rejection of hypotheses (Bollen & Jackman, 1985). In a multivariate regression model, multicollinearity occurs when two or more independent variables have significant inter-correlations. Regarding the influence of independent variables in a model, multicollinearity may result in larger confidence intervals and probabilities that are less reliable. Therefore, we employ the VIF test for multicollinearity. The variance inflation factor (VIF) measures the multicollinearity of a set of multivariate regression variables. A high VIF indicates that the dependent variable is highly correlated with the model's other variables. Multicollinearity prevents regression models from distinguishing between the effects of independent and dependent variables. Traditional VIF begins at 1 and has no maximum value. The results in Table 4 rule out the presence of this problem. The study further uses the ordinary least squares (OLS) as a robustness test for the baseline regression results. The OLS results presented in Table 6 offers support for the baseline results and the hypotheses testing.

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