CEO DEMOGRAPHICS, BOARD GENDER DIVERSITY AND LIKELIHOOD OF FINANCIAL STATEMENT FRAUD AMONG FIRMS LISTED IN EAST AFRICA COMMUNITIES SECURITIES /STOCK EXCHANGES

BY

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A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS AND ECONOMICS IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS DEGREE IN BUSINESS MANAGEMENT (AUDITING AND FORENSIC ACCOUNTING)

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DECLARATION

Declaration by the Candidate

This research project is my original work and has not been previously presented for a degree in Moi University or any other university. No part of this research project may be reproduced without the prior written permission of the author and /or Moi University.

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Declaration the Supervisor

We confirm that this research project has been submitted by the candidate for examination under our Supervision.

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DEDICATION

I dedicate this research project to my elder brother Ekwom Nabuin, dearest wife Hildah Kiptoo Nabuin, your unwavering support, love, and encouragement have been my anchor throughout this research journey. Your sacrifices and understanding have fueled my determination. This endeavor is dedicated to you, a source of inspiration and my partner in every step of life's adventure. To my beloved children Evannah Abei Lotui and Eddie Adung Nabuin, you are the heartbeat of my existence, and your joy and curiosity have added a special dimension to my pursuit of knowledge. This research project is dedicated to you, with the hope that it contributes to a world where your dreams and aspirations can flourish.

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ABSTRACT

Fraudulent activities among the listed companies across the world have led to massive losses amounting to billions of Shillings. The East African regions have not been an exception as listed companies have been seen to engage in fraudulent activities. Extant literature indicates that the effect of CEO demographics and the likelihood of financial statements fraud have been very controversial. Guided by the Agency theory, Fraud Pentagon theory and Resource-Dependency theory, this study sought to examine whether Board Gender Diversity moderates the relationship between CEO demographics and the likelihood of financial statements fraud among firms listed in the East African Securities/ Stock Exchanges. The general objective of the study was to investigate moderating role of Board Gender Diversity on the relationship between CEO demographics and the likelihood of financial statements fraud in East Africa. Specifically, the study examined the relationship between CEO Age, Gender, Education and Tenure on likelihood of financial statement fraud. The study adopted a longitudinal and explanatory research design since it sought to establish causal relationships between the research variables using panel data analysis. The target population comprised of all the 122 firms listed in East Africa. The inclusion/ exclusion criteria were based on whether the firms traded consistently during the research period among others. A survey of the remaining 62 firms that traded consistently during the period 2012-2023 was done. Data was extracted from the individual firm's audited annual reports with the aid of a data collection schedule for the period between 2012 and 2023. The data was analyzed through descriptive and inferential statistics. Hypotheses were tested using the probit regression model. The findings revealed that CEO: age (β= -2.022, $\rho<0.05$), gender (β= 0.768, $\rho<0.05$), financial expertise (β= -0.368, $\rho<0.05$) and tenure (β= 0.313, $\rho<0.05$), had a statistically significant effect on financial statement fraud with an overall pseudo R^2 of 30.06%. In addition, the results revealed that board gender diversity moderated the relationship between CEO: age (β= 6.796, $\rho<0.05$), gender (β= - 5.047, $\rho<0.05$), financial expertise (β= -3.182, $\rho<0.05$) and tenure (β= -1.500, $\rho<0.05$) and financial statement fraud, with a change in R^2 of 4.94%. Based on the findings, the study concluded that CEO demographics have significant effects on financial statement fraud. Further, the study established that board gender moderates the effect of CEO demographics on the likelihood of financial statements fraud among firms listed in East Africa. The study recommends that policy makers should consider not only the gender of CEOs, but also their competences in exercising oversight in financial reporting. Also, there is need to regulate CEO's age in an effort to combat corporate fraud. Therefore, the findings of this study may inform corporate governance setters in developing codes that mitigates the likelihood of firms engaging in fraudulent financial statement fraud. This study was limited to listed firms in EAC; future studies may consider other regions and other corporate governance variables.

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ACRONYMS AND ABBREVIATIONS

ACFE:	Audit Committee Financial Expertise
AQ	Audit Quality
CEO:	Chief Executive Officer
COSO:	Committee of Sponsoring Organizations of the Treadway Commission
DSE:	Dar-es-salam Security Exchange
EAC	East Africa Community
FRG	Financial Statement preparation Quality
FSF:	Financial Statement Fraud
GAAPs	Generally Accepted Accounting Principles
IAS	International Accounting Standards
ICFR:	Internal Control over Financial Statement preparation
ISA	International Standards of Audit
NSE:	Nairobi Security Exchange
OLS	Ordinary Least Square
PCAOB:	Public Company Accounting Oversight Board
ROE	Return on Equity
RSE:	Rwanda Security Exchange
UET	Upper Echelons Theory
UGD:	Uganda Security Exchange
EAC	East Africa Community

OPERATIONAL DEFINITION OF TERMS

CEO Age: refers to the number of years of the Chief Executive Officer of a company (Hambrick, 2007).

CEO Gender: CEO gender pertains to the sex of the Chief Executive Officer (Masruroh & Carolina, 2022).

CEO Financial Expertise: refers to the understanding and skilled execution of financial strategies within a company (Altarawneh, *et al.,* 2022).

CEO Tenure: is the duration a Chief Executive Officer has been in that position (Darouichi *et al.,* 2021).

Board Gender Diversity: refers to the representation of women on corporate boards, aiming to achieve a more equitable distribution of genders in leadership positions (Smith *et al.,* 2018).

Financial Statement Fraud: A deliberate and intentional manipulation of accounting records to achieve illegal benefits or gains to the detriment of the investors and other various stakeholders of the business community. Okoh & Uwaifo (2021)

Financial Statement Fraud: Intentional misstatement of the financial position and performance of the organisation in order to deceive the users of financial information. (Brierley, Price, Prior [BPP] Learning Media, 2012).

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter focuses on the background, institutional setting, statement of the problem, objectives of the study, significance of the study and the scope of the study have been discussed.

1.1 Background to the Study

According to report to the nation (ACFE, 2020), fraudulent practices have occurred in 20125 countries with 2,504 cases, and have caused losses in global projections reaching 5% of turnover each year with a median nominal loss of US$3.6 billion. These fraudulent practices have a significant impact on organizations and industrial sectors in the world, especially the mining sector. The survey results show that the highest losses due to fraud are in the mining industry, amounting to US$475,000. Based on a comprehensive professional analysis conducted by KPMG in 2020, the majority of companies in the United States are prone to incurring a loss due to a combination of fraudulent activities, non-compliance problems, and regulatory penalties. 85% of organizations experienced internal fraud, amounting to around $10 billion, as stated. In contrast, a majority of enterprises, namely 55%, incurred regulatory fines as a result of non-compliance. The American Edition Association of Certified Fraud Examiners/ACFE (2020) offers statistics specifically related to occupational fraud within the United States. It is observed that asset misappropriation is prevalent in the majority of fraud schemes, accounting for 77% of instances. However, these schemes typically result in the lowest median loss, amounting to US $100,000 per case. Financial statement fraud schemes, albeit the least prevalent (19% of schemes), are the most expensive type of occupational fraud, with a median loss of US$2,000,000.

Corruption, as the third category, is characterized by a moderate level of both frequency and financial harm. These schemes manifest in 51% of instances and result in a median financial loss of US$425,000. The primary factor behind financial statements scandals is earnings manipulation, as shown by companies such as Enron, WorldCom, Tesco Plc, Toshiba, and Satyam. For instance, in the United States, the Chief Executive Officer (CEO) of Tyco, Kozlowski, engaged in fraudulent practices to artificially inflate the company's earnings. This unethical behavior led to a staggering decrease of $100 billion in the market value of the firm, surpassing even the total loss incurred by Enron (Troy *et al.*, 2011). India experienced another case known as the Satyam scandal. The CEO of Satyam assumed full accountability for the accounting misappropriations, as he manipulated the financial records to present the company as a larger entity with a more rapid growth rate and greater profits than it actually possessed. The Satyam scandal sparked a debate regarding the role of a CEO in leading a company to great success (Bhasin, 2015 & 2016).

Multiple studies (DeFond and Jiambalvo, 1994; Healy and Wahlen, 1999; Baker *et al.*, 2009) have demonstrated that managers are incentivized to manipulate accounting outcomes for various reasons, despite the fact that maximizing the company's value and enhancing its financial integrity are goals that should be upheld by all company members. Financial statement fraud refers to the intentional manipulation of a company's results by its CEO, as described by Burgstahler and Dichev (1997) and Degeorge *et al*. (1999). Cornett *et al*. (2008) propose that an improvement in company performance could lead to a decrease in the utilization of discretionary accruals.

The focus on top management in the control environment aligns with the idea of upper echelons theorists that organizational outcomes reflect the principles and cognitions of

executives (Hambrick and Mason, 1984). Researchers have documented a link between the characteristics of executives and the financial reporting quality (Habib & Hossain, 2013; Patelli & Pedrini, 2015; Plöckinger *et al.,* 2016). The researchers demonstrated a correlation between the age of CEOs and both the level of risk and the performance of the company (Serfling, 2012). Additionally, they found a connection between CEO age and the trustworthiness of financial statement preparation (Huang, Rose-Green, & Lee, 2012). Researchers have linked the length of time a CEO serves in their position with instances of dishonest financial statement preparation (Ali & Zhang, 2015) and the revelation of control vulnerabilities (Yazawa, 2015). Young, less experienced CEOs may be less motivated to maintain effective Internal Control over financial statement preparation (ICFR) because it is more likely to discourage financial statement fraud habits.

Prior research (Klein, 2002; Fich and Shivdasani, 2006; Bergstresser and Philippon, 2006; Cornett *et al.,* 2008; Laux and Laux, 2009) establishes a connection between the CEO's length of service, expertise and occupation, remuneration, and authority with regards to deceptive financial statement preparation. A CEO with extensive experience and expertise can reduce the likelihood of misleading financial statement preparation through excellent management (Falato *et al.,* 2015; Wang *et al.,* 2016). Recent studies examine the correlation between the gender and age of top executives (Barua *et al.,* 2010; Francis *et al.,* 2015), as well as their impact on the quality of profits. In addition, prior studies have primarily examined the correlation between CEO attributes (such as age, length of service, and ethnicity) and instances of financial statement fraud, primarily in developed nations (Davidson *et al.,* 2007; Yang, 2010; Peni and Vähämaa, 2010; Bozanic *et al.,* 2013).

The responsibility for managing a company's business and ensuring compliance with legal obligations lies with the board of directors (Abdou *et al.,* 2021; Alam *et al.,* 2020; Gallego-Álvarez and Pucheta-Martínez, 2020). Consequently, there has been a growing interest in examining the characteristics of board directors, such as the representation of women in corporate leadership positions, and its impact on corporate behavior (Kliestik *et al.,* 2021).

The growing presence of women in corporate leadership roles has generated considerable interest on the potential association between male and female corporate leaders and distinct patterns of corporate action.. According to Khan and Vieito (2013) and Triana et al. (2012), board gender diversity may not exert an influence on corporate decisions in the absence of cognitive disparities between males and females. There exists a fundamental distinction between men and women in terms of their emotional expression, rather than their approach to addressing specific matters (Baez *et al.,* 2018). Furthermore, it has been shown by scholars such as Strydom et al. 2017, Sarhan *et al.,* 2019) that there exist distinct cognitive and behavioral patterns between men and women, which subsequently lead to divergent business outcome. Scholarly contributions from the fields of economics, organizational studies, and psychology have further demonstrated relationship between board gender diversity and the quality of financial reporting. Consequently, this study sort to examine the relationship between CEO demographics, board gender diversity and likelihood of financial statement fraud. (Yarram and Adapa, 2021; Schwartz-Ziv, 2017; Wiley & Monllor-Tormos, 2018). According to report to the nation (ACFE, 2020), fraudulent practices have occurred in 20125 countries with 2,504 cases, and have caused losses in global projections reaching 5% of turnover each year with a median nominal loss of US$3.6 billion. These fraudulent practices have a significant impact on organizations and

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1.1.1 East Africa Community listed firms

The Nairobi Securities Exchange was founded in 1954 as a regional exchange serving Uganda, Kenya, Tanzania (then known as Tanganyika), and Zanzibar, making it the oldest exchange in the region. By authorizing the inclusion and transaction of debt products, the Nairobi Securities Exchange undergoes a rebranding as the Nairobi Stock Exchange, therefore enhancing market liquidity. Currently, NSE operates as a limited liability business. In December 2023, the Nairobi Securities Exchange had a cumulative of 61 businesses that were officially listed. The company's market capitalization amounted to Ksh 2,776.9 billion. The exchange consists of five market tiers: the Real Estate Investment Trusts (REITS) fixed income securities market segment, the Main investments market segment, the alternative investment market segment, and the Growth and Enterprise Market Segment (GEMS).

The Capital Markets Authority enacted the regulations for stock exchanges in 1996, in accordance with the Capital Markets Authority Act of the same year. Their primary objective is to offer guidance for the development and operation of stock exchanges.

The Uganda Securities Exchange (USE) began operating in 1998 following regulatory changes. Since the year 2000, the exchange has been facilitating equities trades. In December 2020, the market capitalization reached UGX 18,577.94 billion, as stated in the USE annual report of 2010. In December 2013, the Uganda exchange has a cumulative of seventeen listed businesses.

The exchange consists of three divisions: the fixed income securities market, which is the main investment market for major firms, and the primary and alternative investment market sectors, which cater to smaller corporations. Currently, transactions are conducted through an open outcry system, and their settlement takes place on a T+5 timetable. The USE and NSE have recently harmonised their listing, trading, and settlement policies and procedures. The three East African exchanges aim to construct an East African central depository system and electronic trading system. Foreign investors trading shares on the Uganda exchange are exempt from specific limitations, in contrast to the NSE and DSE. The operations of the Uganda Stock Exchange are governed by several statutes and regulations. The Uganda Capital Markets Authority, empowered by the Capital Markets Act (Cap 84), primarily oversees the regulatory compliance of the USE.

According to the Capital Markets Regulations (1996), the sole duty of the USE is to oversee the operations of a stock exchange. The regulatory body, referred to as the Capital Markets Authority, is tasked with the duty of maintaining transparency in the stock exchange. In order to accomplish this, the regulatory body collects extensive data before a stock exchange is registered and carries out continuous assessments of operational advancements.

The Dar es Salaam Securities Exchange (DSE) was founded in 1996, in compliance with the Capital Markets and Securities (CMS) Act of 1994. Nevertheless, the DSE officially started functioning on April 15, 1998, with TOL Gas Limited and Tanzania Breweries Limited (TBL) being the first companies to be listed. In order to extend the duration of government debt, the Tanzanian government issued bonds with a term of two years in 1997, and subsequently issued bonds with maturities of five and seven years in 2002. The DSE first listed two- and five-year bonds in 2002, although only Tanzanian residents are allowed to participate in these securities. In early 2005, the DSE included "corporate" bonds from the East African Development Bank and BIDCO, alongside the bonds issued by the Tanzanian government. In May 2003, the DSE relaxed the limitations on cross- listing, allowing firms based in Kenya and Uganda, both of which are EAC participants, to engage in cross-listings. In 2004, Kenya Airways became the first company to cross- list on the DSE. The DSE integrated the automated trading, clearing, settlement, and depository systems that Kenya had developed for the EAC area in 2006. This will help improve the market infrastructure of the Tanzanian exchange and support the increase of liquidity. The Tsh 10,533 billion minor bond market in Tanzania is primarily composed of government securities.

The Dar-es-Salaam Stock Exchange was re-registered as a public limited corporation in 2015. The Dar es Salaam Stock Exchange Limited underwent reorganisation and became the Dar es Salaam Stock Exchange Public Limited Company. The DSE annual report for 2020 states that the market capitalization of the DSE was slightly above Tsh 16445.17 billion as of December 2020. In September 2013, the exchange had a total of thirteen equity listings. Currently, the DSE consists of a total of 28 listed companies.

The Rwanda Stock Exchange was incorporated in 2005 and officially launched in January 2011. The Capital Market Authority (CMA) of Rwanda is responsible for regulating the RSE, as mandated by Law No.23 (2017). Before, the RMA was known as the stock Markets Advisory Council (CMAC), a group established by the Prime Minister on 28 March 2007 to give initial advise on the creation of a stock market in Rwanda.

The stock exchange commenced operations on January 31, 2011. On that day, Bralirwa, the only brewery in Rwanda, commenced trading. It was represented by the symbol BLR. Starting in 2008, Rwanda established an over-the-counter exchange. This was later replaced by the Rwanda Stock Exchange, which began trading two corporations: National Media Group (NMG) and Kenya Commercial Bank Group (KCB) on 2 November 2010.

The Rwanda Stock Exchange (RSE) is host to 10 functioning firms in the stock market, with a combined valuation of around USD 3,627 million as of 2020. The NSE, DSE, and USE are all constituents of the African Stock Exchanges Association, with which RSE has a strong alliance. The process of merging the four stock exchanges into a unified East African bourse is now underway. As of April 2012, the Rwanda Stock Exchange (RSE) trades a total of five local and East African firms, three government fixed-income instruments, and one corporate fixed-income instrument. As of December 2020, RSE had a total of 10 businesses listed, with five of them being cross-listed.

The Somali Stock Exchange (SSE) was established by the Somali Economic Forum (SEF) with the primary objective of capitalizing on Foreign Direct Investment (FDI) in Somalia's expanding economy and fostering the growth of the private sector. The Somali Stock Exchange has achieved a significant milestone by becoming the inaugural

stock exchange located within Somalia. The sale of the initial shares of the SSE commenced on September 1, 2015, at the exchange's headquarters located in Garowe, Somalia.

Throughout history, the practice of trading shares has a long-standing history spanning several centuries. Traditionally, shares were exchanged through intimate networks and among business colleagues. Nevertheless, economists have observed that the rise of different stock markets in African countries has significantly contributed to the promotion of economic and private sector expansion. The objective of the SSE is to establish a viable securities market in Somalia, facilitating the interaction between financial securities holders, bondholders, and buyers or investors. There is a growing need for financing among Somali businesses, encompassing both large corporations and small and medium-sized enterprises (SMEs). The presence of liquidity is crucial in economic transactions, as it is unattainable without a market or exchange that brings together investors and stockholders. The SSE was established with this objective in mind.

1.2 Statement of the Problem

The issue of financial statement fraud continues to garnered significant attention from the general public, media, and regulatory bodies. Furthermore, prominent scandals, such as Enron, Qwest, and Lehman Brothers, caused a decrease in public confidence in capital markets (Throckmorton *et al.,* 2015). In the East Africa Communities, fraudulent financial reporting cases have also resulted in significant financial losses to investors and creditors, amounting to millions or billions of Shillings, Some of these cases include Kenya Airways Ltd., which incurred a loss of Ksh. 10 billion, Uchumi Supermarkets Ltd., which suffered a loss of Ksh. 226 million, Mumias Sugar Co. Ltd.,

which experienced a loss of Ksh. 3.4 billion, and Eveready East Africa Co. Ltd, which recorded a loss of Ksh. 248 million, Acacia Mining made an illegal transaction ranging from $1.5 million to 752 Million (Kinyua, Gakure, Gekara & Orwa, 2015).

As the agents of the company CEO and CFO are at the heart of financial statement preparation. Studies have associated CEOs with corporate misstatement preparation and unethical manipulation of earnings (Buchholz et al). The upper echelons theory posits that the background qualities and experiences of CEOs can have an impact on their decision-making and subsequently affect the outcomes of the firm (Osei *et al.,* 2023). Although previous research has identified several CEO demographics that influence financial statement fraud; Age (Conyon & He, 2016), Gender (Maulindi,2023) Financial Expertise (Ngo & Rathnasiri 2020) and Tenure(Oyioghosa & Amede 2022) the findings are mixed and inconclusive.

The board gender diversity is a crucial mechanism that aids a firms in achieving its strategic objectives (Wang, *et al.,* 2022; Maulidi, 2023), boards effectiveness in exercising managerial oversight. Prior research has acknowledged that aboard gender diversity would facilitate vigilant oversight of managers' opportunistic conduct and enhance the quality of financial reporting (Wang et al 2022, Bufarwa *et al*., 2020; Saidu & Aifuwa 2020). This study sought to examine whether board gender diversity moderates the association between CEO demographics and financial statement fraud in listed firms in East Africa securities/stock exchanges.

1.3 General Objectives

The main objective of study was to examine whether board gender diversity moderated on the relationship between CEO demographics and likelihood of financial statement fraud among listed firms in East Africa securities/stock exchanges.

1.3.1 Specific Objectives

i. To examine the effects of CEO age on financial statement fraud of listed firms in EAC.

ii. To determine the effects of CEO gender on financial statement fraud of listed firms in EAC.

iii. To examine the effects of CEO financial expertise on financial statement fraud of listed firms in EAC.

iv. To determine the effects of CEO tenure on financial statement fraud of listed firms in EAC.

v. To examine the moderating effect of board gender diversity on the relationship between:

   a) CEO age and financial statement fraud of listed firms in EAC
   b) CEO gender and financial statement fraud of listed firms in EAC
   c) CEO financial expertise and financial statement fraud of listed firms in EAC
   d) CEO tenure and financial statement fraud of listed firms in EAC

1.4 Hypotheses

The study tested the following hypotheses:

H_{0_1} CEO age has no significance effects on financial statement fraud of listed firms in EAC

H_{0_2} CEO gender has no significance effects on financial statement fraud of listed firms in EAC

H_{0_3} CEO financial expertise has no significance effects on financial statement fraud of listed firms in EAC

H_{0_4} CEO tenure has no significance effects on financial statement fraud of listed

firms in EAC

H_{0_5} Board gender diversity does not moderate the relationship between:

a) CEO age and financial statement fraud of listed firms in EAC

b) CEO gender and financial statement fraud of listed firms listed in EAC

c) CEO financial expertise and financial statement fraud of listed firms in EAC

d) CEO tenure and financial statement fraud of listed firms in EAC

1.5 Significance of the Study

Insights gained from this study can inform the development and refinement of corporate governance policies and regulations. Policymakers can use the findings to tailor regulations that related to CEO demographics board gender diversity and financial statement fraud, In addition corporate governance codes setters and stock/security exchange regulators can use the finding to come up with corporate governance such as boards attributes which can lessen CEOs likelihoods of engaging in financial statement fraud. By doing so, policymakers and stock/security exchange regulators can contribute to fostering transparent and ethical corporate practices, ultimately promoting economic stability and growth.

Investors in East Africa may benefit significantly from the findings of this study. For instance they can use this knowledge to make more informed decisions on which companies to allocate their resources based on the CEO demographics and board gender diversity on financial statement fraud. Specifically, Understanding the impact of CEO demographics and board gender diversity on financial statement preparation practices can aid investors in assessing the governance structures of companies, thereby mitigating risks and enhancing the likelihood of sustainable returns. Furthermore Informed investment decisions contribute to the overall stability and attractiveness of

the East Africa's capital market.

For the academic community, this study enriches the existing body of knowledge on CEO demographics board gender diversity and financial statement fraud. It opens avenues for further research and exploration into the nexus between CEO demographics, board gender diversity, and financial statement fraud. Academics can build upon these findings to develop more comprehensive theories and models that capture the intricacies of governance mechanisms and corporate fraud. Additionally, the study provides a foundation for professional trainings on corporate governance and financial reporting in developing regions such as the challenges associated with corporate governance in the East African context.

1.6 Scope of the Study

The study examined whether board gender diversity moderated the relationship between CEO demographics and financial statement fraud in listed industrial firms in the East African Community (EAC). The study specifically targeted the entire 122 firms that were listed in the East Africa Community's five Securities/stock Exchanges: Nairobi Securities Exchange (NSE), Uganda Securities Exchange (USE), Dar es Salaam Stock Exchange (DSE), Somalia Stock Exchange (SSE), and Rwanda Stock Exchange (RSE) and final sample of 62 listed firms. The study period will span from 2012 to 2023, and it is considered optimal for many reasons. The Rwanda Stock Exchange commenced operations in January 2011. The Nairobi Securities Exchange Limited was founded in 2011 with the purpose of facilitating the trading, clearing, and settlement of various financial instruments including as stock, debt, derivatives, futures, and Real Estate Investment Trusts. The FTSE NSE Kenya 15 and FTSE NSE Kenya 25 Indices were established in November 2011. In 2012, the Nairobi Securities

Exchange became a member of the Software and Information Industry Association (SIIA) and the Financial Information Services Division (FISD). In 2010, the Uganda Securities Exchange introduced an electronic trading system for the Settlement and Clearing Depository. Furthermore, the research period allowed for an ample amount of time for the East African Community's stock/securities market to recover from the Global Financial Crisis (GFC) of 2008, sometimes referred to as the Great Recession. This crisis had a devastating impact on economies globally, including Europe, Africa, Asia, and other countries. Recently, there have been several instances of earnings management, particularly in Mumias and Uchumi companies. These incidents prompted the Central Bank of Kenya (CBK) and the Capital Markets Authority (CMA) to introduce new regulations and procedures to avoid such situations from happening again.

Furthermore, during the same period numerous cases of financial statement fraud were reported hence making the period ideal for the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter discusses the concepts, theories, review of empirical literature and presents the study conceptual framework.

2.1 Concept of Financial Statement Fraud

Financial statement fraud is a deceitful practice where companies intentionally manipulate their financial statements to mislead stakeholders about the firms financial performance and health (Marjohan, *et al*., 2023). It involves the deliberate misrepresentation of financial information, such as revenues, expenses, assets, and liabilities, with the aim of achieving specific financial goals or concealing adverse financial conditions. Financial statement fraud poses significant risks to investors, creditors, regulators, and the broader financial market, as it undermines the integrity and reliability of financial information.

Financial statement fraud typically involves sophisticated schemes orchestrated by management or employees of an organization. According to the Committee of Sponsoring Organizations of the Treadway Commission (COSO), financial statement fraud is characterized by three primary factors: incentives/pressures, opportunities, and rationalizations. Incentives or pressures may arise from factors such as meeting earnings targets, obtaining financing, or maintaining stock prices. Opportunities refer to the conditions or weaknesses in internal controls that allow fraud to occur, while rationalizations involve justifications made by individuals to justify their fraudulent actions.

One common technique used in financial statement fraud is revenue recognition manipulation. Companies may recognize revenue prematurely, fabricate sales transactions, or inflate the value of accounts receivable to artificially boost revenue figures. This was evident in the case of Enron Corporation, where the company engaged in off-balance sheet transactions and accounting gimmicks to overstate revenues and conceal debt, leading to its eventual collapse in 2001 (Thomas, 2002).

Another technique involves the manipulation of expense accounts to understate expenses or overstate assets. This can be achieved through improper capitalization of expenses, such as research and development costs, or understating provisions for bad debts and liabilities. WorldCom's accounting scandal in 2002 is a notable example, where the company inflated its assets by capitalizing ordinary operating expenses, thereby overstating its financial performance (Healy & Palepu, 2003).

To mitigate the risk of financial statement fraud, organizations must implement robust internal controls and corporate governance practices. This includes establishing clear segregation of duties, conducting regular internal audits, and promoting a culture of ethics and integrity within the organization. Whistleblower hotlines and anonymous statement preparation mechanisms can also encourage employees to report suspicious activities without fear of retaliation.

Furthermore, regulatory oversight and enforcement play a crucial role in deterring fraudulent behavior. Regulatory bodies such as the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB) continuously monitor financial statement preparation and enforce compliance with accounting standards and regulations. Enhanced transparency and disclosure requirements also provide stakeholders with greater visibility into a company's

financial affairs, making it more difficult for fraudulent activities to go undetected.

2.2 Concept of CEO Demographics

The agency theory posits that managers are incentivized to prioritize their own interests over those of shareholders (Jensen, 1986). Hence, the correlation between CEO attitudes and financial statement fraud is a highly intricate subject that warrants additional scrutiny. The upper echelons theory posits that the background qualities and experiences of CEOs can have a significant impact on their decision-making and subsequently affect the outcomes of the firm. Previous research has identified several important factors that influence international behavior, according to the upper echelons theory. These factors include international experience (Kirca *et al.*, 2012), age (Davis and Harveston, 2000; Hsu *et al.*, 2013; Olivares-Mesa and Cabrera-Suarez, 2006), tenure (Herrmann and Datta, 2005), and the duality of the CEO (Hsu *et al.*, 2013). Nevertheless, the limited management proficiency (Fernández and Nieto, 2006; Gallo and Pont, 1996; Graves and Thomas, 2006) and the CEO's reluctance to take risks (Fernández and Nieto, 2006; Gallo and Pont, 1996) are identified as factors that restrict the internationalization process.

CEOs derive numerous advantages from their authority and power within firms, mostly because to their crucial role in delivering superior accounting information. These benefits extend to various domains, including strategic direction, decision-making, and the alignment of diverse stakeholders. Hence, it is crucial to examine the various attributes of the CEO that might help the establishment of a strong position and impact the effectiveness of financial communication. The establishment of CEO entrenchment is an unfavorable measure as it results in a decrease in the wealth of shareholders (Jensen, 1986). In their study, Lail and Martin (2017) discovered a correlation between

CEO presence and financial statement fraud, specifically in connection to discretionary accruals. The study was conducted using data from Compustat Capital IQ for the period of 1989-2013. The entrenchment signifies the CEO's desire to liberate themselves, either completely or partially, from the influence of the shareholders, while devising specific strategies to attain certain goals: enhancing their autonomy, strengthening their discretionary authority, and nullifying various disciplinary measures. However, the connection between a manager's individual traits and performance management approaches is still unclear and subject to debate (Alqatamin *et al.*, 2017). This study investigates the importance of the chief executive officer (CEO) demographics

(Age, gender, financial expertise and tenure) moderated by board gender diversity in relation to likelihood financial statement fraud.

2.2.1 CEO age

CEO age refers to the chronological age of an individual occupying the top executive position within an organization. While chronological age serves as a basic indicator, it does not solely determine a CEO's capabilities or effectiveness. Factors such as experience, expertise, leadership style, and adaptability also influence CEO performance (Zajac & Westphal, 1994). However, age can shape a CEO's perspective, priorities, and decision-making tendencies, particularly as they progress through different stages of their career.

Research suggests that CEO age can have both positive and negative effects on organizational outcomes. Older CEOs may bring valuable experience, industry knowledge, and stability to their leadership roles, enhancing corporate governance and long-term strategic planning (Smith *et al.*, 2009). Conversely, younger CEOs may possess greater innovation, risk-taking propensity, and technological savvy,

driving organizational agility and competitiveness (Rosenbusch *et al.,* 2011). The optimal age for CEO leadership varies depending on the company's context, industry dynamics, and strategic objectives.

CEO age can influence various aspects of corporate governance, including board dynamics, executive compensation, and succession planning. Boards of directors often consider CEO age when evaluating candidates for executive positions, weighing factors such as leadership experience, industry expertise, and potential for long-term performance (Connelly *et al.,* 2012). Age diversity within the executive suite and boardroom can promote balanced decision-making and mitigate groupthink, enhancing organizational resilience and innovation (Kunze *et al.,* 2011).

Succession planning is another critical area where CEO age plays a significant role. Organizations must carefully assess the timing and process of CEO transitions to ensure smooth leadership succession and continuity of strategic direction (Schein & Maier, 2016). Transitioning from an older CEO to a younger successor may present challenges related to organizational culture, stakeholder expectations, and strategic alignment. Conversely, promoting internal talent or hiring external candidates of similar age may facilitate smoother leadership transitions and knowledge transfer.

Furthermore, CEO age can influence stakeholders' perceptions of organizational performance, risk management, and long-term sustainability. Investors, analysts, and employees may interpret CEO age as a proxy for leadership stability, industry experience, and succession planning preparedness (Fahlenbrach *et al*., 2016). Transparent communication about CEO succession plans, strategic vision, and corporate governance practices can enhance stakeholders' confidence in the organization's leadership team and future prospects.

2.2.2 CEO Gender

CEO gender pertains to the sex of the Chief Executive Officer as either male or female (Masruroh & Carolina, 2022). Despite progress in promoting gender equality in the workplace, women remain underrepresented in CEO roles across industries and geographic regions (Catalyst, 2021). Factors such as unconscious bias, systemic barriers, and cultural norms contribute to the gender gap in executive leadership positions (Eagly & Carli, 2007).

Research suggests that male and female CEOs may exhibit differences in leadership styles, communication approaches, and decision-making processes. While individual characteristics and experiences play a significant role, gender stereotypes and societal expectations can influence leadership behavior (Eagly & Johannesen-Schmidt, 2001). Female CEOs may bring unique perspectives, collaborative leadership styles, and emotional intelligence to their roles, whereas male CEOs may be perceived as more assertive, competitive, and task-oriented (Koenig *et al.,* 2011). However, it is essential to recognize that these are generalizations, and leadership attributes vary among individuals regardless of gender.

The gender composition of executive leadership has implications for corporate governance, organizational culture, and stakeholder perceptions. Research suggests that gender-diverse leadership teams are associated with enhanced decision-making processes, innovation, and financial performance (Carter *et al.,* 2003). By incorporating diverse perspectives and experiences, gender-diverse leadership fosters creativity, problem-solving, and adaptability, contributing to organizational resilience and competitiveness (Herring, 2009).

Furthermore, female CEOs often face unique challenges and opportunities in navigating corporate environments. Gender stereotypes, unconscious bias, and glass ceiling barriers can hinder women's advancement to CEO positions and influence perceptions of their leadership effectiveness (Eagly & Carli, 2007). Female CEOs may also experience heightened scrutiny, performance expectations, and leadership evaluations compared to their male counterparts, amplifying the pressure to succeed (Catalyst, 2021).

The relationship between CEO gender and financial statement fraud is complex and requires careful consideration of various factors. Research on this topic is limited, but some studies suggest potential associations between gender diversity in leadership and ethical decision-making processes (Carter *et al.*, 2003). Gender-diverse leadership teams may bring complementary skills, perspectives, and ethical orientations to decision- making, reducing the likelihood of unethical behavior or fraudulent activities (Herring, 2009).

However, it is essential to note that gender alone does not determine ethical conduct or propensity for fraudulent behavior. Both male and female CEOs are capable of engaging in financial statement fraud, depending on individual characteristics, organizational culture, and situational factors (Davidson *et al.*, 2005). Instances of fraudulent behavior are influenced by organizational factors such as internal controls, corporate governance practices, and ethical climate, rather than solely CEO gender.

Moreover, gender diversity in executive leadership may indirectly influence financial statement fraud through its impact on organizational culture, accountability mechanisms, and stakeholder trust. Gender-diverse leadership teams that prioritize transparency, integrity, and ethical conduct are more likely to establish robust internal

controls, promote a culture of compliance, and detect and deter fraudulent activities (Carter *et al.,* 2003). By fostering a climate of trust and accountability, gender-diverse leadership contributes to the prevention and detection of likelihood financial statement fraud within organizations.

2.2.3 CEO Financial Expertise

CEO financial expertise reflects the formal training and qualifications acquired by individuals occupying the highest executive positions within organizations. While there is no standard educational path for CEOs, common qualifications include undergraduate degrees in business administration, finance, economics, or related fields, often complemented by advanced degrees such as Master of Business Administration (MBA) or specialized certifications (Hermalin & Weisbach, 1998). Additionally, executive education programs and professional development initiatives provide CEOs with opportunities to enhance their leadership skills, industry knowledge, and strategic acumen.

The educational background of CEOs shapes their cognitive abilities, problem-solving approaches, and decision-making frameworks. Research suggests that CEOs with diverse educational experiences may bring different perspectives and insights to their leadership roles, fostering innovation and strategic agility within organizations (Finkelstein & Hambrick, 1996). However, the relationship between CEO education and organizational performance is complex, influenced by factors such as industry dynamics, corporate culture, and leadership effectiveness.

CEO expertise has significant implications for corporate governance, strategic management, and organizational culture. Boards of directors often consider CEO education when evaluating candidates for executive positions, assessing factors such as

academic credentials, industry expertise, and leadership competencies (Finkelstein *et al.,* 2009). Educational diversity within the executive suite and boardroom can promote balanced decision-making, risk management, and long-term value creation.

Furthermore, CEO expertise can influence stakeholders' perceptions of organizational credibility, transparency, and ethical conduct. CEOs with strong educational backgrounds may be perceived as more competent, trustworthy, and capable of navigating complex business environments (Hambrick & Mason, 1984). Transparent communication about CEO qualifications, professional development initiatives, and adherence to ethical standards can enhance stakeholders' confidence in the organization's leadership team and governance practices.

CEO education is also relevant to the prevention and detection of financial statement fraud within organizations. Research suggests that CEOs with financial expertise may exhibit greater financial literacy, analytical skills, and understanding of accounting principles, reducing the likelihood of financial misstatements or irregularities (Francis *et al.,* 1999). Additionally, CEOs with expertise backgrounds may prioritize ethical conduct, corporate integrity, and compliance with regulatory requirements, mitigating the risk of fraudulent behavior (Davidson *et al.,* 2005).

However, the relationship between CEO education and financial statement fraud is not deterministic, as educational qualifications alone do not guarantee ethical behavior or integrity. Instances of financial statement fraud have occurred in organizations led by CEOs with prestigious educational credentials, highlighting the importance of comprehensive internal controls, ethical leadership, and organizational culture (Bédard & Gendron, 2010). Moreover, overconfidence or hubris stemming from extensive education and professional achievements may lead CEOs to underestimate risks or

engage in aggressive financial practices, increasing vulnerability to fraudulent behavior (Malmendier & Tate, 2005)

2.2.4 CEO Tenure

Chief Executive Officer (CEO) tenure refers to the duration of time an individual serves as the top executive in an organization. It is a critical aspect of corporate governance and leadership dynamics, influencing organizational performance, strategic decision-making, and succession planning.

CEO tenure represents the length of time a CEO holds their position within an organization. It serves as a key indicator of stability, continuity, and leadership experience. CEO tenure varies widely across industries, company sizes, and organizational contexts. Factors such as CEO age, performance, and industry dynamics can influence the duration of CEO tenure (Vancil, 1987). While some CEOs may have relatively short tenures due to performance issues or external pressures, others may lead organizations for decades, shaping their strategic direction and organizational culture.

Longer CEO tenures are often associated with greater institutional knowledge, industry expertise, and leadership stability. Experienced CEOs may develop deep relationships with stakeholders, understand the complexities of the business environment, and implement long-term strategic initiatives (Hambrick & Fukutomi, 1991). However, prolonged CEO tenure can also lead to complacency, resistance to change, and diminished innovation, particularly in rapidly evolving industries.

CEO tenure has significant implications for corporate governance, organizational performance, and stakeholder relations. Boards of directors play a crucial role in evaluating CEO performance, setting succession plans, and ensuring effective

leadership transitions (Dalton *et al.,* 2003). Transparent communication about CEO tenure, performance goals, and succession planning processes can enhance stakeholders' confidence in the organization's leadership team and governance practices.

Furthermore, CEO tenure influences organizational culture, employee morale, and strategic decision-making. Long-serving CEOs may imprint their leadership style, values, and priorities onto the organization, shaping its identity and strategic direction (Chatterjee & Hambrick, 2007). However, entrenched leadership may also hinder organizational adaptability, diversity of perspectives, and responsiveness to external changes (Charan *et al.,* 2011). Balancing the benefits of CEO experience with the need for fresh perspectives and innovation is crucial for sustaining organizational competitiveness and relevance.

CEO tenure can be both a mitigating and exacerbating factor in financial statement fraud within organizations. Research suggests that longer CEO tenures are associated with lower incidences of financial misstatements and accounting irregularities (Engel *et al.,* 2015). Experienced CEOs may have a deeper understanding of financial statement preparation requirements, internal control systems, and risk management practices, reducing the likelihood of fraudulent behavior (Palmrose *et al.,* 2004). Additionally, long-tenured CEOs may have established credibility with stakeholders, enhancing transparency and accountability in financial statement preparation processes.

However, prolonged CEO tenure can also create conditions conducive to likelihood financial statement fraud. Entrenched leadership may foster a culture of deference, where dissenting voices are silenced, and internal controls are weakened (Beasley *et al.,* 2000). CEOs with long tenures may exert significant influence over organizational

culture, incentive structures, and performance metrics, creating opportunities for earnings management or manipulation to meet short-term financial targets (Hermalin & Weisbach, 1998). Moreover, the psychological phenomenon of hubris or overconfidence among long-serving CEOs may lead to unethical behavior, disregarding regulatory requirements or ethical standards (Malmendier & Tate, 2005).

2.3 Concept of Board Gender Diversity

Board gender diversity refers to the practice of ensuring equitable representation of both men and women on corporate boards, with the aim of fostering a balanced and inclusive decision-making environment (Adams & Funk, 2018). It encompasses initiatives aimed at increasing the proportion of women serving in leadership positions within organizations, particularly at the board level (Catalyst, 2018).

Numerous studies conducted in 2018 highlight the significant benefits associated with board gender diversity. Research by McKinsey & Company (2018) indicates that companies with gender-diverse boards tend to achieve better financial performance and higher levels of innovation compared to those with less diverse boards. Additionally, Catalyst (2018) emphasizes that gender-diverse boards are better equipped to understand and cater to diverse customer bases, leading to improved market responsiveness and competitiveness.

The inclusion of women on corporate boards has been shown to positively influence decision-making processes. Adams and Funk (2018) found that gender-diverse boards are associated with more thorough discussions, greater consideration of alternative perspectives, and reduced instances of groupthink. This diversity of viewpoints enhances the quality and effectiveness of board decisions, leading to better outcomes for the organization as a whole.

Despite the recognized benefits, achieving board gender diversity presents challenges for many organizations. Erkens, Hung, and Matos (2018) point out that systemic gender biases and entrenched cultural norms within corporate structures often serve as barriers to gender diversity initiatives. However, they also note that organizations that prioritize diversity and implement proactive strategies stand to gain a competitive advantage in attracting top talent and fostering a culture of innovation.

2.4 Theoretical Review

2.4.1 Agency Theory

Agency theory, a fundamental concept in corporate governance, explores the relationship between principals (shareholders) and agents (CEOs) within organizations. It suggests that conflicts of interest arise when agents, entrusted with decision-making authority, pursue their interests over those of the principals, potentially leading to agency problems such as moral hazard or adverse selection (Jensen & Meckling, 1976). Agency theory provides valuable insights into how attributes such as age, gender, education, and tenure influence CEO behavior and the likelihood of engaging in unethical or fraudulent activities.

Agency theory posits that CEO Demographics, such as age, gender, education, and tenure, affect their behavior and decision-making processes within organizations (Fama & Jensen, 1983).

Older CEOs may exhibit risk-averse behavior, prioritizing organizational stability over short-term gains, which can mitigate agency problems related to managerial opportunism or excessive risk-taking (Dalton *et al.*, 2003). However, age-related cognitive decline or entrenched leadership may also lead to complacency or resistance to change, potentially increasing the likelihood of agency problems such as managerial

entrenchment or empire-building (Finkelstein & Hambrick, 1996).

Gender diversity in CEO positions is a key aspect of agency theory, influencing leadership dynamics, communication styles, and stakeholder perceptions within organizations (Eagly & Carli, 2007). Female CEOs may bring different perspectives and leadership approaches compared to their male counterparts, potentially impacting agency relationships and decision-making processes (Carter *et al.,* 2003). Research suggests that gender-diverse leadership teams are associated with improved decision-making and financial performance, which can mitigate agency problems such as groupthink or overconfidence (Catalyst, 2021).

CEO education plays a crucial role in agency theory by shaping CEO expertise, accountability mechanisms, and signaling effects (Hermalin & Weisbach, 1998). CEOs with advanced degrees or specialized training may possess greater technical knowledge, analytical skills, and industry expertise, enhancing their ability to fulfill fiduciary responsibilities and mitigate agency risks (Davidson *et al.,* 2005). Moreover, educational qualifications serve as signals of competence and commitment to shareholders, influencing stakeholders' perceptions of CEO credibility and trustworthiness (Francis *et al.,* 1999).

CEO tenure affects agency relationships by influencing power dynamics, accountability mechanisms, and organizational culture (Hambrick & Fukutomi, 1991). Long-tenured CEOs may develop strong relationships with stakeholders, accumulate firm-specific knowledge, and exert significant influence over strategic decisions (Engel *et al.*, 2015). While tenure can enhance organizational stability and continuity, it may also lead to agency problems such as managerial hubris, resistance to change, or diminished accountability (Malmendier & Tate, 2005).

Agency theory provides insights into how CEO Demographics influence the likelihood of financial statement fraud within organizations. Older CEOs may have accumulated experience and reputation capital, reducing the incentive to engage in fraudulent activities (Palmrose *et al.,* 2004). However, age-related cognitive decline or reluctance to adopt new technologies may create vulnerabilities to financial manipulation or misstatement (Malmendier & Tate, 2005).

Gender diversity in executive leadership may influence ethical conduct, risk management, and stakeholder relations, potentially affecting the likelihood of financial statement fraud (Carter *et al.,* 2003). Female CEOs may bring different ethical perspectives and communication styles, promoting transparency and integrity in financial statement preparation processes (Eagly & Carli, 2007).

CEOs with strong educational backgrounds and financial expertise are better equipped to understand and comply with accounting standards, internal controls, and regulatory requirements, reducing the risk of financial statement fraud (Abbott *et al.,* 2004). Educational qualifications serve as signals of competence and ethical commitment, influencing stakeholders' perceptions of CEO integrity and accountability (Davidson *et al.,* 2005).

CEO tenure affects the likelihood of financial statement fraud by influencing organizational culture, internal controls, and accountability mechanisms (Engel *et al.,* 2015). Long-tenured CEOs may be more familiar with firm operations and financial statement preparation processes, facilitating detection and prevention of fraudulent activities (Hambrick & Fukutomi, 1991). However, entrenched leadership may also create opportunities for misconduct or abuse of power, especially in the absence of effective governance mechanisms. This theory is used to Hypotheses that CEO

demographics may influence financial statement fraud.

2.4.2 Fraud-Pentagon Theory

The Fraud Pentagon Theory, developed by Steve Albrecht, proposes that five elements— pressure, opportunity, rationalization, capability, and attitude—converge to facilitate fraudulent behavior within organizations. This theory offers a comprehensive framework for understanding the motivations and mechanisms underlying fraudulent activities, including those perpetrated by CEOs. By examining how these elements interact, the Fraud Pentagon Theory provides insights into the role of CEO Demographics in Financial statement fraud.

The Fraud Pentagon Theory suggests that certain CEO Demographics can influence their susceptibility to engaging in fraudulent behavior. For example, CEOs facing significant financial pressure, such as the need to meet earnings targets or maintain market expectations, may experience heightened motivation to commit fraud (Wells, 2005). Additionally, CEOs with a predisposition towards risk-taking or a lack of ethical values may be more inclined to exploit opportunities for financial statement fraud (Albrecht *et al.,* 2018).

Furthermore, the theory emphasizes the importance of the opportunity element in facilitating fraud. CEOs with substantial control over organizational resources and weak internal controls may find themselves in a position to manipulate financial information without detection (Albrecht *et al.,* 2018). Additionally, CEOs who hold dominant positions within the corporate hierarchy may have the capability to override or circumvent existing controls, further enabling fraudulent behavior (Albrecht *et al.,* 2018).

In the context of financial statement fraud, the Fraud Pentagon Theory provides insights into the underlying motivations and rationalizations employed by CEOs to justify their actions. CEOs may rationalize fraudulent behavior by convincing themselves that the ends justify the means, especially when faced with intense pressure to achieve short-term financial goals (Albrecht *et al.*, 2018). Moreover, CEOs may perceive their actions as necessary to maintain their reputation, preserve their position within the organization, or meet external expectations (Wells, 2005).

Additionally, the theory highlights the role of attitude in shaping CEO behavior. CEOs with a predisposition towards aggressive accounting practices or a disregard for ethical standards may be more inclined to engage in financial statement fraud (Wells, 2005). Moreover, CEOs who exhibit overconfidence in their abilities or a sense of entitlement may rationalize fraudulent behavior as permissible or justified (Albrecht *et al.*, 2018). The theory has been employed to argue that financial statement fraud may be influenced by motivational factors linked to CEO demographics.

2.4.3 Resource Dependency Theory

According to RDT, organizations are reliant on external resources to survive and thrive, leading to power imbalances and dependencies among various stakeholders (Pfeffer & Salancik, 1978). CEO demographics, such as age, gender, and educational background, can significantly influence the decision-making processes within an organization (Hambrick & Mason, 1984). In the case of financial statement fraud, certain demographic characteristics of CEOs may create vulnerabilities. For example, younger or less experienced CEOs might be more inclined to engage in unethical behavior due to pressure to meet performance targets or lack of ethical guidance (Mishra & McConaughy, 1999). Therefore, RDT suggests that CEO demographics play a crucial

role in shaping the firm's vulnerability to Financial statement fraud.

Furthermore, the composition and board gender diversity are pivotal in mitigating the risk of financial statement fraud within organizations (Bedard *et al.*, 2012). RDT posits that organizations rely on external resources, such as expertise and oversight provided by the board gender diversity, to navigate complex regulatory environments and maintain stakeholders' trust. Board gender diversity are better equipped to detect irregularities and ensure compliance with accounting standards and regulations, thereby reducing the likelihood of Financial statement fraud.

However, the relationship between CEO demographics, board gender diversity, and financial statement fraud may not be straightforward. RDT acknowledges that power dynamics and dependencies among stakeholders can influence decision-making processes within organizations (Pfeffer & Salancik, 1978). For instance, if the CEO holds significant power and influence over the composition of the board, they may prioritize loyalty over expertise, leading to ineffective oversight and increased susceptibility to fraudulent activities.

By examining how organizations depend on external resources and navigate power dynamics among stakeholders, this theory offers insights into the mechanisms underlying fraudulent behavior and avenues for enhancing corporate governance mechanisms to mitigate such risks. This study uses RDT to suggest that board gender diversity may influence the relationship between CEO demographics and financial statement fraud.

2.5 Empirical Review

2.5.1 CEO Age and Financial Statement Fraud

Prior studies have demonstrated that the CEO's age can be associated with the rationalization of committing fraud. However, the findings are inconclusive. For example, Troy et al. (2011), Huang et al. (2012) and Xu et al. (2017) found that older CEO is less likely to commit fraud. They argued that older CEOs are often more knowledgeable and more likely to lose if they fail to carry out their monitoring duties. Also, as the CEO aged, they often get more ethical and more conservative because of the more prolonged exposure to traditional culture and customs (Mudrack, 2011) and more likely to recognize moral issues and sound moral reasoning (Singhapakdi *et al.*, 1996) and, thus, improve the decisionmaking quality of the company. Troy et al. (2011) also highlighted that younger CEOs are more likely to engage in fraudulent activities because they are more risk-takers and more vulnerable to external pressures. On the contrary, Demers and Wang (2010) said that younger CEOs are less likely to engage in earnings management because they are less knowledgeable; hence, they are less aware of the possibilities and rewards of conducting earnings management. Meanwhile, Conyon and He (2016) revealed no significant difference in CEO age between fraud and non-fraud firms in China and suggested that CEO age is less useful as a predicted probability to engage fraud.

Putra & Setiawan (2024) aimed to examine the effect of chief executive officer (CEO) characteristics on earnings management. Research samples was manufacturing firms listed in the Indonesian Stock Exchange 2015–2021. There was no effects of CEO age and tenure on earnings management.

Girau *et al.*, (2019) did a study which consisted of companies listed in Bursa Malaysia, focusing on three industries; retail, telecommunication and technology, covering the period from year 2010 to 2017, and the logistic regression were used to analyse the data obtained. This study found that the size of the board and CEO age are significantly positively related to the likelihood of corporate fraud.

Hadijah, (2022) aimed to determine the influence of managerial factors, ownership, external pressure, and tax avoidance on financial statement fraud in companies listed on the Indonesia Stock Exchange (BEI). The managerial factor variable is measured by the age of the CEO. The financial statement fraud variable was measured by dummy. The population of this study was manufacturing companies in the industrial subsector listed on the BEI. The sampling method used was purposive sampling. The data source was secondary data collected by documentation techniques. This study used descriptive statistics and partial hypothesis testing logistic regression with a quantitative approach assisted by the IBM SPSS Statistics 25 program. The results of the study showed that first; the age of the CEO has a negative and insignificant effect on Financial statement fraud.

Park *et al.*, (2017) presented empirical evidence to answer the following question: "Which factors of CEO Demographics can affect the CEO's decision-making or actions on embezzlement?" CEOs may be the key wrongdoers of fraud in asset embezzlement, it is important to understand the relationship between embezzlement and the characteristics of the CEOs involved in it. The study analyzed the association between embezzlement by CEO and CEO Demographics, represented by ownership status and demographic variables (age and major), by examining cases of CEO embezzlement in the Korean capital market. Although previous accounting studies on fraud were rarely

taken into consideration in embezzlement cases, the study focused on these cases using a sample of 490 firm-year observations during the period from 2005 to 2012. The major findings of the study are as follows. First, owner CEOs was less likely to commit embezzlement compared to non-owner CEOs. The incidence of CEO asset embezzlement tends to decrease when the CEO is a major shareholder of the company. Second, we found a significantly negative association between the CEO's age and embezzlement, suggesting that older CEOs are less likely to embezzle corporate assets. Meanwhile, no significant relationship is found between the CEO's major and asset embezzlement.

2.5.2 CEO gender and Financial statement fraud

Ismato & Sambuaga. (2023) examined the effect of gender and expertise and political connection on a fraudulent financial statement. Financial statement fraud is measured by managerial ability which presents with F-SCORE variable, gender on board, financial expertise, and political connection. The population used in this study are the countries in Indonesia listed in IDX and S&P Capital IQ for 2018-2021. In the study, a total of 100 industrial enterprises whose annual reports were made public and who disclosed their external auditors on the Indonesia stock exchange were chosen on purpose. STATA 17 was used to test the sample in this study using the multiple regression method. The study showed the following result: the impact of CEO gender on board towards fraudulent financial statements is significant, and the impact of political connection towards fraudulent financial statements is insignificant. Also, financial expertise towards fraudulent financial statements can't be defined.

Ghodrati *et al.,* (2021) examine the effect of a CEO's gender criteria on the financial statement fraud of the firm. The sample consists of 86 firms listed in Tehran Stock

Exchange over the years 2013-2017. Data are tested using the logistic regression model. The results of the study showed that the CEO's gender diversity increases the financial statement fraud of the company.

Luo *et al.,* (2020) investigated the impact of CFO gender on financial-statement preparation-related corporate fraud. They hypothesized that firms with female CFOs are less likely to commit risky and unethical fraud than otherwise similar firms with male CFOs. Based on a sample of Chinese listed firms from 2004 to 2012, they provided support for their prediction. Further, they found that the negative association is more pronounced when female CFOs have higher levels of education and/or external job opportunities.

Liao, Smith & Liu (2019) investigated the influence of female chief financial officers (CFOs) on accounting fraud. Using a sample of Chinese listed firms for the period from 2003 to 2015, the study found that firms with female CFOs are significantly less likely to engage in accounting fraud. Further the study found the negative relationship between female CFOs and accounting fraud is less significant in state-owned enterprises (SOEs), where political concerns are more pronounced. Additional tests show that the negative relationship is significant in firms with gender-mixed boards rather than male-only boards. In addition, the relationship is more pronounced when the firm has a less powerful CEO and when the CFO simultaneously holds a directorship in the same firm.

Maulidi (2023) examined the effect of CEO gender board diversity on corporate fraud. Particularly, it is to gain empirical evidence whether firms with more female corporate leaders are more (less) likely to engage in corporate fraud. The authors used data of fraud firms from Accounting and Auditing Enforcement Releases. As a focus of the

study, the authors take the fraud sample observations from the last 10 years, from 2011 to 2021. The idea was that the number of firms sectioned due to corporate fraud reached a peak in such periods. In the context of non-state-owned enterprise environments, the authors find female corporate leaders are less likely to engage in corporate fraud. However, among firms with a state-owned background, the authors' empirical evidence showed that the roles of female corporate leaders remain under-represented in the boardrooms. As reported, the presence of female corporate leaders does not bring a significant impact on enhancing group ethical decision-making and governance quality. This situation does appear when political connections between firms and governments or politicians are prevalent.

Lenard *et al.*, (2017) examined whether companies with female executives and directors are less likely to be involved in financial statement preparation fraud litigation. The authors used a logistic regression model to determine the likelihood of fraud when there is at least one woman in an executive position or on the board of directors. The authors found that the presence of at least one female leader decreases the likelihood that the company was involved in litigation for financial statement preparation fraud. The results were robust after controlling sample selection bias by using a propensity score matched sample.

Rathnasiri *et al.,* (2020) investigated how to improve corporate governance understanding the effect of board gender diversity and audit committee gender diversity on the likelihood of financial statement fraud in Sri Lankan listed companies. The study used resource dependency theory as a theoretical framework for understanding the effect of internal corporate governance mechanisms on financial statement fraud. A matching sample was generated using Propensity Score Matching procedure consists

of 203 firm- year observations out of a total of 1,785 firm-year observations. The logistic regression analysis was employed to analyse the effect between gender diversity and likelihood of financial statement fraud of Sri Lankan listed firms between 2009-2017. Subsequently, the research was extended to explore the effect of audit committee gender diversity on financial performance, addressing endogeneity issues. The findings of this study indicated that audit committee gender diversity has a significant and negative effect on the likelihood of financial statement fraud while board gender diversity showed a negative but insignificant effect on the likelihood of financial statement fraud. The effect of audit committee gender diversity on firm performance found robust results after controlling for endogeneity using the Generalised Method of Moments.

Parvin & Akter (2023) intended to test the nexus between the possibility of financial statement fraudand the corporate governance in Bangladesh. The content analysis of annual reports was performed for 20125 Bangladeshi listed manufacturing companies.

The study applied more than one fraud indicator models such as Altman Z-score and Decheow F-score models to determine more accurately the chance of financial statement fraud. The likelihood of financial statement fraud was determined based on whether either one or both of Altman Z-score and Decheow F-score models show red flags of potential fraud. The study found that board members with finance or accounting backgrounds are less likely to practice misleading financial statement preparation since they may have the knowledge essential to understand financial statement fraud strategies.

Masruroh, & Carolina (2022) examined the effect of CEO characteristic factors on indications of financial statement fraud using the Beneish Model. Based on the upper echelon theory, this study proposes six hypotheses which are tested using logistic regression analysis. This study uses secondary data derived from financial statements or annual reports of mining companies listed on the Indonesia Stock Exchange from 2015 to 2019. The results of this study show that CEO Demographics in the form of CEO age, educational background, and work experience cannot be used as indicators that can detect financial statement fraud. Meanwhile, some other characteristics that are still the focus of this study, such as CEO's gender, tenure, and nationality have an influence on indications of financial statement fraud

2.5.3 CEO Education and Financial statement fraud

Troy, Smith & Domino, (2011) proposed that key CEO demographic factors reflect alternative modes of rationalizing the choice to engage in and/or facilitate accounting fraud. Specifically, the authors theorized that younger, less functionally experienced CEOs and CEOs without business degrees was more likely to rationalize accounting fraud as an acceptable decision. Based on a sample of 32012 fraud-committing and control firms, the study found support for the authors' predictions. It was found that CEO stock options (a form of executive equity incentive) also predict fraud, and that this relationship is not moderated by CEO demographics.

Masruroh & Carolina, (2022) analyzed the influence of CEO characteristic factors on indications of financial statement fraud using the Decheow Model. Based on the upper echelon theory, the study proposed six hypotheses which are tested using logistic regression analysis. The study used secondary data derived from financial statements or annual reports of mining companies listed on the Indonesia Stock Exchange from

2015 to 2019. The results of the study showed that CEO Demographics in the form of CEO age, educational background, and work experience cannot be used as indicators that can detect financial statement fraud. Meanwhile, some other characteristics that was still the focus of the study, such as CEO's gender, tenure, and nationality have an influence on indications of financial statement fraud. So, it can be concluded that the CEO Demographics that have a link in detecting financial statement fraud can be considered fraud prevention efforts.

Ngo & Nguyen (2022) aimed to analyze the role of the financial and accounting expertise of the chief executive officer (CEO) on financial statement preparation quality (FRQ) in an emerging economy. Their study was based on data collected from a large sample of all non-financial companies listed on Vietnamese stock exchanges during the period 2016– 2020 with 2,435 observations. FEM-ROBUST standard errors regression model was used to examine the relationship between the financial, accounting expertise of CEOs and FRQ through earnings management by discretionary accruals. The results showed that CEOs with financial and accounting expertise have more influence and intervention on earnings management and thus adversely affect FRQ.

Rostami & Rezaei (2022) aimed to trace the impact of corporate governance and its mechanisms in preventing companies from turning to financial statement fraud. To achieve this, they examined information from 187 listed companies on the Tehran Stock Exchange over six years (2013-2019). The findings revealed that robust corporate governance significantly reduced companies' intention to engage in financial statement fraud. Similarly, a negative and significant relationship was observed between each of the nine individual corporate governance mechanisms (except for board compensation) and financial statement fraud.

Dewi (2022) aimed to provide empirical evidence about the effect of financial target, nature of industry, change in auditor, length of tenure of President Director, President Director's education level and political connections on fraudulent financial statement using the fraud hexagon theory approach. This study used annual reports and financial statement as the secondary data from Indonesia Stock Exchange (IDX) and company official website. The object of this research was the mining sector companies in 2016-2020. Based on predetermined criteria, there are 38 companies with 190 samples used in this study. This study proved that financial target and nature of the industry have positive effect on fraudulent financial statements. Meanwhile, change in auditor, President Director's or CEO education level, length of tenure of President Director and political connection have no significant effect on fraudulent financial statements.

2.5.4 CEO tenure and financial statement fraud

Ashafoke, Dabor & Ilaboya, (2021) explored the effect of CEO Demographics on financial Statement quality of listed financial firms. The study employed a sample of 15 firms operating in Nigeria's financial institutions from 2008 - 2019, drew insights from the upper echelon theory to investigate the effect of CEO Demographics on the financial statement preparation quality. A CEO characteristic was measured using variables such as CEO gender, CEO financial expertise and CEO tenure. The study analyzed the data using the panel regression analysis. Empirically, the results showed that CEO tenure revealed a positive and significant relationship with financial statement quality.

Borgi, *et al.*, (2021) examined the effect of some demographic characteristics of the Chief Executive Officer (CEO) on Financial Statement Timeliness (FST) in Saudi Arabia. More particularly, this study aimed to test whether or not CEO Demographics,

namely, tenure, accounting financial expertise, and sociability are associated with FST. The sample of the study consists of 119 non-financial firms listed on Tadawul Stock Exchange for a period of four years (2012-2017). The study used panel regressions and two proxies of FST. Their findings reported that a long-tenured CEO are associated with timely financial statements when the IFRS transition is simultaneously considered. The result implied that companies with a long-tenured CEO reduce the period taken to prepare and disclose their financial statements in the period of IFRS transition. Their findings showed that CEO accounting financial expertise is significantly associated with timely financial statement.

Iyioha & Akhor (2022) examined the relationship between Chief Executive Officers' (CEO) attributes and financial statement quality of Deposit Money Banks (DMBs) listed in the Nigerian Stock Exchange as at 31st December, 2020. The study adopted a longitudinal research design, suited for its repetitive observations of the same subjects (DMBs) over a period of time (2010-2020). A census of all thirteen (13) DMBs listed in the Nigerian Stock Exchange during that period provided the study's data, sourced from their audited annual reports. The panel estimation technique was chosen to address the heterogeneity problem associated with cross-sectional studies. The estimation results revealed an inverse relationship between CEO tenure, and financial statement quality.

Uyioghosa & Amede (2019) examined whether CEO attributes namely CEO tenure, gender, financial expertise, and ownership are significantly related to financial statement preparation timeliness. The study adopted a correlational research design and secondary data were sourced from firms quoted on the financial sector of the Nigerian Stock Exchange (NSE) for the period 2010-2016. The data collected were analysed

using Ordinary Least Square (OLS) method regression technique. The findings reveal that CEO tenure and CEO gender are significantly related to financial statement preparation timeliness while CEO financial expertise and CEO ownership have no significant relationship with financial statement preparation timeliness.

2.6 The Moderating Effect of Board Gender Diversity

2.6.1 Board gender diversity and financial statement fraud

Wang, Yu, and Gao (2022) examined the effect of gender diversity on fraud commission and detection. Their objective was to determine whether organizations featuring a higher proportion of female corporate leaders are less prone to engaging in financial statement fraud. An analysis was conducted using a bivariate probit model to investigate the impact of female corporate leaders on the commission and detection of financial statement fraud in Chinese listed companies between 2007 and 2018. Increasing the presence of female corporate leaders enhances the probability of detecting fraud, hence decreasing organizations' inclination to commit fraudulent activities. The study verified that women exhibit a greater inclination towards risk aversion and a higher level of dedication to ethical standards compared to men in business leadership roles. Furthermore, the influence of gender diversity is dependent on the characteristics of the individuals who hold the highest positions of authority in publicly traded corporations. Specifically, a greater presence of women in top leadership positions has the potential to reduce the occurrence of fraudulent activities or enhance the ability to identify fraudulent activities in non-state-owned firms. However, this effect is not observed in state-owned organizations.

Subair et al. (2020) investigated the correlation between board features and the Likelihood of financial statement fraud in the Saudi stock exchange, which is

considered an innovative market. Over a span of six years, specifically from 2012 to 2019, a comprehensive collection of financial statements from 67 companies listed on the Saudi Stock Exchange has been undertaken. The Decheow F-score model, as modified by Decheow the Financial Analysis, was employed to assess the presence of falsified financial statements. The study employed panel data techniques to investigate the correlation between financial statement fraud and four board characteristics: independence, size, frequency of meetings, and gender diversity. The results of the study revealed a substantial negative correlation between board independence and the likelihood of fraud in financial statements. Additionally, a positive correlation was seen between board size and the chance of fraud in financial statements. The findings of the study also revealed that there is no statistically significant correlation between the presence of women on the board and the frequency of meetings, and the likelihood of fraud occurring in the financial statements.

The study conducted by Bufarwa, IElamer, Ntim, and AlHares (2020) examined the influence of corporate governance (CG) procedures on the field of financial risk statement preparation within the United Kingdom. The research employed a panel dataset consisting of 50 non-financial companies from 10 industrial sectors that were listed on the London Stock Exchange between 2011 and 2015. The study employed multivariate regression techniques to investigate the associations. The study's findings indicate that corporate governance (CG) exerts a substantial impact on the transparency of financial risk information. The research findings indicate that there is a positive correlation between block ownership and board gender diversity with the extent of corporate financial risk disclosure (FRD).

Saidu & Aifuwa (2020) examined the effect of board characteristics on the audit quality of industrial companies listed in Nigeria. The study was guided by the positivist research philosophy and employed a deductive research strategy, utilizing a multi-method quantitative research design. The researchers utilized Binary Probit Regression to evaluate the provided assumptions. The findings indicated that there was a positive and substantial correlation between board size and audit quality. The research also did not find any evidence regarding the moderating influence of female representation on the board on the relationship between board independence and audit quality.

Orazalin (2020) conducted a study to investigate the potential impact of board gender diversity and other board features on the earnings management practices of leading publicly traded firms in Kazakhstan. The research examined data from prominent publicly traded corporations spanning the years 2010 to 2016. The empirical findings indicated that organizations exhibiting higher levels of board gender diversity demonstrate greater efficacy in mitigating profits management.

2.7 Control Variables

To control for the effect of CEO demographics and Board gender diversity on financial statement fraud, the study incorporated a set of control variables as suggested by previous studies

2.7.1 Firm age and financial statement fraud

Teguh & Kristanto (2020) examined the relation between company characteristics towards the tendency of financial statement fraud. The research data was taken from the Indonesian Stock Exchange and Compustat from 2012 until 2018. The research used a logistic regression model for data analysis. The results showed that firm age have negative relation towards the tendency of financial statement fraud.

Okoh & Uwaifo (2021) employed the longitudinal research design. The design was chosen because the observation of variables was over the period of six years (2015 through 2020). The data of the study were generated from secondary sources obtained from the annual reports of the selected companies and the NSE fact book. The data were analysed using binary probit regression model. The findings from the study revealed that firm size and firm age respectively have negative/insignificant relationship and positive/insignificant relationship with the likelihood of financial statement fraud.

According to Tajudeen (2020) examined the effect of firms' characteristics and audit quality on earnings management of listed manufacturing companies in Nigeria. The study employed ex-post facto research design. Secondary data obtained from the annual report and accounts of companies for a period of seven years (2012-2018) were analyzed through panel fixed-effect model and Analysis of Variance (ANOVA). Sixty-two (62) companies were selected from the population of seventy-four (74) listed manufacturing firms listed in the Nigeria Stock Exchange as at 31st December, 2018. The study found that firm age and auditor experience reduce earnings management at 95% confidence level. This implies that the age of the firm and audit firm experience reduces the level of earnings management in the listed manufacturing firms in Nigeria.

2.7.2 Firm leverage and Financial statement fraud

Zainudin and Hashim (2016) analyzed the financial ratio (i.e. financial leverage, profitability, asset composition, liquidity and capital turnover ratio) in detecting Financial statement fraud. The probit model was used to identify firms that are related to FSF. The sample firms that engage in fraudulent statement preparation were obtained from the media centre of Bursa Malaysia. The firms were selected based on their contravention of the Listing Requirements of Bursa Malaysia Securities Berhad. The

data covered a period of seven years from 2007 to 2013.The results suggested that financial leverage, asset composition, profitability and capital turnover were significant predictors of FSF.

Baridwan and Mardiati (2018) examined correlation among profitability, liquidity, leverage and corporate governance to financial statement fraud and financial distress as mediation variable. The research applied quantitative research using the fraud diamond theory. This research proved that there was an impact of profitability, leverage, shareholder > 3% and directors quantity to financial distress. This research showed that the higher company's profitability, the lower financial distress company risks. Based on the research, the companies that had financial distress would tend to do the financial statement fraud.

Ferdinand and Santosa (2018) investigated the influence of leverage, and liquidity toward the fraudulent financial statements report in retail companies listed on the Indonesia Stock Exchange in the period of 2012-2016. Using regression, the result showed that leverage did not have any significant effect on the fraudulent financial statements report.

Mayabi and Yani (2022) aimed to examine the effect of financial stability, leverage, and profitability on the likelihood of financial statement fraud in banking sector companies listed on the Indonesia Stock Exchange (IDX) during the 2017-2019 period. Quantitative data sourced from the company's financial statements was obtained. The population in this study was banking Sector Company on the IDX during the 2017-2019 period, with a total of 47 companies. The results of this study indicated that: Financial performance had no significant effect on the likelihood of financial statement fraud. Additionally, the study finds that Leverage has a significant effect on the

likelihood of financial statement fraud.

2.7.3 Firm size and financial statement fraud

Suryani *et al.,* (2023) examined the effect of the size and tenure of KAP on the detection of financial statement fraud. The research sample was 140 manufacturing companies from 2012 to 2015, which were listed on the Indonesia Stock Exchange using a purposive sampling technique. Data analysis research used SPSS version 20. Descriptive analysis used multiple regression. The research found that the size of the audit firm and the tenure of the audit did not significantly affect the indications of fraudulent financial statements.

According to Mohd *et al.,* (2010) the purpose of the study was to examine the relationship between financial statement fraudand firms' characteristics, i.e. size, type of ownership and audit quality in companies audited by the Inland Revenue Board of Malaysia (IRBM) after the implementation of a self-assessment system in Malaysia. The study employed an empirical research design, using data on companies audited by IRBM. The hypotheses of the study are tested using both univariate and multivariate statistical methods. It was found that firm size and audit quality have significant negative relationships with Financial statement fraud.

2.8 Conceptual Framework

A conceptual framework is a diagrammatical illustration of the relationship between the research concepts and their impact on the phenomenon being investigated (Robert, Yu & Lewis 2021). While Huberman and Miles (1994) assert that, a conceptual framework shows either graphically or in a narrative forms the aspects that are to be studied. In this study CEO demographics is the independent variable, board gender diversity the moderator and financial statement fraud the dependent variable. The study

incorporates firm size, leverage and firm age as control variables.

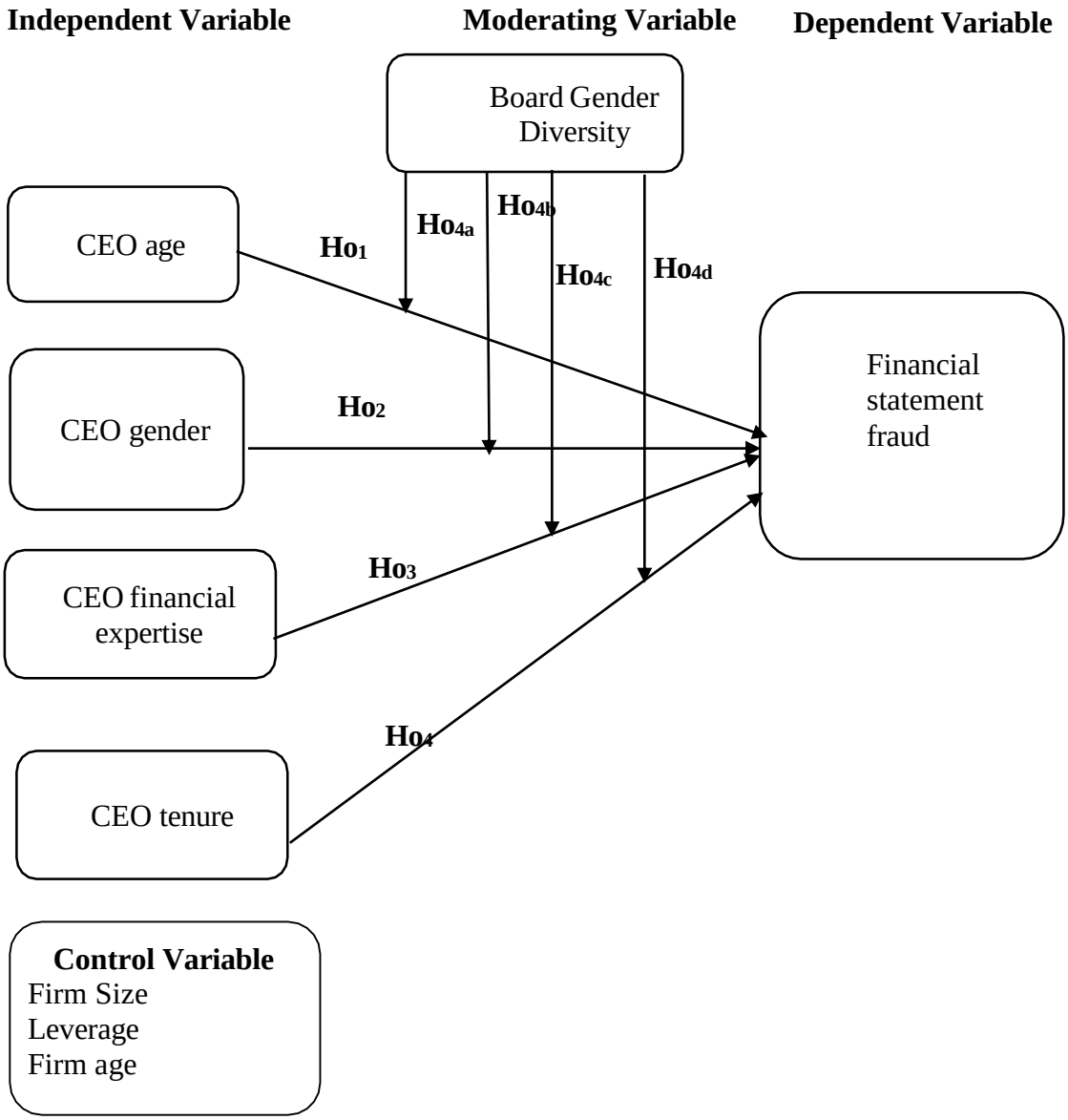

Figure 2.1: Conceptual framework

Source: Researcher, 2024

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

The focus of this chapter was on the research design, study area, target population, data collection instruments and procedures, measurements of the variables of the study, data processing, analysis, presentation, and the ethical consideration.

3.1 Research Design

A research design is a road map for data collection, measurement, and analysis (Kothari, 2004). This research employed both the longitudinal and explanatory design. The longitudinal research design was deemed appropriate because the study used panel data for the twelve -year period from 2012 to 2023. The study also employed the explanatory research design since the study sought to establish a causal and effect relationship between variables (Kassa, 2021). More specifically, the study sought to establish the moderating effect of board gender diversity on the relationship between CEO demographics and financial statement fraud among listed firms in EAC.

3.2 Target Population

The precise group that has all the study features that are of interest to the study is what is meant as the "target population". According to (Rinjit, 2020), a population is a specified group of people, services, elements, events, and groups of items or homes that are being researched. All of the above institutions that are registered with the NSE, USE, DSE, SSE and RSE were the primary focus of this population survey. A total of 122 listed institutions are currently listed at the securities exchange in Kenya (NSE), Uganda (USE), Tanzania (TSE), Somalia (SSE) and Rwanda (RSE).

3.2.1 Inclusion and Exclusion Criterion

The final unit of analysis was determined using the inclusion/exclusion criteria. Listed firms that were not in operation in the study period, that is, between 2012 and 2023 were excluded. This time period 2012- 2023 is appropriate in this study because the securities exchange in Kenya (NSE), Uganda (USE), Tanzania (TSE), Somalia (SSE) and Rwanda (RSE) underwent a significant amount of regulatory and policy enactment, which required listed firms to adhere to the continuous listing obligations. These obligations included the publication of financial statements as well as a variety of other provisions aimed at preventing the failure of corporations. As a result of its transition back to private ownership, Marshall East Africa Ltd. has been removed off the trading floor of the Nairobi Securities Exchange. Additionally, Hitching, Biemer, Baumann, and Atals Africa have been removed from the security exchange. Secondly, the study excluded all firms that have been cross-listed across the all the four (5) security exchanges, for example, KCB, Kenya Breweries, Equity Group, Nation Media Group, Umeme and BK group. Additionally, firms that were suspended from trading between 2012 and 2023 excluded such Kenya Airways, Mumias Sugar Company and Uchumi. Lastly, listed firms that underwent major restructuring such as National Bank of Kenya (NBK) which was acquired by Kenya Commercial Bank (KCB) was excluded.

3.3 Data Types and Sources

The study gathered data from secondary sources, including annual reports and financial statements. The annual reported were downloaded from the individual companies' websites and the African Financials data base. Secondary data is valuable for enhancing understanding and expanding on the research topic, as well as offering supplementary information that can aid in problem-solving (Greenhoot & Dowsett, 2012). Utilizing

secondary data sources can efficiently economize a researcher's time and resources, while also furnishing them with comparable and pertinent data. Furthermore, it can facilitate unforeseen findings and is reasonably straightforward to employ.

3.4 Operationalization and Measurement of Variables

According to Sekaran (2006), operationalization is the explicit specification of a variable in such a way that that it can be measured. The study operationalized the variables as discussed in the subsections.

3.4.1 Dependent Variable

Financial statement fraud is the condition when data presented in the financial statement preparation is not in accordance with the actual condition which causes the information not to be relevant for decision-making materials; this could also affect losses for various parties (Apriliana and Agustina 2017).

To measure the dependent variable in this research, Fraud Score model is measured with the computation from (Annisya et al. 2016) in (Akbar 2017) as below:

$$F - Score = Accrual\ quality + Financial\ Performance.$$

The first component, accrual quality, is proxied by RSST Accrual (Richardson et al. 2005) as below:

$$RSST\ Accrual: \quad \frac{\Delta WC + \Delta NCO + \Delta FIN\ Average}{Total\ Assets}$$ Description

Description:

WC (Working Capital): ($Current\ Assets - Current\ Liabilities$)

NCO (Non-Current Operating Accrual): ($Total\ Assets - Current\ Assets -$

$Investment\ and\ Advances) - (Total\ Liabilities - Current\ Liabilities - Long\ Term\ Debt)$

FIN (Financial Accrual): $Total\ Investment - Total\ Liabilities$

ATS (Average Total Assets): $(Beginning\ Total\ Assets + Ending\ Total\ Assets)/ 2$

The second component, financial performance, is measured with the changes in receivables, changes in inventories, changes in cash sales, and also changes in earnings before interest and tax (EBIT) (Skousen and Twedt 2009).

Decheow F- Score is a financial report fraud detection model developed using a scaled logistic probability technique. The score of F can be counted using the following formula:

Predicted : -7.893 + 0.790 (RSST_Acc) + 2.518 (ch_rec) + 1.191 (ch_inv) + 1.979 (soft assets) + 0.171 (ch_cs) + (-0.932) (ch_ROA) + 1.029 (issue)

RSST Accruals

This variable measures the changes of current assets with the formula as below: RSST = ΔWC + ΔNCO + ΔFIN Average Total Assets

WC (Working Capital): $(Current\ Assets - Current\ Liabilities)$

NCO (Non-Current Operating Accrual): $(Total\ Assets - Current\ Assets - Investment\ and\ Advances) - (Total\ Liabilities - Current\ Liabilities - Long\ Term\ Debt)$

FIN (Financial Accrual): $Total\ Investment - Total\ Liabilities$

ATS (Average Total Assets): $(Beginning\ Total\ Assets + Ending\ Total\ Assets)/2$

Changes in Receivables

Changes in receivable from last year to this year are scaled against the average of total

assets. It indicates a big change in accounts receivable that shows the income and income manipulation. The changes in accounts receivable formulated with the following model:

Ch_Rec = Account Receivables Average Total Assets Changes in Inventories

The change in inventory from last year to this year is scaled against the average of total assets. Big changes in inventory can indicate a surplus, shortage, obsolescence, or liquidation. The change in inventory is obtained by the following formula:

INV = ∆ Inventory Average Total Assets Percentages of Soft Assets

This measure is as total assets minus total cash and cash equivalents (scaled against total assets). The ratio of the current asset can be obtained with the following formula:

Soft Assets = Total assets – PPE – Cash and cash equivalents Total Assets Changes in cash sales

This measure is the change percentage in cash sales from last year to this year. The formula used to get the change in cash sales are as follows:

Cash Sales = Salest - ∆ Accounts Receivables t Salest-1∆ Accounts Receivablest-1 Changes in Return on Assets

This measure is the percentage calculated as revenue divided by total assets this year less than the same measure last year. Volatile income might be an indicator of revenue manipulation. The formula is as below:

Change ROA = earnings – Average total asset earnings-1 – Average total asset-1 Issuance

This measure is a dummy variable that is 1 if additional securities were issued during the year of the manipulation and 0 if there are no securities issued.

Issuance = 0 or 1 (Score = "1" if bonds or shares are issued).

The computed VALUE is converted to a probability as follows

$$Prob\ (FSF) = \frac{e^{logit}}{1 + e^{logit}}$$

The resulting probability is then divided by the unconditional probability of misstatement (=0.0037) to obtain the F-SCORE. An F-Score of 1.00 indicates that the firm has the same probability of misstatement as the unconditional expectation (the probability of misstatement when randomly selecting a firm from the population). F-Scores greater than one indicate higher probabilities of misstatement than the unconditional expectation. F- Scores less than one indicate lower probabilities of misstatement than the unconditional expectation.

3.4.2 Independent Variable

3.4.2.1 CEOs age

In this study, the CEO's age was measured as the natural logarithm of the CEO's age (Huang *et al.*, 2012; Wei *et al.*, 2018).

3.4.2.2 CEO Tenure

In this study, CEO tenure is defined as the natural logarithm of the number of years a CEO has held this position in the respective company (Ali & Zhang, 2015; Zhang & Wiersema, 2009).

3.4.2.3 CEOs financial expertise

CEO education reflects the formal training and qualifications acquired by individuals occupying the highest executive positions within organizations. Common qualifications include undergraduate degrees in business administration, finance, economics, or related fields, often complemented by advanced degrees such as Master of Business Administration (MBA) or specialized certifications (Hermalin & Weisbach, 1998).

3.4.2.4 CEOs gender

In this study, the CEO's gender was defined as a dummy variable expressing 1 as a value for a female CEO and 0 for a male CEO (Dah, Jizi & Kebbe, 2020).

3.4.3 Moderating Variable

Refers to the ratio of female directors in the board divided by the total number of directors in the board (Reddy & Jadhav, 2019; Brahma, Nwafor & Boateng, 2021).

$$BGD = \frac{\text{Number of female in the board}}{total\ number\ of\ members\ in\ the\ board}$$

3.4.4 Control Variables

3.4.4.1 Firm size

Despite the above independent variables, the researchers such as Manna *et al*. (2016), Mishra and Kapil (2017), Mishra (2020) and Agrawal and Lakshmi (2020) included some control variables in their studies. These control variables are firm size, firm age. The first one, namely firm size, is gauged via the natural logarithm of the book value of total assets. Large firm size may affect the performance of the companies due to more official involvement and lesser growth opportunities. Following prior studies, firm size is defined as the natural log of the total firm's assets (Lee, Upneja, Özdemir, & Sun, 2012; Rashidah & Ali, 2006). The study measured firm size as natural logarithm of Total assets.

3.4.4.2 Firm age

The second one, *firm age,* is quantified as the current year's log minus the incorporation year. Older firms have more expertise and learnings, so they enjoy economies of scale. New firms have to build their image in the market and bear huge costs, whereas the older firms have already reached the end stage of the product life cycle. The age of the

firm is the number of years the entity has survived since its incorporation. Based on extant literature, this study measured firm age as the period of time in years the firm has served since incorporation.

3.4.4.3 Firm Leverage

The use of a high leverage ratio discourages opportunistic managerial activities as well as earnings management that is related to those actions. Accounting manipulations that increase revenues are one tactic that opportunistic managers use to conceal acts that do not maximize value (Jelinek, 2007). Jelinek, (2007) postulate that in the event of a takeover scenario, managers who feel threatened by the acquisition offer may strive to conceal their poor behavior, such as income increases. On the other hand, a number of studies suggest that managers may manipulate results for the company so that it appears to prospective shareholders and the general public that it has a reliable income stream.

Tarjo (2008), Jao and Pagulung (2011). Financial leverage is measured by taking the total debts of a company divided by the total equity (Abubakar, 2015).

Table 3.1: Measurement of Variables

Type of Variable	Operationalization	Source
Dependent Variable		
Likelihood Financial statement fraud	F-Score = Performance Accrual Quality + Financial	(Dechow *et al*. 2011)
Independent Variables		
CEO age	numeric variable expressing an executive's age adjusted by year	(Huang *et al.,* 2012; Wei *et al.,* 2018).
CEO gender	In this study, the CEO's gender was defined as a dummy variable expressing an 1 as a value for a female CEO and 0 for a male CEO	(Dah, Jizi & Kebbe, 2020).
CEO expertise financial	formal training and qualifications acquired by individuals occupying the highest executive positions within organizations.	(Hermalin 1998). & Weisbach,
CEO tenure	number of years a CEO has held this position in a publicly traded company.	(Ali & Zhang, 2015; Zhang & Wiersema, 2009)
Moderating Variable		
Board gender diversity	Refers to the ratio of female directors in the board divided by the total number of directors in the board	(Reddy & Jadhav, 2019; Brahma, Nwafor & Boateng, 2021)
Control Variable		
Firm Size	the natural log of the total firm's assets	(Lee *et al.,* 2012; Rashidah & Ali, 2006)
Firm Age	Current year's log minus the incorporation year	(Ghafoor, Zainudin, & Mahdzan, 2019; Perols & Lougee, 2011; Wang & Hsu, 2013; Waswa, Mukras, & Oima, 2018)
Firm Leverage	Debt/Equity	(Ilyukhin, 2015); Rahman, Saima & Jahan, 2020)

Source: Researcher (2024)

3.5 Data Analysis and Presentation

The collected data was subjected to a number of data analysis techniques using STATA version 16 software. In the light of the objectives of this study a hierarchical model was used.

3.6 Assumption of Logistic Regression Model

3.6.1 Normality Test

Tests for Normality of any study data are crucial for identifying whether or not the gathered data can be appropriately modeled by a normal distribution (Moore & McCabe, 2012). Probit model test is the most typical numerical tests for normality. For moderately high sample sizes ranging from 50 to 2000 items, the second test was the most suitable option. The null hypothesis states that the data is normally distributed while alternative hypothesis state that the data is not normally distributed. If the significance level of the probit model test is more than 0.05, then the data set is considered normal. In contrast, if the significant value was less than 0.05 (0.05), the data set was considered to be significantly out of normal distribution (Razali *et al.*, 2011).

3.6.2 Multicollinearity tests

Multicollinearity, as defined by Gujarati (2003), is the existence of a perfect or exact linear relationship between some or all explanatory variables of a regression model. It occurs when one or more of the independent variables are highly correlated, leading to a number of difficulties in comprehending the importance of the individual predictor variables in the regression model. The Null Hypothesis is that the coefficient of a variable is zero while the alternative hypothesis states that the coefficient is not. The study quantified the severity of multicollinearity in OLS analysis using the correlation matrix of explanatory variables, where the correlation coefficient between two independent variables must be less than 0.8, and variance inflation factor (VIF). As a rule of thumb, the VIF of a variable must not exceed 10 in order to conclude that multicollinearity has no effect on the regression outputs. In the event that multicollinearity is present, highly correlated predictors was eliminated.

3.7 Model Specification

Hierarchical model was adopted in this study to examine the moderating role of board gender diversity on the relationships between CEO demographics, board gender diversity and financial statement fraud. The models are stated as follows:

The model specification for the control variable is as shown in model 1:

Model 1. Testing the effect of control variables on the Financial statement fraud.

$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \varepsilon_{it}$……………..……………… (1)

Where:

FSF: Financial statement fraud FA: Firm Age

FS: Firm Size

FL: Firm Leverage $\beta 0$: Constant

$\beta_1 - \beta_4$: Regression coefficients

e: Error term

Model 2. Testing the effect of independent variable on Financial statement fraud.

$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 CEOage_{it} + \beta_5 CEOgen_{it} + \beta_6 CEOexp_{it} + \beta_7 CEOten_{it} + \varepsilon_{it}$………………………………………..…… (2)

A moderator is a variable that adjusts the strength of a causal relationship (Chikaraishi, *et al.,* 2015). It is a variable that affects the direction or strength of the relationship between study variables (Baron & Kenny, 1986). The study will use hierarchical multiple linear regression to test for moderation effects (Baron & Kenny, 1986). First, independent variables (CEO age, CEO financial expertise, CEO gender diversity and CEO tenure) in the model will be regressed against the dependent variable (Financial statement fraud) for potential direct effects. Secondly, moderating variable (board gender diversity) will then be introduced and regressed together with other variables. Therefore, the interaction term between predictor and moderating variables will be

obtained by multiplying the two variables that produced an interaction effect done at different stages for each individual interaction as specified in the hierarchical regression models below:

The model specification is as follows:

Model 3. Testing the moderating variable of the board gender diversity on Financial statement fraud.

$$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 CEOage_{it} + \beta_5 CEOgen_{it} + \beta_6 CEOexp_{it} + \beta_7 CEOten_{it} + \beta_8 BGD_{it} + \varepsilon_{it} \quad (3)$$

First Interaction Effect

Model 4. Introducing the first interaction term between board gender diversity and CEO age.

$$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 CEOage_{it} + \beta_5 CEOgen_{it} + \beta_6 CEOexp_{it} + \beta_7 CEOten_{it} + \beta_8 BGD_{it} + \beta_9 CEOage * BGD_{it} \quad (4)$$

Second Interaction Effect

Model 5. Introducing the second interaction term between board gender diversity and CEO gender.

$$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 CEOage_{it} + \beta_5 CEOgen_{it} + \beta_6 CEOexp_{it} + \beta_7 CEOten_{it} + \beta_8 BGD_{it} + \beta_9 CEOage * BGD_{it} + \beta_{10} CEOgen * BGD_{it} + \varepsilon_{it} \quad (5)$$

Third Interaction Effect

Model 6. Introducing the third interaction term between board gender diversity and CEO financial expertise.

$$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 CEOage_{it} + \beta_5 CEOgen_{it} + \beta_6 CEOexp_{it} + \beta_7 CEOten_{it} + \beta_8 BGD_{it} + \beta_9 CEOage * BGD_{it} + \beta_{10} CEOgen * BGD_{it} + \beta_{11} CEOexp * BGD_{it} + \varepsilon_{it} \quad (6)$$

Fourth Interaction Effect

Model 7. Introducing the third interaction term between board gender diversity and CEO tenure.

$$FSF = \beta_0 + \beta_1 FA_{it} + \beta_2 FS_{it} + \beta_3 FL_{it} + \beta_4 CEOage_{it} + \beta_5 CEOgen_{it} + \beta_6 CEOexp_{it} + \beta_7 CEOten_{it} + \beta_8 BGD + \beta_9 CEOage * BGD_{it} + \beta_{10} CEOgen * BGD_{it} + \beta_{11} CEOexp * BGD_{it} + \beta_{12} CEOten * BGD_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Where:

FSF: Financial statement fraud FA: Firm Age

FS: Firm Size

FL: Firm Leverage CEO age: CEO age

CEO exp: CEO financial expertise CEO ten: CEO tenure

CEO gen: CEO gender

BGD: Board Gender Diversity β_0: Constant

$\beta_1 - \beta_{12}$: Regression coefficients

e: Error term

A moderator is a variable that modifies the strength between the predictor and outcome variable (Chikaraishi *et al.*, 2015). It's a factor that modifies the strength or direction of the correlation between other variables in the research (Baron & Kenny, 1986). The study used hierarchical multiple linear regression to test for moderation effects (Baron & Kenny, 1986). First, began by testing the effect of control variable on dependent variable by regressing. Secondly, control variables and competency training aspects were regressed against organizational performance. Thirdly, moderating variable was introduced and regressed together with other variables. Therefore, the interaction term between predictor and moderating variables was obtained by multiplying the two variables that produced an interaction effect done at different stages for each individual interaction as specified in the hierarchical regression models

3.8 Ethical Consideration

The researcher verified the integrity and accuracy of the secondary data to avoid disseminating misleading or incorrect information. This was done through Cross-checking data from multiple sources when possible. The researcher ensured objectivity by basing data presentation, analysis, and interpretation solely on the collected data. The School of Graduate Studies at Moi University evaluated the project for ethical approval. After obtaining these approvals, the researcher requested permission to acquire and analyze data from the National Commission for Science, Technology, and Innovation.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Overview

This chapter covers the result of the study. The findings are provided in four main sections; descriptive statistics, diagnostic tests, correlation analysis and hypothesis testing.

4.1 Descriptive Statistics

Table 4.1 reveals that the mean financial statement fraud of firms in the EAC is 0.294 and with a standard deviation rate equivalent to 0.456. The standard deviation shows high variability in FSF across the selected firms. The table shows that the firm age was approximately 30 years (e^3.4156). Firm size had a mean of 9.590 (logarithm of total assets). The mean leverage was 0.4633 indicating moderate use of debt capital. The mean return on assets was 0.068, suggesting low profitability, while the standard deviation of 0.138 shows high variability in profitability among the selected firms. The mean CEO age was approximately 50 years (e^3.9165). The mean CEO gender of 0.070 shows low female representation in executive positions and the standard deviation of 0.2555 show high variation across firms in recruiting female CEOs. The mean CEO expertise of 0.813 indicates that many CEOs have knowledge in accounting and finance. The average CEO tenure was approximately 4 years (e^1.281). The mean board gender diversity of 0.193 suggest women are underrepresented in corporate boards.

Table 4.1: Descriptive statistics results

Variable	Obs	Mean	Std. Dev.	Min	Max
fscore	744	.294	.456	0.000	1.000
fa	744	3.416	.899	0.000	4.844
fs	744	9.590	.691	7.101	11.308
lev	744	.463	.277	.004	1.000
roa	744	.068	.138	-.419	.556
ceoage	744	3.917	.189	3.466	4.466
ceogen	744	.070	.255	0.000	1.000
ceoed	744	.813	.390	0.000	1.000
Ceoten	744	1.281	.894	0.000	3.689
Bgd	744	.193	.152	0.000	.667

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure, bgd, board gender diversity

Source: Field data, 2024.

4.2 Correlation Analysis

Pearson correlation coefficient was used to determine the link between the response variable and the explanatory before estimating the logistic regression model. This was done to assess the strength and nature of the association between the dependent, independent, and moderating variables. The coefficients of the correlation analysis are presented in a matrix, as shown in Table 4.2 shows a weak negative correlation between firm age and financial statement fraud ($r = -0.015$, $\rho<0.05$). The correlation matrix further indicates a negative correlation between firm size and financial statement fraud ($r= -0.104$, $\rho<0.05$). Leverage and financial statement fraud have a weak and positive correlation ($r = 0.220$, $\rho<0.05$). The correlation between ROA and financial statement fraud was negative and significant but weak ($r = -0.453^*$, $\rho<0.05$). In respect to the independent variable the Pearson pairwise correlation matrix shows that financial statement fraud was positively and significantly correlated with CEO gender ($r = 0.1353$, $\rho<0.05$) and CEO tenure ($r = 0.142$, $\rho<0.05$). However, financial statement fraud is negatively correlated with CEO expertise ($r = -0.037$, $\rho<0.05$), CEO age ($r =-$

0.192, ρ<0.05) and board gender diversity (r = -0.201, ρ<0.05). The correlation coefficients are less than 0.8 confirming the absence of multicollinearity.

Table 4.2: Correlation test results

	Fscore	Fa	Fs	Lev	roa	ceoage	ceogen	Ceoed	ceoten	Bgd
Fscore	1.000									
Fa	-0.015	1.000								
Fs	-0.104*	-0.087*	1.000							
Lev	0.220*	-0.029	0.079*	1.000						
Roa	-0.453*	-0.163*	0.056	-0.173*	1.000					
ceoage	-0.192*	0.068	0.053	0.086*	0.028	1.000				
ceogen	0.135*	0.102*	-0.040	0.045	-0.045	-0.006	1.000			
Ceoed	-0.037	-0.163*	0.062	0.134*	-0.089*	-0.130*	0.037	1.000		
Ceoten	0.142*	-0.237	0.006	0.048	-0.002	0.132*	-0.030	0.071	1.000	
Bgd	-0.201*	0.149*	0.026	-0.066	0.039	0.0575	0.052	-0.155*	-0.011	1.000

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure, bgd, board gender diversity. *p<0.05

Source: field data, 2024

4.3 Diagnostic tests and assumptions of regressions

4.3.1 Test for linearity

One of the main assumptions of probit regression model is linearity. This test was conducted using the Q_Q plot by plotting all the predictor variables against the residual. The graphs are presented in the appendices. The graphs point at a linear relationship.

4.3.2 Normality of errors

Probit regression necessitates that the errors conform to a normal distribution, unlike logistic regression. Similar to linear regression, the analysis commenced by predicting errors and subsequently plotting a histogram**.**

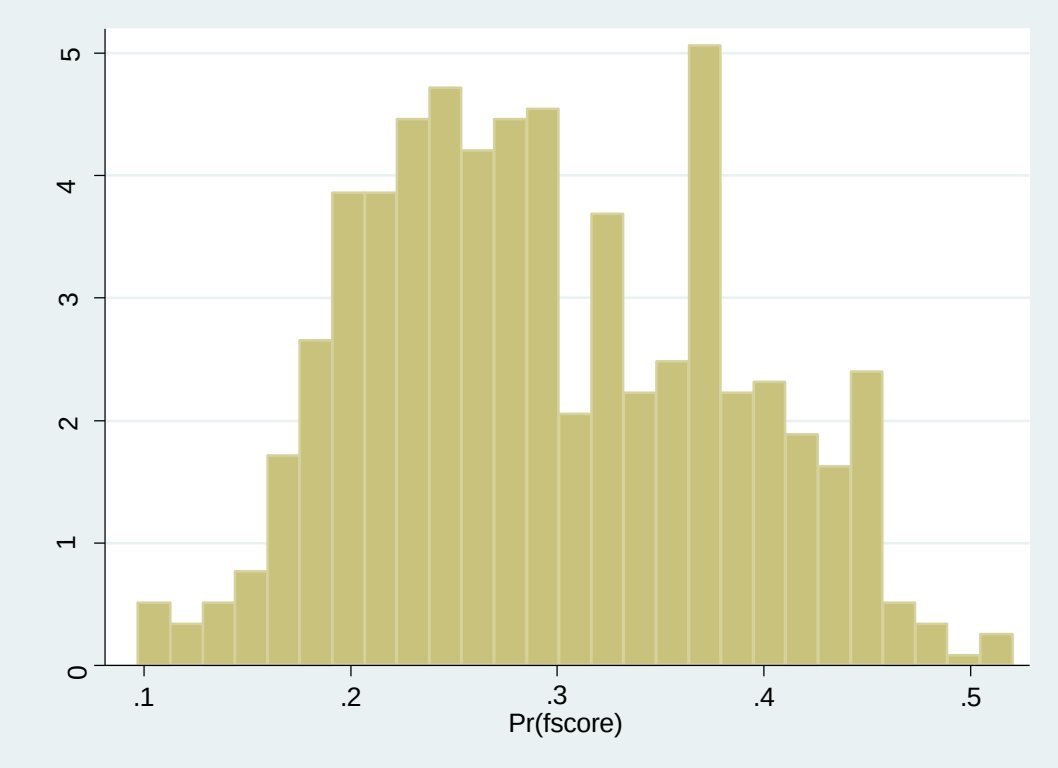

Figure 4.1: Normality of errors

Source: Researcher, 2024

The plot graph shows a close to normal distribution as a straight line. Furthermore, the more the points deviate from that line, the less normal the errors are.

4.3.3 Test for Multicollinearity

Multicollinearity arises when there is a substantial correlation between independent variables or when one predictor variable is nearly a linear combination of another predictor variable (Keith, 2006). As the degree of overlap (correlation) between variables increases, researchers face greater difficulty in isolating the individual impacts of each variable. Multicollinearity occurs when the correlation coefficients exceed 0.9 (Hair, 2006; Saunders, Lewis & Thornhill, 2009) and 0.8 (Garson, 2013; Gujarati, 2012). Variance inflation factors (VIF) were utilized for diagnostic purposes as well. A general guideline is that a VIF value more than ten indicates a larger effect size (Keith, 2006, Shieh, 2010).

As per Hair *et al.*, (2010), a model is considered to be free from the issue of multicollinearity when the tolerance value is greater than 0.10 and the VIF value is less than 10. Table 4.3 shows that the research variables (firm age, firm size, leverage, ROA, CEO age, CEO gender, CEO expertise, CEO tenure and board gender diversity had a minimum variance inflation factor of 1.03 and a maximum variance inflation factor of 1.19.

Table 4.2: Multicollinearity test results

Variable	VIFSQRT VIF	Tolerance	R-Squared
Fa	1.191.09	0.8411	0.1589
Fs	1.031.01	0.9726	0.0274
Lev	1.091.04	0.9213	0.0787
Roa	1.081.04	0.9249	0.0751
Ceoage	1.071.03	0.9339	0.0661
Ceogen	1.061.03	0.9435	0.0565
Ceoed	1.101.05	0.9096	0.0904
Ceoten	1.091.05	0.9152	0.0848
Bgd	1.051.03	0.9498	0.0502
Mean VIF	1.08		

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure, bgd, board gender diversity

Source: Researcher 2024.

4.4 Results of the Probit Regression Analysis

4.4.1 Testing the Effect of the Control Variables

Before investigating the effect of the predictor variables on the dependent variable, the study examined the impact of the control variables, firm age, firm size and leverage on likelihood financial statement fraud. Probit regression was used to examine the effect of the control variables and the results are presented in table 4.4. The goodness of fit measure indicates that, the model perfectly fits the data given the likelihood ratio statistics of the high significant chi-square ($\rho<0.000$). The Pseudo R2 value of 0.2272, while relatively low, indicates that there is still a small proportion of the variability in

the likelihood financial statement fraud.. The LR chi2 test with a value of 204.90 and a p- value of 0.0000 indicates that the model significantly fits the data better than a model with no predictors. This suggests that the chosen control variables are important predictors of the likelihood of financial statement fraud.

The negative beta coefficient of firm size suggests that as firms size increases, the likelihood of financial statement fraud decreases. The effect of leverage on likelihood of financial statement fraud was positive and stastically significant. This implies that as firms employ more debt, they tend to engage in financial statements manipulation. The negative coefficient of return on assets suggests that well performing firms tend to engage less in financial statements fraud.

Table 4.4: Control variables

Probit regression — Number of obs = 744
LR chi2(4) = 204.90
Prob > chi2 = 0.0000
Log likelihood = -348.41724 — Pseudo R2 = 0.2272

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.1386889	.0595451	-2.33	0.020	-.2553952	-.0219827
fs	-.2305502	.0789891	-2.92	0.004	-.385366	-.0757345
lev	.8230227	.2040072	4.03	0.000	.423176	1.222869
roa	-5.61028	.5227575	-10.73	0.000	-6.634866	-4.585694
_cons	1.9939	.7942166	2.51	0.012	.4372638	3.550536

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets

Source: Field data, 2024

4.4.2 Testing the Direct Effect

The logistic regression model is used for the empirical statistics to analyze predictor variables, as shown in Table 4.5. The goodness of fit measures indicates that the model perfectly fits the data, given the likelihood ratio statistics of the highly significant chi-square ($p<0.000$). This signifies that the model has strong explanatory power with a pseudo R2 of 0.3006, meaning the specification suit the model, and the predictor

variables used for the estimation explain 30.06 percent of the variation of the variables. The model is statistically significant overall, as indicated by the likelihood ratio chi-square (LR chi2) value of 271.09 with a p-value of 0.0000. The estimated coefficient of the predictor variables poses the common signs. The findings reveal that all four predictor variables used in the study produced estimated coefficients that were statistically significant at a 0.05 level of significance. Negative coefficient signs imply that a unit increase in the predictor variables reduces the likelihood of financial statement fraud.

Table 4.5: Direct test results

Probit regression				Number of obs =	744
				LR chi2(8) =	271.09
				Prob > chi2 =	0.0000
Log likelihood = -315.32478				Pseudo R2 =	0.3006
fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
fa	-.0780571	.0643959	-1.21	0.225	-.2042706 .0481565
fs	-.2206996	.0817707	-2.70	0.007	-.3809673 -.0604319
lev	1.072361	.2220347	4.83	0.000	.637181 1.507541
roa	-5.741228	.5391142	-10.65	0.000	-6.797872 -4.684583
ceoage	-2.021554	.3213173	-6.29	0.000	-2.651324 -1.391784
ceogen	.7679348	.210398	3.65	0.000	.3555622 1.180307
ceoed	-.3681885	.1553931	-2.37	0.018	-.6727534 -.0636235
ceoten	.3130249	.0686679	4.56	0.000	.1784383 .4476114
_cons	9.300791	1.46904	6.33	0.000	6.421525 12.18006

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure.

Source: Field data, 2024

The first hypothesis (H_{01}) stated that*: CEO age has no significant effect on financial statement fraud among listed firms in EAC*.

The results confirm that the effect of the CEO age on financial statements fraud was negative and significant ($\beta = -2.021554$, $\rho = 0.001$). Therefore, H01 is rejected, and the conclusion is that the as CEO age advances there is less likelihood of fraudulent financial statement preparation. Several studies support this finding. The findings agree with those of Park *et al.,* (2017) but disagree with those of Girau *et al.,* (2019) who

reported a positive and significant effect and Hadijah, (2022) who found a negative but insignificant effect. While, Conyon and He (2016) revealed no significant difference in CEO age between fraud and non-fraud firms in China and suggested that CEO age is less useful as a predicted probability to engage fraud. Younger executives engage in more risky strategies, maybe referencing the impulsive actions associated with youth. Furthermore, younger managers exhibit a higher propensity for taking risks. Younger managers exhibit higher levels of strategic aggressiveness compared to senior managers, particularly in periods of crisis. Price and Norris (2009) found that younger managers are more susceptible to societal and organizational influences in the context of white-collar crime. Hence, it be deduced that older CEOs are less likely to engage in fraudulent financial statement preparation.

The second hypothesis (H_{02}) stated that*: CEO gender has no significant effect on financial statement fraud among listed firms in EAC.*

The results confirm that the effect of CEO gender on the financial statement fraud was positive and significant ($\beta = 0.768$, $\rho = 0.001$). Therefore, H02 is rejected, and the conclusion is that the CEO gender influences the likelihood of a firm engaging in fraudulent financial statement preparation, and the results agree with those of Masruroh, & Carolina, 2022) among Indonesian firms. However, the findings are inconsistent with those of Lia *et al.*, (2019) and Maulidi (2023) who reported a negative relationship. Traditionally, white-collar crime has been predominantly linked to male. Nevertheless, the existing gender disparity has gradually diminished, so presenting women with potential avenues to engage in fraudulent activities. Women do not consistently possess superior moral values compared to men. The variations in the commission of fraud mostly stem from disparities in the available possibilities that can be used to carry out fraudulent activities, particularly in the roles of high-ranking executives within a

business (Dodge, 2009). The findings of Bonny et al.'s (2009) research indicate that there is a significant gender disparity among fraud perpetrators, particularly in the financial sector. Specifically, 73% of fraud perpetrators in this sector are women, while men make up only 27%. According to Hilliard and Neidermeyer (2018), female CEOs had a higher likelihood of engaging in fraudulent financial statements and misappropriation of assets, as opposed to corruption.

The third hypothesis (H_{03}) stated that*: CEO financial expertise has no significant effect on financial statement fraud among listed firms in EAC*

The results confirm that the effect of the CEO expertise on the financial statement fraud was negative and significant ($\beta = -0.368$, $\rho = 0.000$). Therefore, H03 is rejected, and the conclusion is that the CEO financial expertise reduces the likelihood of fraudulent financial statement preparation, and the results agree with those of previous studies (Hoitash, and Bedard (2008). Results suggest that CEOs of fraudulent firms are less likely to possess skills in accounting and finance. Corporate education, which includes instruction in accounting and finance, impacts knowledge about the principles and standards of financial statement preparation and ethical corporate conduct. Therefore, CEOs who have received a business degree may gain a more extensive understanding of accounting and financial expertise. The regression results indicate that business education lowers rationalization, specifically in relation to accounting fraud. The study argues that CEOs who possess expertise in accounting and finance are more inclined to lead companies that do not participate in financial statement fraud. Jiang et al. (2013) found that CEOs with accounting financial expertise are able to provide more accurate earnings information and produce higher quality financial reports. They propose that CEOs with expertise in accounting and finance, who consistently prioritize the concept of accounting conservatism, cultivate a consistent work approach. Additionally, they

indicate that a CEO who possesses competence in accounting and finance could exert control over other executives, such as the CFO and controller, in order to manipulate financial statement preparation or engage in fraudulent activities. This talent is linked to reducing audit testing time and minimizing customer preparation time, as it significantly reduces the time required to conceal fraudulent activities or rectify inaccuracies in financial reports. This aligns with the upper echelon theory, which posits that the education and experience of managers play a vital role in effectively fulfilling their duties (Hambrick & Mason, 1984).

The fourth hypothesis (H_{04}) stated that*: CEO tenure has no significant effect on financial statement fraud among listed firms in EAC.*

The results confirm that the effect of the CEO tenure on financial statement fraud was positive and significant ($\beta = .313$, $\rho = 0.022$). Therefore, H04 is rejected, and the conclusion is that the CEO tenure increase the likelihood of financial statement fraud, and the results agree with those of previous studies (Lara, *et al.,* 2016). Early-tenure CEOs possess a comparatively extended career perspective and are more inclined to prioritize the long-term growth of the company. Therefore, it is unlikely that they will participate in fraudulent activities. CEOs may engage in fraudulent financial statement preparation at the end of the period to not only maximize compensation payments, but also to improve implicit compensation, such as the opportunity to take a post-retirement role (Gibbons & Murphy, 1992). The CEO's chances of securing a more successful career after leaving the position was enhanced by achieving excellent results in the final year of their term. Hence, driven by dual motivations, a CEO would endeavor to enhance the market value of their managerial work upon the completion of their term. One approach is to employ earnings management techniques in order to present favorable financial results to shareholders before the conclusion of the

statement preparation period.

4.4.3 Test for Moderation

Moderation indicates that the causal relationship between two variables changes as a function of the moderator variable. This implies that the statistical test of moderation must measure the differential effect of the exogenous variable on the endogenous variable as a function of the moderator. A moderation effect could be enhancing, where increasing the moderator would increase the effect of the predictor (IV) on the outcome (DV); buffering, where increasing the moderator would decrease the effect of the predictor on the outcome; or antagonistic, where increasing the moderator would reverse the effect of the predictor on the outcome (Hayes, 2013). Moderation is said to exist if the following three conditions are fulfilled. First, the amount of variance accounted for with interaction should be significantly more than the variance accounted for without the interaction. Secondly, the coefficient for the interaction term should be different from zero. This is the simple slope for the interaction that is the basis of examining the simple slopes in probing the nature of the interaction. Lastly, the overall models with and without the interaction should be significant (Hayes, 2013). Based on table 4.6, board gender diversity has a negative and significant effect on the likelihood of financial statement fraud (β= -1.339, ρ<0.05). Specifically, a unit increase in board gender diversity reduces the likelihood of financial statement fraud by -1.339, as shown in table 4.6. The model is statistically significant overall, as indicated by the likelihood ratio chi-square (LR chi2) value of 282.05 with a p-value of 0.0000. This indicates that the predictors collectively influence the likelihood of fraudulent financial statement preparation. The Pseudo R2 value of -1.339 suggests that approximately 31.28% of the variance in the likelihood of fraudulent financial statement preparation is explained by the model.

Table 4.6: Testing the effect of the moderator

Probit regression	Number of obs	=	744
	LR chi2(9)	=	282.05
	Prob >chi2	=	0.0000
Log likelihood = -309.84083	PseudoR2	=	0.3128

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0440205	.0659314	-0.67	0.504	-.1732437	.0852027
fs	-.2337961	.0832819	-2.81	0.005	-.3970257	-.0705665
lev	1.089483	.2258361	4.82	0.000	.646852	1.532113
roa	-5.832737	.5481815	-10.64	0.000	-6.907153	-4.758321
ceoage	-1.989062	.3245767	-6.13	0.000	-2.625221	-1.352904
ceogen	.8266108	.213787	3.87	0.000	.4075961	1.245626
ceoed	-.4666714	.1598244	-2.92	0.004	-.7799216	-.1534213
ceoten	.3236039	.0694374	4.66	0.000	.1875092	.4596986
bgd	-1.339391	.4109557	-3.26	0.001	-2.144849	-.5339323
_cons	9.487439	1.49154	6.36	0.000	6.564074	12.4108

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure, bgd, board gender diversity.

Source: Field data, 2024

4.5 Moderating effect of board gender diversity on the relationship between CEO Demographics and financial statement fraud.

To test the moderation, the predictor variables and the moderator were mean-centered before creating the interaction terms. Each interaction term was hierarchically entered into the model. The results for hierarchical regression are presented in the summary moderation table shown as 4.1. To ascertain whether there was moderation and the type of moderation, the beta coefficients and Δ in r-squared. While, Modgraphs were used to test for the type of moderation. The moderating hypotheses were tested as follows;

H05a stated that: board gender diversity does not moderate the relationship between CEO age and financial statement fraud.

Based on model 7 of table 4.7, the interaction term of board gender diversity and CEO age had a positive and significant effect on financial statement fraud ($\beta = 2.337$ and $\rho < 0.05$). Further, when the interaction term was entered in model 4 there was a 0.009 Δ in pseudo r-squared. Therefore, the null hypothesis was rejected. Based on these findings, one unit increase in the interaction between board gender diversity and CEO age is likely increase fraudulent financial statement preparation by 2.337 units.

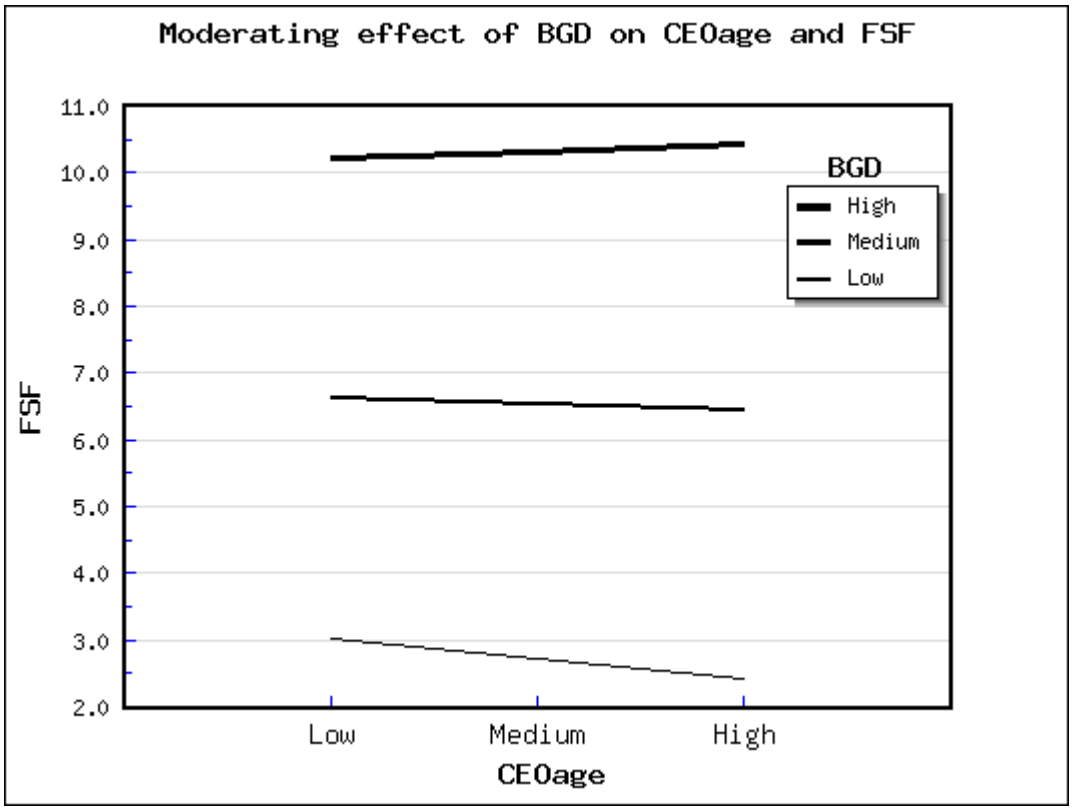

Figure 4.2: Moderating effect of board gender diversity on the relationship between CEO age and financial statement fraud

Source: Field data, 2024

The modgraph further shows that with high CEO age and low board gender diversity, the listed firms are less likely to engage in financial statement fraud. Though high board gender diversity is associated with enhanced oversight, this may not be the case with older CEOs in relations to corporate fraud.

H_{05b} stated that: board gender diversity does not moderate the relationship between CEO gender and financial statements fraud.

The regression results presented in Model 7 of table 4.7 indicated that the interaction term of board gender diversity and CEO gender had a negative and significant effect on financial statements fraud (β= -5.047 and $\rho < 0.05$). When the interaction was added in model 5, there was a 0.011 Δ in pseudo r-squared. Hence, the null hypothesis was rejected. Based on these findings, one unit increase in the interaction between board gender diversity and CEO gender may reduce fraudulent financial statement preparation by 5.047 units.

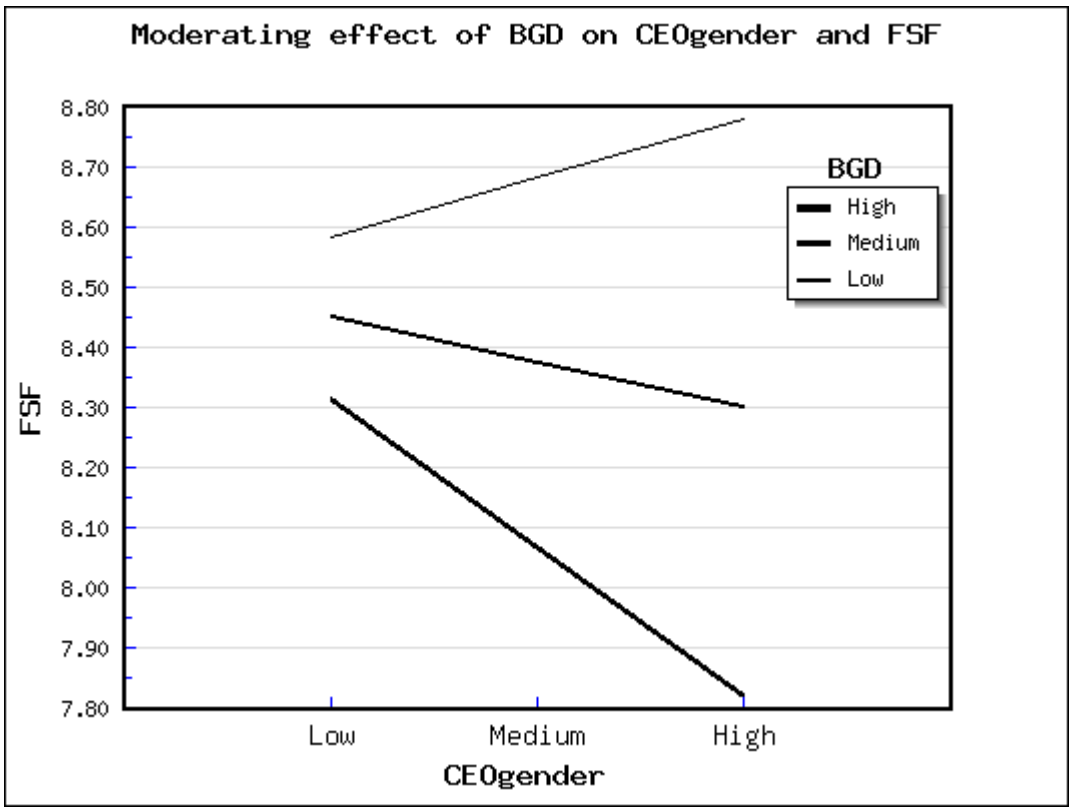

Figure 4.3: Moderating effect of board gender diversity on the relationship between ceo gender and financial statement fraud

Source: Field data, 2024

The modgraph figure 4.2 further shows that financial statement fraud is minimal with high CEO gender diversity and high board gender diversity. This implies board gender

diversity has an enhancing effect. Based on this results it can be argued that gender in management and gender in top management plays a complementary role in mitigating corporate fraud.

H_{05c} stated that: board gender diversity does not moderate the relationship between CEO expertise and financial statements fraud.

Going by the results of model 7 of table 4.7 the interaction term of board gender diversity and CEO expertise had a negative and significant effect on financial statement fraud (β= 3.182 and $\rho < 0.05$). Moreover, when the interaction in model 6, the overall model Δ was 0.009. Therefore, the null hypothesis was rejected. Based on these findings, one unit interaction between board gender diversity and CEO expertise may lessen fraudulent financial statement preparation by 3.182 units.

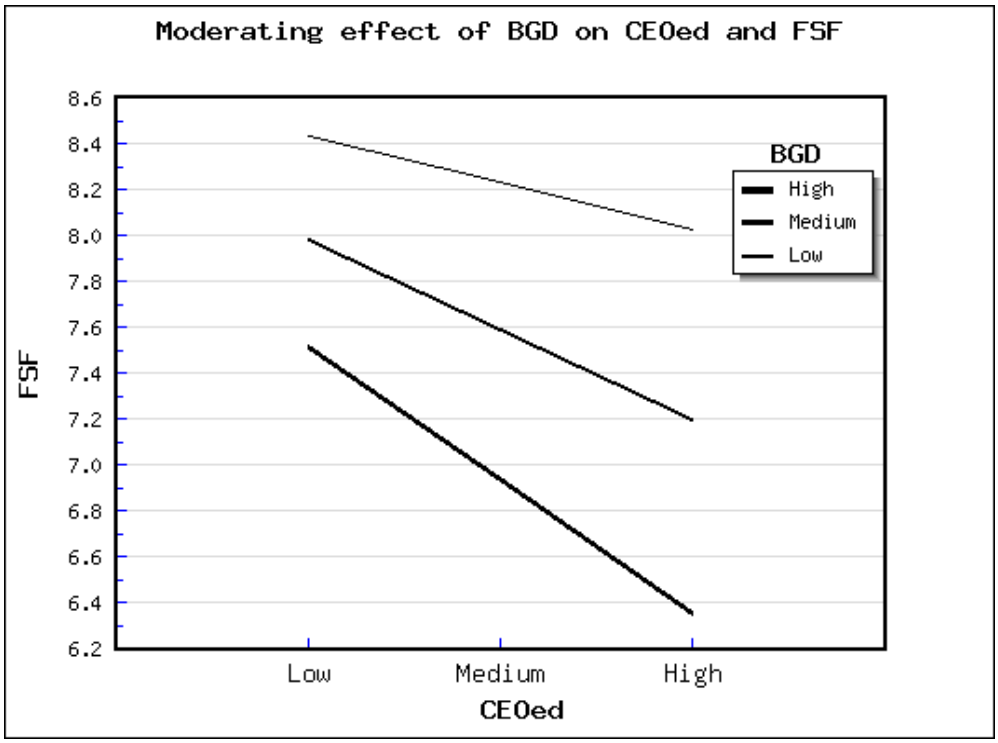

Figure 4.4: Moderating effect of board gender diversity on the relationship between CEO expertise and financial statement fraud

Source: Field data, 2024

The modgraph, figure 4.4, further shows that with high CEO expertise and high board gender diversity, financial statement fraud is low. CEOs with financial and accounting expertise have knowledge in financial statement preparation and can easily detect fraud in financial statement preparation. Similarly, women in corporate boards are more ethical and risk averse and more effective in exercising oversight. Hence, board gender diversity may enhance the effect of CEO expertise in lessening the likelihood of financial statement fraud.

H_{05d} stated that: board gender diversity does not moderate the relationship between CEO tenure financial statement frauds.

Finally, model 7 of table 4.7 indicated that the interaction term of board gender diversity and CEO tenure had a negative and significant effect on financial statement fraud (β= -1.500 and $\rho < 0.05$). Furthermore, the model 7 revealed a 0.008 Δ in the regression results after the incorporation of the interaction term. Therefore, the null hypothesis was rejected. Based on these findings, one unit interaction between board gender diversity and CEO tenure is likely to reduce financial statement fraud by 1.500 units.

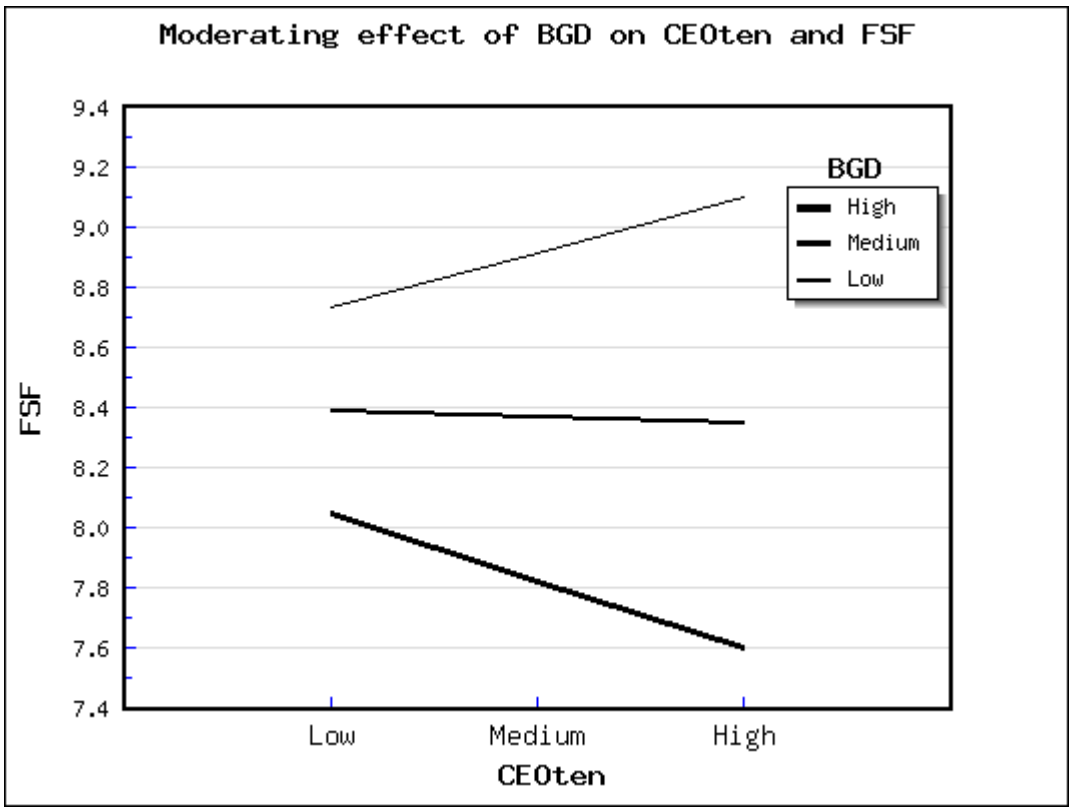

Figure 4.5: Moderating effect of board gender diversity on the relationship between CEO tenure and financial statement fraud.
Source: Field data, 2024

The modgraph, figure 4.5, further shows that with financial statement fraud is low with high CEO tenure and high board gender diversity. CEOs with a long tenure take less risks as they are concerned about their post-retirement legacies, hence they will avoid engaging in any form of fraud. Similarly, female directors improves board's oversight role in mitigating fraudulent financial statement preparation. Consequently, an increase in women representation in boards will enhance the effect of CEO tenure on financial statement fraud.

Table 4.7: Testing the moderating effect of board gender diversity

	Model 1 Coef. (Std. Err.)	**Model 2 Coef. (Std. Err.)**	**Model 3 Coef. (Std. Err.)**	**Model 4 Coef. (Std. Err.)**	**Model 5 Coef. (Std. Err.)**	**Model 6 Coef. (Std. Err.)**	**Model 7 Coef. (Std. Err.)**
_cons	1.99(0.794) **	9.301(1.469) **	9.487(1.492) **	8.977 (1.504) **	8.846 (1.521) **	8.610 (1.532) **	8.720 (1.539)**
Fa	-.139(0.060) **	-.078 (0.06)	-.044(0.066)	-.074 (0.271)	-.076 (0.067)	-.071 (0.068)	-.076 (0.068)
Fs	-.231(0.79) **	-.221(0.082) **	-.234 (0.083) **	-.227 (0.084) **	-.226 (0.084) **	-.220 (0.085) **	-.214 (0.085)**
Lev	0.823(0.204) **	1.072 (0.222) **	1.089(0.226) **	1.022 (0.228) **	1.003 (0.229) **	1.011 (0.231) **	1.015 (0.233)**
Roa	-5.610(0.523) **	-5.741(0.539) **	-5.832(0.548) **	-5.962(0.560) **	-5.990 (0.567) **	-5.951(0.563) **	-5.917 (0.569)**
Ceoage		-2.022 (0.321) **	-1.989 (0.325) **	-1. 838 (0.331) **	-1.798 (0.334) **	-1.776 (0.338) **	-1.794 (0.339)**
Ceogen		.768(0.210) **	.827 (0.214) **	.694 (0.220) **	.558(0.239) **	.596 (0.241) **	.644 (0.242)**
Ceoed		-.368(0.155) **	-.467(0.160) **	-.442 (0.162) **	-.446(0.163) **	-.386 (0.167) **	-.389 (0.167)**
ceoten		.313(0.069) **	0.323 (0.069) **	.321 (0.070) **	.323 (0.070) **	.316 (0.071) **	.268 (0.073)**
Bgd			-1.339(0.410) **	-1.475 (0.424) **	-1.655 (0.438) **	-1.527 (0.450) **	-1.671 (0.462)**
Ceoage_bgd				6.619(2.289) **	6.532 (2.331) **	6.039 (2.488) **	6.796 (2.494)**
Ceogen_bgd					-5.277(1.890) **	-5.066 (1.899) **	-5.047 (1.916)**
Ceoed_bgd						-2.767 (1.037) **	-3.182(1.057)**
Ceoten_bgd							-1.500 (0.549)**
Log likelihood	-348.417	-315.324	-309.840	-305.583	-300.751	-296.820	-293.057
Pseudo R-square	0.2272	0.3006	0.3128	0.322	0.3330	0.3417	0.3500
R-square	0	0.0734	0.0122	0.009	0.011	0.009	0.008
LR chi2	204.90	271.09	282.05	290.57	300.23	308.10	315.62
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure, bgd, board gender diversity. Ceoage_bgd, ceogen_bgd, ceoed_bgd and ceoten_bgd are interaction terms

**p<0.05; standard errors in parentheses

Source: Field data, 2024.

Table 4.8: Summary of hypothesis

Hypotheses	B	P<5%	Decision
$H_{01:}$ CEO age has no significant effect on financial statement fraud	-2.021	0.001	Rejected
$H_{02:}$ CEO gender has no significant effect on financial statement fraud	0.768	0.000	Rejected
$H_{03:}$ CEO education has no significant effect on financial statement fraud	-0.368	0.018	Rejected
$H_{04:}$ CEO tenure has no significant effect on financial statement fraud	0.313	0.000	Rejected
$H_{05a:}$ Board gender diversity does not moderate the relationship between CEO age diversity and financial statement fraud	6.796	0.006	Rejected
$H_{05b:}$ Board gender diversity does not moderate the relationship between CEO gender of meeting and financial statement fraud	-5.047	0.008	Rejected
$H_{05c:}$ Board gender diversity does not moderate the relationship between CEO education and financial statement fraud	-3.182	0.003	Rejected
$H_{05d:}$ Board gender diversity does not moderate the relationship between CEO tenure and financial statement fraud	-1.500	0.006	Rejected

Key: F-score, the Dechow F-score model; fa, firm age; fs, firm size; lev, leverage; roa, return on assets; ceoage, CEO's age; ceogen, CEO gender; ceoed, CEO education; ceoten, CEO tenure, bgd, board gender diversity

Source: Field data, 2024

4.6 Discussion of findings

The first objective sought to investigate the effects of CEO age on financial statement fraud of listed firms in EAC. The findings revealed a negative and significant relationship between CEO age and financial statement fraud. Hambrick and Mason (1984) suggested that younger CEOs are more inclined to pursue riskier tactics, maybe due to their youthful impulsiveness. Markóczy (1997) provided evidence that younger managers exhibit a higher propensity for taking risks. Additionally, Brouthers et al. (2000: 867, 876) observed that younger managers display more strategic aggression compared to senior managers, particularly in periods of turbulence. Price and Norris (2009) found that younger managers are more susceptible to societal and organizational influences in the context of white-collar crime. On the other hand, Hambrick and Mason

(1984) argue that senior leaders tend to be more cautious, potentially due to their enhanced ability to assess risks and anticipate bad outcomes. Managers that are older are less inclined to question the established regulations within a company (Child, 1974). Kelley et al. (1990) argue that as individuals grow older, their moral development tends to be more advanced, and older employees tend to have more stringent interpretations of their company's ethical standards of behavior (Serwinek, 1992). According to Daboub et al. (1995), older CEOs are more resistant to industry and organizational demands. Additionally, Price and Norris (2009) found that increasing age acts as a protective factor against these pressures.

The inherent danger associated with accounting fraud lies in its potential exposure and subsequent detection. The consequences of being detected engaging in or aiding financial statement fraud can be extremely damaging. Despite the absence of punishments from the Securities and Exchange Commission (SEC) against the individuals within the firm accountable for these actions, there are personal reputational consequences that the market imposes on those persons connected to these offenses. Due to the extensive range of experiences and increased maturity that accompanies aging, an elder CEO is more inclined to perceive the based on Reynolds' research in 2006, this study propose that senior executives possess a more extensive knowledge base for decision-making compared to younger CEOs. Additionally, as executives' age, they tend to exhibit more structure in their decision-making processes, resulting in increased efficiency and accuracy, as shown by Fiske and Taylor in 1991. An older executive may face greater challenges in justifying accounting fraud compared to a younger executive due to the higher costs associated with rationalizing financial statement fraud.

The second objective sought to determine the effects of CEO gender on financial statement fraud of listed firms in EA Over the past decade, there has been a significant increase in the amount of research on the relationship between gender, corporate ethics, and risk-taking behaviors. Prior research indicates that the gender of a CEO significantly influences the decisions made by a corporation regarding risk-taking and ethical considerations (Clikeman *et al.,* 2001). This research posits that the disparities in corporate results can be attributed to the inequalities between males and females, as discussed by Gilligan (1982) and Betz et al. (1989). Betz et al. (1989) propose that men have a greater inclination towards economic advantages and rule-breaking, whereas women tend to prioritize harmonious development and are less prone to engage in unethical behaviors. Similarly, Shawver et al. (2006) discovered that females have a lower propensity to provide bribes and participate in unjust loan practices. Studies conducted by Dalton and Ortegren (2011) and Faccio *et al.,* (2016) indicate that women in leadership positions are less inclined to take hazardous business decisions due to their higher susceptibility to social desirability. Adams and Funk (2012) propose that women who aspire to leadership roles should mimic masculine traits in order to thrive in male-dominated environments. Research reveals that women who successfully attain top executive positions exhibit higher levels of motivation, goal orientation, and self-direction compared to their male colleagues. Zalata *et al.,* (2018) propose that the practice of changing how enterprises are classified decreased considerably for companies led by female Chief Executive Officers (CEOs) after the implementation of the Sarbanes-Oxley (SOX) Act. This is believed to be because female CEOs employed alternative methods to manipulate their profitability. In a similar vein, Harris et al. (2019) discovered that female CEOs only mitigate the manipulation of earnings when their equity remuneration is at a minimal level. A study conducted by Arun et al. (2015)

found that female directors constraining upward accruals-based earnings management (AEM) and encourage downward earnings management. Zalata *et al.,* 2018 found that the disparities in financial statement preparation decisions between female and male CEOs can be attributed to the higher level of risk aversion among female CEOs, rather than their greater ethical sensitivity.

The third objective examined the effect of CEO financial expertise on financial statement fraud among listed firms in EAC Chief executive officers are generally well educated, with most having completed college (Chandy, 1991; Palia, 2000). According to cognitive theory, education is positively related to cognitive abilities (Finkelstein and Hambrick, 1996) and more highly educated executives are better able to generate novel and creative solutions to various problems (Bantel and Jackson, 1989). Hambrick and Mason (1984) suggest that education can influence strategic choices within organizations. Troy et al. 265 Higher levels of CEO education are associated with greater innovation (Grimm and Smith, 1991) and advanced ability to process and integrate information (Wiersema and Bantel, 1992). The level of education has also been shown to have a positive relationship to the level of moral development (Freeman and Gilbert, 1988; Rest and Thoma, 1985). Research in social cognition supports the notion that education improves decision-making (Fisk and Taylor, 1991; Fong *et al.,* 1986; Lehman *et al.,* 1988). CEOs schooled in business administration was more aware of the fundamentals of accounting, including the related subjects of business processes and internal controls, the monitoring role of the board of directors and the potential repercussions and penalties of unethical behavior.

The fourth objective sought to assess the effect of CEO tenure on financial statement fraud of listed firms in EAC. The results confirmed a positive and significant association between CEO tenure and financial statements fraud.

CEOs that have longer tenures are often regarded as more skilled and capable of producing high-quality earnings compared to newly appointed CEOs (Ali and Zhang, 2015; Cheng and Leung, 2012). In addition, Kusuma (2011) contends that newly appointed CEOs are more inclined to engage in earnings management tactics in order to decrease earnings at the beginning of the year. This is accomplished by the manipulation of accounting or non-accounting means. Furthermore, according to Zahra et al. (2007), CEOs who have been in their positions for a long time are less likely to engage in fraudulent activities due to their exhaustion from carrying out harmful behaviors. Nevertheless, Crutchley et al. (2007) hold a contrasting view, stating that executives who have been in their positions for a longer period of time are more likely to engage in executive voting, which is positively correlated with signs of accounting fraud. Fredrickson (1985) posits that CEOs with greater work experience has a higher capacity to make superior decisions compared to CEOs with lesser work experience. Hitt and Tyler (1991) concur that CEO job experience can influence an individual's cognitive structure and aid in decision-making about different strategic options.

During the first few years of a CEO's term, they possess comparatively less authority and have a restricted ability to impact the functioning of the business. According to Huybrechts et al. (2013), the longer someone serves as a CEO, the greater their ability to have an impact on firms. Long-serving family CEOs, due to their significant authority, are more prone to exploiting their dominant positions for opportunistic behaviors that harm minority shareholders (Ali *et al.,* 2007). Previous data indicates

that CEOs who serve for extended periods of time are associated with increased business risk-taking, lower quality internal controls, and a decrease in firm value (Taylor, 2010). This exacerbates CEO entrenchment, leading to decisions that prioritize their own interests or those of controlling parties rather than the interests of minority shareholders. As a result, individuals are less inclined to adhere to environmental standards and more prone to engage in environmental fraud. These CEOs with lengthy tenures tend to prioritize immediate financial gains. As a result, they are more motivated to participate in environmental fraud (Liu, 2018). Long-tenured CEOs with enormous decision-making authority impede the prompt identification of fraudulent actions in the context of fraud detection. The board of supervisors, whose responsibility is to act as an effective check and balance, are less inclined to question the decision-making of family CEOs or report any violations to environmental authorities. This is because they are worried about the CEOs' ability to remove perks or retaliate against them (Wang *et al.,* 2019). This entrenched behavior compels CEOs to assume greater risks. In addition, CEOs who have been in their positions for a long time in family-owned companies are more inclined to establish political relationships with local regulators (You & Du, 2011), which can hinder regulatory investigations and the identification of fraud.

The fifth objective sought to examine whether board gender diversity moderates the relationship between CEO Demographics and financial statement fraud. The regression results confirmed that board gender diversity moderated the relationship between CEO: age, gender, expertise, tenure and financial statement fraud among listed firms in EAC.

The agency theory and the resource dependence theory are commonly employed to explain the relationship between various firm attributes and corporate outcomes. Diverse boards of directors are called for by corporate governance procedures to

address agency difficulties and conflicts of interest among company stakeholders. Diversifying the background of directors enhances credibility and enhances the effectiveness of supervision (Francoeur *et al.,* 2008). Corporations and financial markets have implemented several governance methods to reduce conflicts of interest (Dalton *et al.,* 2007). Recent study on gender diversity highlights board gender diversity (BGD) as an effective governance technique. Gender diversity on corporate boards enhances group dynamics, board communication, and disclosures (Francoeur *et al.,* 2008). It mitigates the influence of the "old boys' club" phenomenon, promotes transparency, and fosters effective communication within the board (Adams and Ferreira, 2009). Additionally, it strengthens board independence. It is anticipated that BGD will have a favorable impact on board monitoring, capabilities, independence, and efficiency, which in turn will enhance corporate governance and act as a moderating factor in improving the quality of financial statement preparation. While many previous studies have focused on the agency theory to explain the connection between BGD and financial statement preparation, the resource dependence theory has gained significant attention in recent times for its ability to clarify this relationship (Tyrowicz *et al.*, 2020). According to Pfeffer and Salancik (1978), this statement implies that a company's actions are influenced by the requirement to acquire resources from outside sources. The board of directors plays a crucial role in acquiring external resources, such as funding, new expertise or techniques, and new opportunities. A corporate board that possesses a wide range of distinct and valuable human skills and knowledge is considered a crucial asset. It is anticipated to offer valuable insights and credibility to the company (Pfeffer and Salancik, 1978). Boards that have a wider range of diversity have an advantage in acquiring and preserving crucial resources (Hillman *et al.*, 2009), resulting in improved decision-making and reduced instances of fraudulent financial

statement preparation. Studies indicate that having a board with a diverse range of genders is linked to a wider range of viewpoints, increased creativity and innovation, and enhanced financial statement preparation (Byrnes *et al.*, 1999). Brammer et al. (2007) propose that the presence of female directors enhances the connections between companies and stakeholders, while also offering legitimacy and improved career prospects for employees. These attributes enhance vital board functions, such as shrewd decision-making and reducing instances of corporate misstatement preparation.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the findings obtained from the analysis, the conclusions, and the recommendations for policy, managerial, theory, and future research.

5.1 Summary of the Findings

5.1.1 Effect of CEO age on financial statement fraud

The first hypothesis (H_{01}) proposed that there is no significant effect between CEO age and financial statement fraud among listed firms in EAC. The study's findings, however, revealed a negative and significant relationship ($\beta = -2.022$, $\rho = 0.001$) CEO age and financial statement fraud, leading to the rejection of H01. Supporting studies indicate that older CEOs tend to be more diligent and ethical, contributing to better oversight and reduced incidences of financial fraud.

5.1.2 Effect of CEO gender on financial statement fraud

The second hypothesis (H_{02}) proposed that there is no significant effect between CEO gender and financial statement fraud among listed firms in EAC. However, the study found a positive and significant relationship ($\beta = 1.3866$, $\rho = 0.001$) between the CEO gender and financial statement fraud, leading to the rejection of H02. This implies that female CEOs are more likely to engage in corporate fraud.

5.1.3 Effect of CEO financial expertise on financial statement fraud

The third hypothesis (H_{03}) proposed that there is no significant effect CEO financial expertise and financial statement fraud among listed firms in EAC ($\beta = -0.368$, $\rho < 0.000$), leading to the rejection of H_{03}. This indicates that CEOs with accounting and

financial expertise are less likely to engage in financial statement fraud.

5.1.4 Effect of CEO tenure on financial statement fraud

The fourth hypothesis (H_{04}) posited that there is no significant effect between CEO and financial statement fraud among firms listed in EAC. However, the results indicated a positive and significant relationship (β =0.313, ρ = 0.000), leading to the rejection of H04. This suggests that long serving CEO are less likely to engage in financial statement fraud.

5.1.5 Moderating effect of board gender diversity

The fifth objective of the study sought to examine whether board gender diversity moderates the relationship between CEO Demographics and financial statement fraud among listed firms in EAC. The study found that the interaction term of CEO age and board gender diversity had a positive and significant effect on financial statement fraud (β= -6.796; $p<0.05$), leading to the rejection of the null hypothesis. Based on the findings financial statement fraud, financial statement fraud is minimum with higher CEO age and lower board gender diversity. The study further found that the interaction term between CEO gender and board gender diversity had a negative and significant effect on financial statement fraud (β= -5.047; $p<0.05$), leading to the rejection of the null hypothesis. This implies that with more female CEOs and more representations in corporate boards, there is a lower likelihood that corporate entities to engage in financial statement fraud. The regression results also revealed that the interaction term of CEO gender and board gender diversity had a negative and significant effect on financial statement fraud (β= -3.182; $p<0.05$), leading to the rejection of the null hypothesis. Based on the results, the study found with firms with CEO with accounting and financial expertise and more gender diverse board are less likely to engage in

financial statement fraud. Finally, the results revealed that the interaction term of CEO tenure and board gender diversity had a negative effect on financial statement fraud (β= -1.500; $p<0.05$), leading to the rejection of the null hypothesis. Based on the results, firm with long serving CEOs and more gender diverse boards are less likely to engage in financial statement fraud.

5.2 Conclusion

The study sought to examine whether board gender diversity moderates the relationship between CEO Demographics and financial statement fraud among firms listed in East Africa Community. The results of the study demonstrate that CEO tenure and financial expertise significantly reduces the likelihood of financial statement fraud among listed firms in East Africa. The findings are supported by various studies, which suggest that older CEOs with accounting financial expertise are more risk-averse and ethical, enhancing the firm ability in monitoring and controlling financial statement preparation practices. This aligns with broader corporate governance literature advocating for more experienced and educated CEOs in leadership roles to improve oversight and reduce the incidence of financial fraud. Therefore, enhancing CEO training in finance and accounting is essential for fostering higher-quality financial statement preparation and reducing the likelihood of fraudulent activities. Similarly promoting board gender diversity enhances board's monitoring roles, hence reducing the likelihood of CEOs engaging in unethical activities such as manipulation of financial reports. The findings further revealed that CEO gender and age had a negative effect on financial statement fraud. This implies that firms with younger CEO tend to engage more in corporate misstatement preparation. As for CEO gender, the findings suggest that there is need to focus on other gender-based factors such as experience of female CEOs, rather than just gender.

5.3 Recommendations

5.3.1 Policy Recommendations

The findings have implications for boards of directors, investors, policy-makers and regulatory authorities, who are interested in prevention of corporate fraud. For example, the findings have implications for boards of directors in terms of informing their decisions regarding CEOs appointments for instance age, expertise and tenure. Similarly, investors and regulators, the findings suggest that they should consider not only the gender of CEOs, but also their competences in prevention of financial statement fraud environment as factors that can influence the propensity for CEOs to manage earnings. Finally and although the study is robust and important, its limitations need to be explicitly acknowledged. First, it is widely known that the quality of external and internal corporate governance environment can influence the extent to which CEOs engage in unethical practices such as financial statements fraud.

Firstly, although there is no mandatory restriction on the CEO tenure of listed firms, the findings suggest that introducing such extending tenure limits can help reduce the incidence of environmental fraud commission. Further, CEO tenure can effectively decrease the influential power of entrenched CEOs within listed firms and contribute to corporate compliance with environmental regulations. In addition, the results call for more integrity checks should be done on younger CEOs.

Furthermore, policy-makers may consider mandatory quotas for women in corporate boards. The findings further suggest the need to consider the female directors' financial background when setting affirmative targets relating to gender representation on corporate boards. Also, regulators and academic institutions may developing training programs for corporate managers and the boards on financial reporting.

5.3.2 Managerial implication

The findings are also important for board directors when appointing CEO, because their demographics affect not only the company's performance but also influence financial statement preparation quality. The findings could be informative to shareholders, boards of directors, and other stakeholders as they make their investment decisions. In particular, users of financial statement should take into account female directors' background and the industries in which their firms operate.

5.3.3 Empirical Contribution

This study contributes to the existing empirical literature by investigating the effect of CEOs' demographics on financial statements fraud. The empirical findings provide additional literature on the nexus between CEOs' demographics and fraudulent financial statements from a developing region, the EAC. Furthermore, this study introduces new empirical evidence that board gender diversity among listed companies EAC is likely to moderate the relationship between CEO demographics and financial statement fraud.

5.3.4 Theoretical implication

This study used the agency theory to explain the relationship between CEO attributes and financial statement fraud. Furthermore, financial statement fraud cannot be separated from agency theory. Agency theory is the basis to understanding corporate governance in which each individual is motivated by their own interests so that conflicts between principals and agents can arise. The principal is motivated to enter into a contract to prosper themselves with ever-increasing profitability. Meanwhile, Agents are motivated to meet as many of their financial and psychological needs as possible. Agency issues arise because shareholders, as owners, and management, as agents, do

not share the same interests. (Surya and Yustiavandana 2006). Jensen and Meckling (1976) state that the agency relationship is a contract in which the owner hires a manager to provide a service and then delegates decision-making authority. The principal authorizes the agent to conduct good corporate governance. Good corporate governance is a system, structure, mechanism and culture that will protect the interests of shareholders and stakeholders. Therefore when the agent is able to manage the company properly, the agent will get compensation from the principal (Lestari 2022). If the owner and manager have different interests, it will cause an agency conflict, namely, the separation of functions between ownership on the part of investors and control in management. Managers may also actively engage in financial statement fraud because of the mentioned income affect their compensation. However, powerful Corporate Governance mechanisms in phrases of board characteristics may additionally help lessen financial statement. Based on the findings, the study contends that the theory can be used in determining CEO Demographics that can minimize the likelihood of firms engaging in corporate misstatement preparation. For instance, the findings revealed that older CEO and CEO with finance expertise are less likely to engage in financial statement fraud. The agency theory and the resource dependency theory have been used to show that participation of women in corporate boards improves boards oversight role. The findings of this study confirmed that board gender diversity moderated the relationship between CEO Demographics and financial statement fraud. In summary, the study applied both the agency and resource dependency theory to demonstrate the important link between top management attributes, board gender diversity and financial statement fraud.

5.4 Limitations of the study and recommendation for further studies

Despite the novelty of this study's findings, there are several limitations, which may limit the generalization of the research findings. First, the study measured the likelihood of financial statement fraud using the F-score, which uses financial statement ratios. Hence future studies may consider firms cited as engaging in fraud by the relevant regulators. Also, further studies may also employ other indicators of financial statement fraud such as accrual based earning management, real earnings management, the Benish M-score model and classification shifting methods.

Secondly, the study considered only four demographics of CEOs: age, gender, expertise and tenure. However, there may be other CEO demographics that can explain financial statement fraud, this may be a fertile area for future studies. Third, unlisted firms have different corporate governance structures compared to listed firms. Consequently, future studies may focus on unlisted firm as well as other jurisdictions. Fourth, the study examined the moderating role of board gender diversity as a governance variable, however board gender diversity is not the only determinant of board's effectiveness in mitigation corporate fraud. Future researchers may, therefore, focus on other board attributes such as board independence, expertise, size, board committees among others. Fifth, several studies suggest (e.g., Jiang et al. 2010) that the motivations for CFOs to engage in financial statements fraud tend to be different from those of CEOs. However, this study focused mainly on CEOs due to limitation of data. However, CFO also plays a significant role in a firm's financial statement preparation. Hence, future research, therefore, may seek to replicate the findings of this study by focusing mainly on the CFOs attributes, as improved data becomes available. Finally, while the findings suggest that female CEOs are relatively more likely to engage in financial statement fraud, earlier studies have shown that female CEOs are more risk- averse and ethical;

hence readers should be cautious about this interpretation. If women changed their statement preparation behavior once they started to engage in fraudulent statement preparation, then differences in ethics between men and women could equally explain the findings of this study. As a result, future research may, improve the finding of this study through an investigation that focuses on both different risk and ethics-orientation between male and female CEO as well as employees. Such an approach may offer more conclusive explanations to the ethics versus risk-aversion puzzle.

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APPENDICES

Appendix I: Data Collection Schedule

	Likelihood of financial statement fraud statement preparation	Dechow F-Score Model											
	Board Gender Diversity	No. of female member in the board											
		Total No. of board members											
	CEO age	numeric variable expressing an executive's age adjusted by year											
	CEO gender	defined as a dummy variable expressing an 1 as a value for a female CEO and 0 for a male CEO											
	CEO education	formal training and qualifications acquired by individuals occupying the highest executive positions within organizations.											

	CEO tenure	number of years a CEO has held this position in a publicly traded company.											
	Firm size	Natural logarithm of Total assets											
	Firm age	Period of time in years the firm has served since incorporation											
	Firm Leverage	Debt/Equity ratio											

Appendix II: Listed Firms in East Africa Securities /Stock Exchanges

(a): Nairobi Securities Exchange

No.	Company Name	Sector	Year Listed
1	Eaagads Ltd	Agriculture	1972
2	Kakuzi Ltd	Agriculture	1951
3	Kapchorua Tea Factory Ltd	Agriculture	1972
4	Limuru Tea (K) Ltd	Agriculture	1967
5	Sasini Ltd	Agriculture	1965
6	Williamson Tea (K) Ltd	Agriculture	1972
7	Rea Vipingo Plantations Ltd	Agriculture	1998
8	Car and General (K) Ltd	Automobiles and Accessories	1950
9	Sameer Africa	Automobiles and Accessories	1994
10	Marshalls (E.A) Ltd	Automobiles and Accessories	1987
11	ABSA Bank of (K) Ltd	Banking	1986
12	CFC Stanbic Holdings Ltd	Banking	1970
13	Diamond Trust Bank of (K) Ltd	Banking	1972
14	Equity Group Holdings Ltd	Banking	2006
15	Housing Finance Group Ltd	Banking	1992
16	I&M Holdings Ltd	Banking	2013
17	KCB Group Ltd	Banking	1989
18	National Bank of (K) Ltd	Banking	1994
19	NIC Group PLC	Banking	1971
20	Standard Chartered Bank (K) Ltd	Banking	1988
21	The cooperative Bank of (K) Ltd	Banking	2008
22	Atlas African Industries Ltd	Commercial and Service	2012
23	Express (K) Ltd	Commercial and Service	1978
24	(K) Airways Ltd	Commercial and Service	1996
25	Longhorn Publishers Ltd	Commercial and Service	2012
26	Nairobi Business Ventures Ltd	Commercial and Service	2016
27	National Media Group Ltd	Commercial and Service	1973
28	Standard Group Ltd	Commercial and Service	1954
29	TPS Eastern Africa Ltd	Commercial and Service	1997
30	Uchumi Supermarket Ltd	Commercial and Service	1992
31	WPP Scan Group Ltd	Commercial and Service	2006
32	Deacons East Africa PLC	Commercial and Service	2016
33	Athi River Mining Cement Ltd	Construction &Allied	1997

34	Bamburi Cement Ltd	Construction &Allied	1951
35	Crown Paints (K) Ltd	Construction &Allied	1992
36	E.A Cables Ltd	Construction &Allied	1973
37	E.A Portland Cement Co. Ltd	Construction &Allied	1972
38	Ken Gen Co. Ltd	Energy and Petroleum	2006
40	Kenya Power &Lighting Co. Ltd	Energy and Petroleum	1954
41	Total (K) Ltd	Energy and Petroleum	1988
42	Umeme Ltd	Energy and Petroleum	2012
43	Britam Holdings Ltd	Insurance	2011
44	CIC Insurance Group Ltd	Insurance	2012
45	Jubilee Holdings Ltd	Insurance	1984
46	Kenya Reinsurance Corp. Ltd	Insurance	2006
47	Liberty (K) Holdings Ltd	Insurance	2007
48	Sanlam (K) PL	Insurance	1963
49	Centum Investment Co. Ltd	Investment	1977
50	Home Afrika Ltd	Investment	2013
51	Kurwitu Ventures Ltd	Investment	2012
52	Olympia Capital Holdings Ltd	Investment	1974
53	Trans-Century Ltd	Investment	2011
54	Nairobi Securities Exchange Ltd	Investment Services	2012
55	B.O.C (K) Ltd	Manufacturing and allied	1969
56	British American Tobacco (K) Ltd	Manufacturing and allied	1969
57	Carbacid Investments Ltd	Manufacturing and allied	1972
58	East African Breweries Ltd	Manufacturing and allied	1972
60	Flame Tree Group Holdings Ltd	Manufacturing and allied	2015
61	Kenya Orchards Ltd	Manufacturing and allied	1959
62	Unga Group Ltd	Manufacturing and allied	1971
63	Safaricom Ltd	Telecommunication and Tech.	2008
64	ILAM	Real Estate Investment Trust	2015

b): Uganda Security Exchange

No.	Company	Sector	Year
1	BAT Uganda Ltd	Consumer Goods	2000
2	East African Breweries Ltd	Consumer Goods	2001
3	Kenya Airways	Consumer Services	2002
4	Nation Media Group	Consumer Services	2010
5	Uchumi Supermarkets	Consumer Services	2013
6	Vision Group	Consumer Services	2004
7	Bank of Baroda (Uganda) Ltd	Banking	2002
8	Centum Investment	Investment	2011
9	DFCU Ltd	Banking	2004
10	Equity Group	Banking	2009
11	Jubilee Holdings Ltd	Insurance	2006
2012	Kenya Commercial Bank Ltd	Banking	2008
13	NIC Holdings	Banking	2010
14	Stanbic Bank Uganda Ltd	Banking	2007
15	Cipla Quality Chemical Ind. Ltd	Health Care	2018
16	Uganda Clays Ltd	Industrials	2000
17	Umeme Ltd	Utilities	2012

c): Dar es Salaam Stock Exchange

No.	Company	Sector	Year Listed
1	TOL Gases	Basic Materials	1998
2	East African Breweries	Consumer Goods	2005
3	Jatu	Consumer Goods	2020
4	Tanzania Breweries	Consumer Goods	1998
5	Tanzania Cigarette Co.	Consumer Goods	2000
6	Tanzania Tea Packers (TATEPA)	Consumer Goods	1999
7	Kenya Airways	Consumer Services	2004
8	Nation Media Group	Consumer Services	2011
9	Precision Air Services	Consumer Services	2011
10	Uchumi Supermarket	Consumer Services	2012
11	CRDB Bank	Banking	2009
2012	Dar es Salaam Commercial Bank	Banking	2008
13	KCB Group	Banking	2008
14	Maendeleo Bank	Banking	2013
15	Mkombozi Commercial Bank	Banking	2015
16	Mucoba Bank	Banking	2016
17	Mwalimu Commercial Bank	Banking	2015
18	National Microfinance Bank Plc	Banking	2008
19	Yetu Microfinance	Banking	2016
20	Jubilee Holdings	Insurance	2006
21	National Invest. Co. (NICOL)	Mutual Fund	2018
22	TCCIA Investment	Mutual Fund	2018
23	Dar es Salaam Stock Exchange	Stock Exchange	2016
24	Swissport Tanzania	Industrials	2003
25	Tanga Cement Co.	Industrials	2002
26	Tanzania Portland Cement Co.	Industrials	2006
27	Swala Oil and Gas (Tanzania)	Oil & Gas	2012
28	Vodacom Tanzania	Telecom	2017

d): Rwanda Securities Exchange

No.	Company	Sector	Year Listed
1	Bralirwa	Consumer Goods	
2	Nation Media Group	Consumer Services	
3	Uchumi Supermarkets	Consumer Services	
4	BK Group	Financials	
5	Equity Group	Financials	
6	I&M Bank Rwanda	Financials	
7	KCB Group	Financials	
8	RH Bophelo	Health Care	
9	CIMERWA	Industrials	
10	Crystal Telecom	Telecommunications	

Probit regression — Number of obs = 744
LR chi2(4) = 204.90
Prob > chi2 = 0.0000
Log likelihood = -348.41724 — Pseudo R2 = 0.2272

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.1386889	.0595451	-2.33	0.020	-.2553952	-.0219827
fs	-.2305502	.0789891	-2.92	0.004	-.385366	-.0757345
lev	.8230227	.2040072	4.03	0.000	.423176	1.222869
roa	-5.61028	.5227575	-10.73	0.000	-6.634866	-4.585694
_cons	1.9939	.7942166	2.51	0.012	.4372638	3.550536

Variable	Obs	Mean	Std. Dev.	Min	Max
fscore	744	.2943548	.4560588	0	1
fa	744	3.415627	.8995946	0	4.844187
fs	744	9.59032012	.6910281	7.100887	11.30759
lev	744	.4633926	.2766311	.0003753	1
roa	744	.0683433	.1383198	-.4188305	.5556032
ceoage	744	3.916517	.1891811	3.465736	4.465908
ceogen	744	.0698925	.2551372	0	1
ceoed	744	.813172	.3900356	0	1
Ceoten	744	1.281062	.8942222	0	3.688879
Bgd	744	.1934403	.1523371	0	.6666667

	fscore	fa	fs	lev	roa	ceoage	ceogen	Ceoed	ceoten	Bgd
fscore	1.0000									
Fa	-0.0151	1.0000								
Fs	-0.1037*	-0.0869*	1.0000							
Lev	0.220124*	-0.0286	0.0792*	1.0000						
Roa	-0.4527*	-0.1627*	0.0548	-0.1732*	1.0000					
ceoage	-0.192012*	0.0680	0.0531	0.0863*	0.0279	1.0000				
ceogen	0.1353*	0.1024*	-0.0399	0.0449	-0.0454	-0.0062	1.0000			
ceoed	-0.0372	-0.1634*	0.062012	0.1343*	-0.0887*	-0.1303*	0.0367	1.0000		
ceoten	0.1420*	-0.2373*	0.0056	0.0479	-0.0024	0.1317*	-0.0305	0.0705	1.0000	
Bgd	-0.201240*	0.1493*	0.0262	-0.0659	0.0392	0.0575	0.0520	-0.1552*	-0.0106	1.0000

Variable	VIF	1/VIF
Fa	1.17	0.854382
Ceoed	1.10	0.911000
Ceoten	1.09	0.915645
Roa	1.08	0.924925
Lev	1.07	0.933302
Ceoage	1.06	0.940022
Bgd	1.05	0.949889
Fs	1.03	0.974173
Ceogen	1.02	0.980696
Mean VIF	1.08	

```
Probit regression                       Number of obs             =        744
                                        LR chi2(8)                =     271.09
                                        Prob > chi2               =     0.0000
Log likelihood = -315.32478             Pseudo R2                 =     0.3006
```

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0780571	.0643959	-1.21	0.225	-.2042706	.0481565
fs	-.2206996	.0817707	-2.70	0.007	-.3809673	-.0604319
lev	1.072361	.2220347	4.83	0.000	.637181	1.507541
roa	-5.741228	.5391142	-10.65	0.000	-6.797872	-4.684583
ceoage	-2.021554	.3213173	-6.29	0.000	-2.651324	-1.391784
ceogen	.7679348	.210398	3.65	0.000	.3555622	1.180307
ceoed	-.3681885	.1553931	-2.37	0.018	-.6727534	-.0636235
ceoten	.3130249	.0686679	4.56	0.000	.1784383	.4476114
_cons	9.300791	1.46904	6.33	0.000	6.421525	12.18006

```
Probit regression                       Number of obs   =744
LR chi2(9)=282.05
Log likelihood = -309.84083
                                        Prob > chi2     =     0.0000
                                        Pseudo R2       =     0.3128
```

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0440205	.0659314	-0.67	0.504	-.1732437	.0852027
fs	-.2337961	.0832819	-2.81	0.005	-.3970257	-.0705665
lev	1.089483	.2258361	4.82	0.000	.646852	1.532113
roa	-5.832737	.5481815	-10.64	0.000	-6.907153	-4.758321
ceoage	-1.989062	.3245767	-6.13	0.000	-2.625221	-1.352904
ceogen	.8266108	.213787	3.87	0.000	.4075961	1.245626
ceoed	-.4666714	.1598244	-2.92	0.004	-.7799216	-.1534213
ceoten	.3236039	.0694374	4.66	0.000	.1875092	.4596986
bgd	-1.339391	.4109557	-3.26	0.001	-2.144849	-.5339323
_cons	9.487439	1.49154	6.36	0.000	6.564074	12.4108

Probit regression — Number of obs = 744
LR chi2(10) = 290.57
Prob > chi2 = 0.0000
Log likelihood = -305.58256 — Pseudo R2 = 0.3222

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0738498	.0671332	-1.10	0.271	-.2054284	.0577288
fs	-.2271023	.0842367	-2.70	0.007	-.3922032	-.0620014
lev	1.021771	.2280892	4.48	0.000	.5747246	1.468818
roa	-5.962481	.5604263	-10.64	0.000	-7.060896	-4.864065
ceoage	-1.837811	.3312227	-5.55	0.000	-2.486996	-1.188627
ceogen	.694487	.2196033	3.16	0.002	.2640726	1.124902
ceoed	-.4416865	.1615521	-2.73	0.006	-.7583228	-.1250503
ceoten	.320649	.0697136	4.60	0.000	.1840128	.4572851
bgd	-1.47532	.4238701	-3.48	0.001	-2.30609	-.6445499
ceoage_bgd	6.619172	2.28874	2.89	0.004	2.133325	11.10502
_cons	8.97656	1.504286	5.97	0.000	6.028214	11.92491

Probit regression — Number of obs = 744
LR chi2(11) = 300.23
Prob > chi2 = 0.0000
Log likelihood = -300.75097 — Pseudo R2 = 0.3330

fscore	Coef.Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0763438.0673414	-1.13	0.257	-.2083306	.0556429
fs	-.2260949.0844796	-2.68	0.007	-.3916719	-.060518
lev	1.002818.2292927	4.37	0.000	.5534123	1.452223
roa	-5.989523.5670813	-10.56	0.000	-7.100982	-4.878064
ceoage	-1.793378.3336386	-5.38	0.000	-2.447297	-1.139458
ceogen	.5577738.2390342	2.33	0.020	.0892754	1.026272
ceoed	-.4456388.1629378	-2.74	0.006	-.7649911	-.1262865
ceoten	.3233209.0701622	4.61	0.000	.1858054	.4608363
bgd	-1.655285.4381225	-3.78	0.000	-2.51399	-.7965809
ceoage_bgd	6.5320672.330938	2.80	0.005	1.963513	11.10062
ceogen_bgd	-5.2774571.890239	-2.79	0.005	-8.982258	-1.572655
_cons	8.8459271.520825	5.82	0.000	5.865165	11.82669

Probit regression — Number of obs = 744
LR chi2(12) = 308.10
Prob > chi2 = 0.0000
Log likelihood = -296.82005 — Pseudo R2 = 0.3417

fscore	Coef.Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0712502.0676158	-1.05	0.292	-.2037747	.0612744
fs	-.2199443.0847079	-2.60	0.009	-.3859687	-.05392
lev	1.010811.2310191	4.38	0.000	.558022	1.4636
roa	-5.951054.5629186	-10.57	0.000	-7.054354	-4.847754
ceoage	-1.775726.3375466	-5.26	0.000	-2.437305	-1.114147
ceogen	.5956708.24095	2.47	0.013	.1234174	1.067924
ceoed	-.3860873.1668548	-2.31	0.021	-.7131166	-.0590579
ceoten	.3159482.0705447	4.48	0.000	.177683	.4542133
bgd	-1.527293.4499776	-3.39	0.001	-2.409233	-.6453535
ceoage_bgd	6.039172.48762	2.43	0.015	1.163524	10.91482
ceogen_bgd	-5.0661431.888915	-2.68	0.007	-8.768348	-1.363937
ceoedbgd	-2.7673351.036846	-2.67	0.008	-4.799515	-.7351543
_cons	8.6099151.532118	5.62	0.000	5.60702	11.61281

Probit regression

Number of obs	= 744
LR chi2(13)	= 315.62
Prob >chi2	= 0.0000
Log likelihood = -293.05712	PseudoR2 = 0.3500

fscore	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
fa	-.0757668	.0683842	-1.11	0.268	-.2097973	.0582638
fs	-.2141046	.0852696	-2.51	0.012	-.3812299	-.0469792
lev	1.014918	.2327071	4.36	0.000	.5588206	1.471016
roa	-5.916903	.5688087	-10.40	0.000	-7.031747	-4.802058
ceoage	-1.794324	.3389134	-5.29	0.000	-2.458582	-1.130066
ceogen	.6437738	.2418976	2.66	0.008	.1696633	1.117884
ceoed	-.3890469	.1671698	-2.33	0.020	-.7166937	-.0614
ceoten	.2679195	.0729388	3.67	0.000	.1249621	.4108768
bgd	-1.67056	.4617741	-3.62	0.000	-2.575621	-.7654994
ceoage_bgd	6.796071	2.494475	2.72	0.006	1.90699	11.68515
ceogen_bgd	-5.04714	1.916457	-2.63	0.008	-8.803327	-1.290954
ceoedbgd	-3.181839	1.057001	-3.01	0.003	-5.253523	-1.110155
ceoten_bgd	-1.500163	.5490205	-2.73	0.006	-2.576224	-.424103
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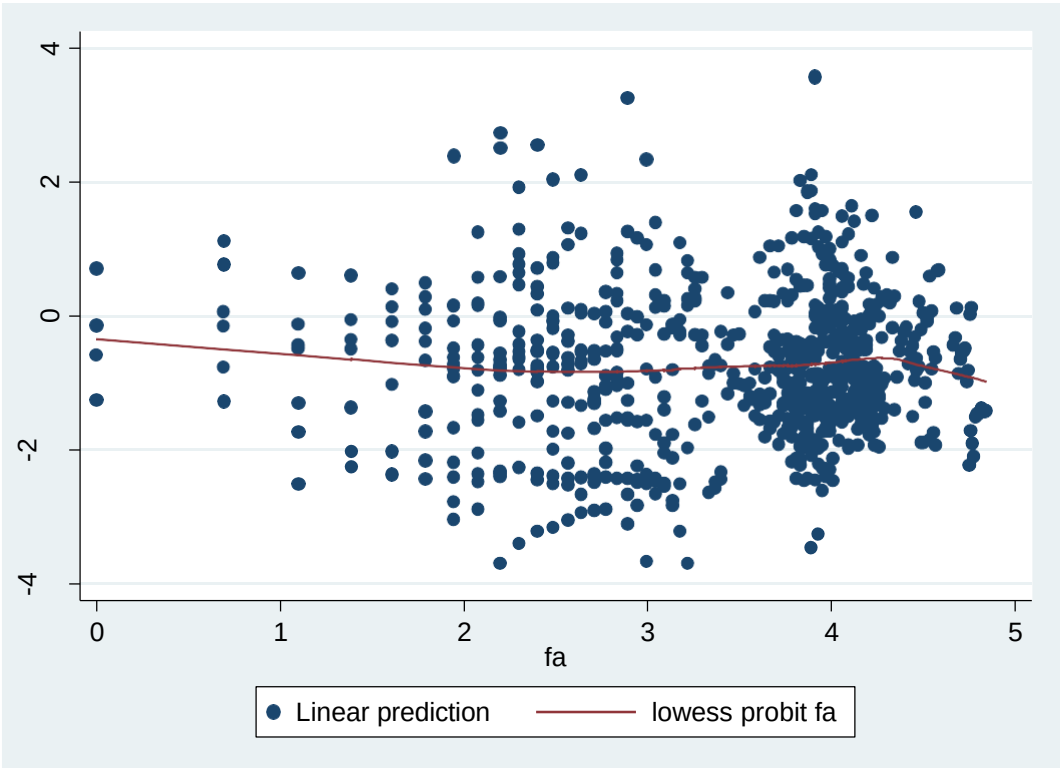

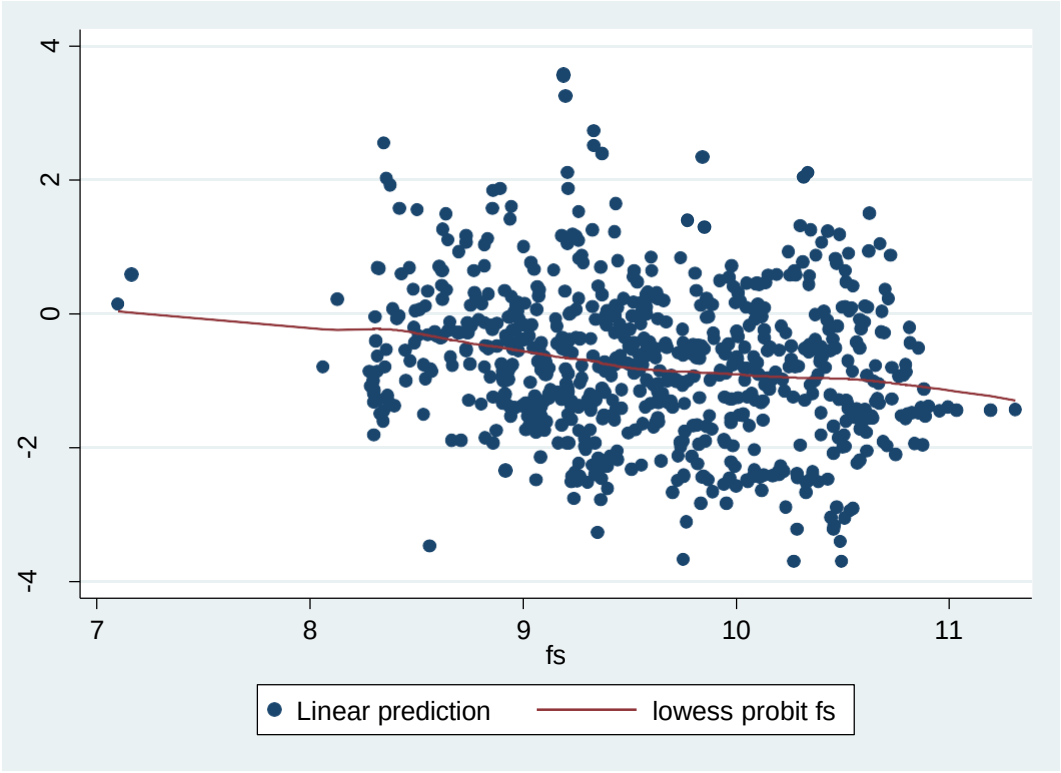
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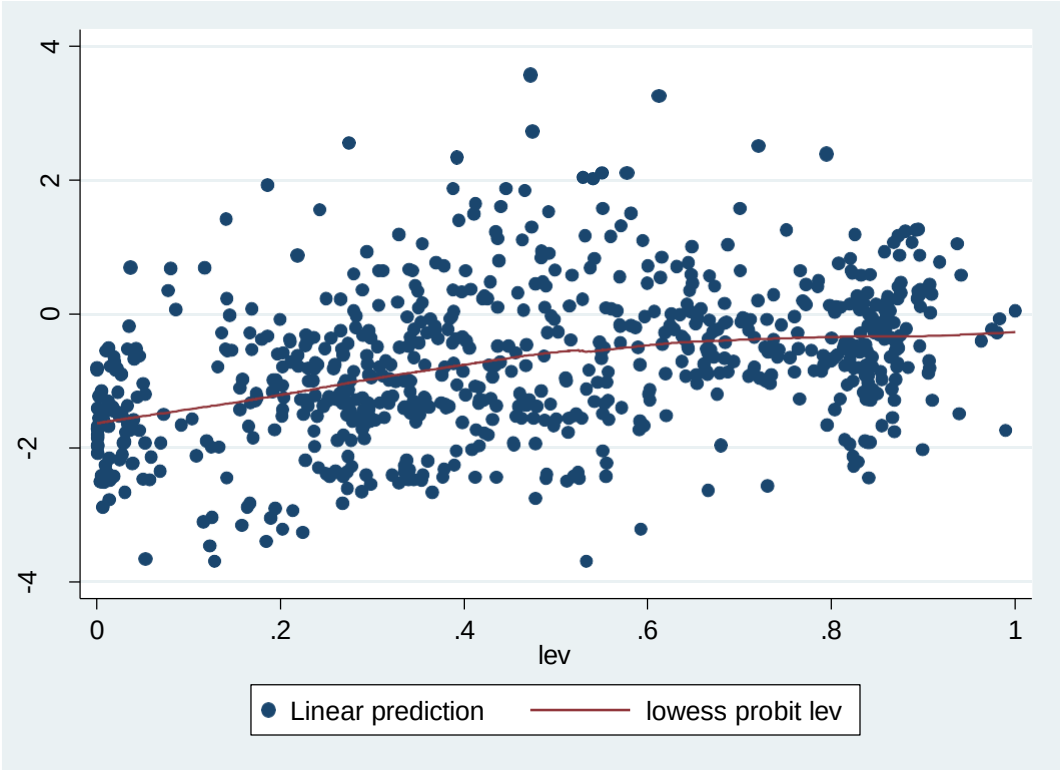
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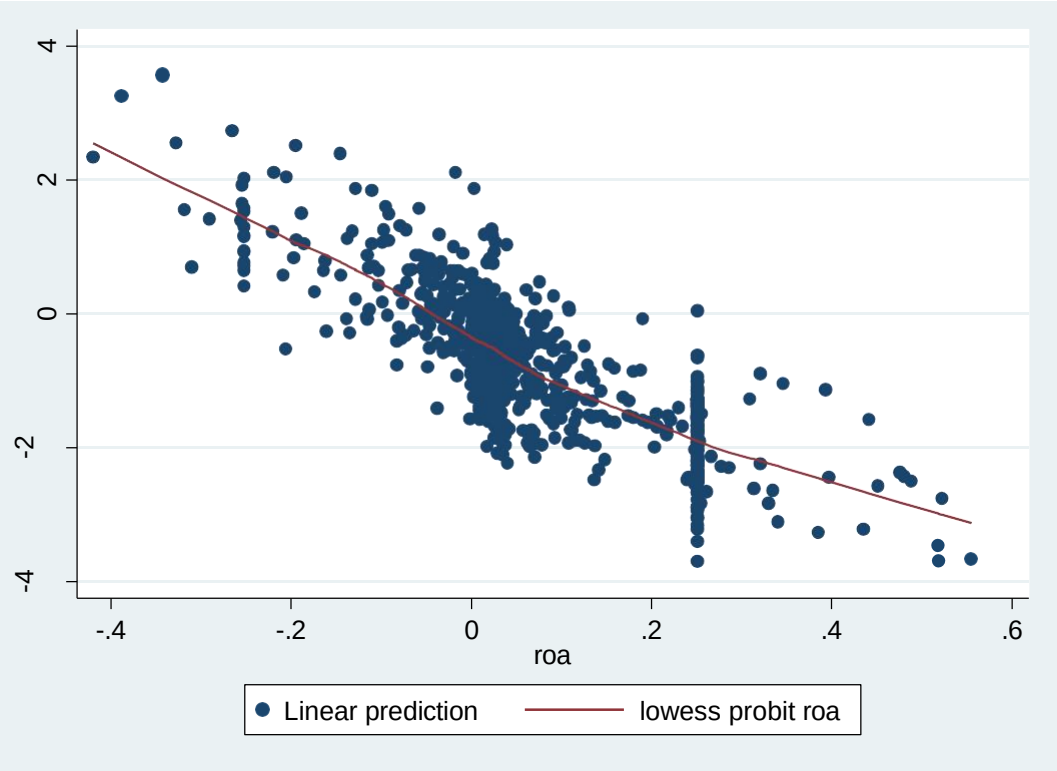
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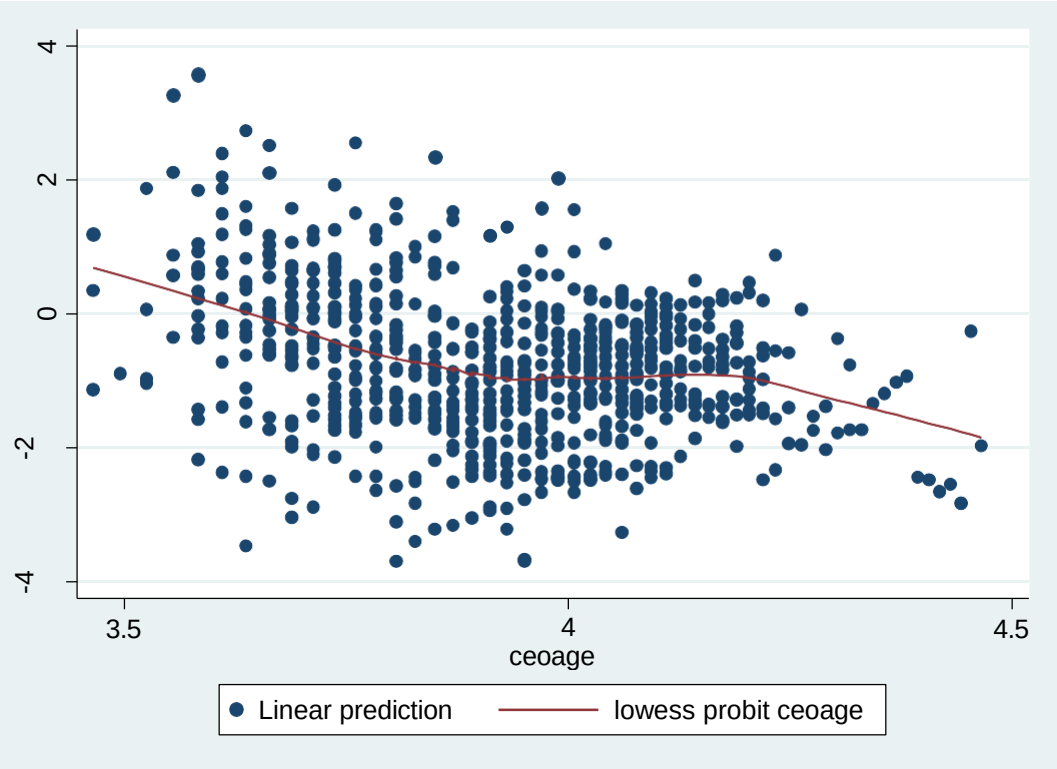
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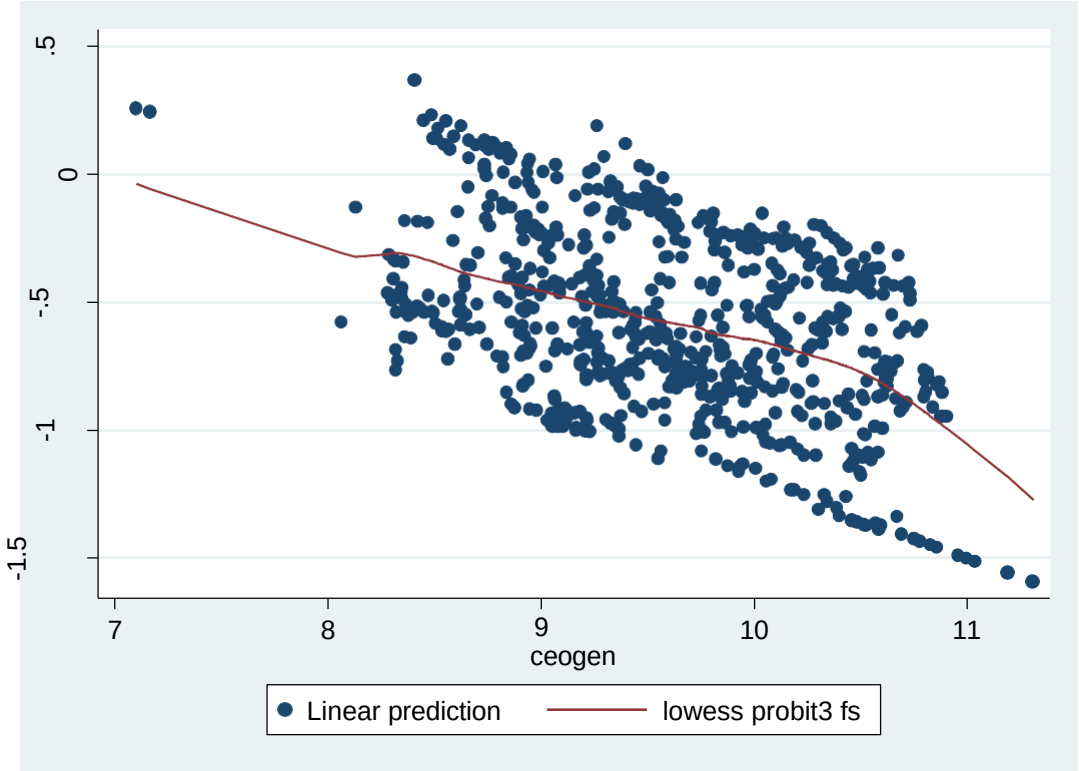
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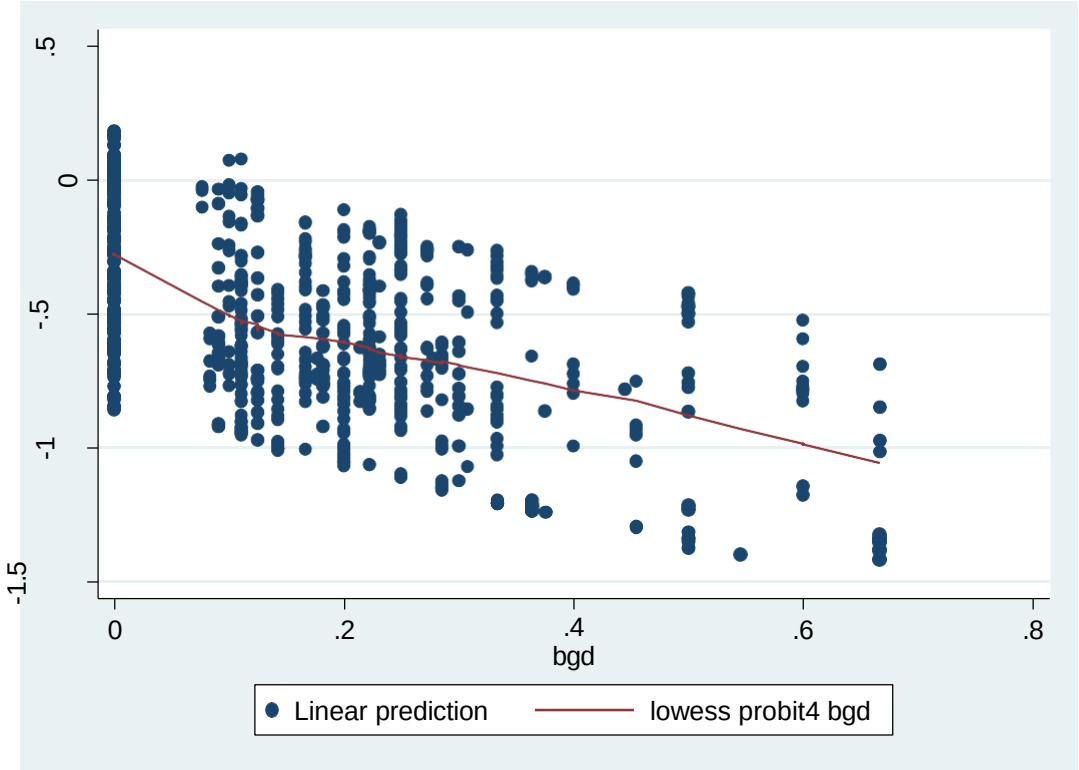
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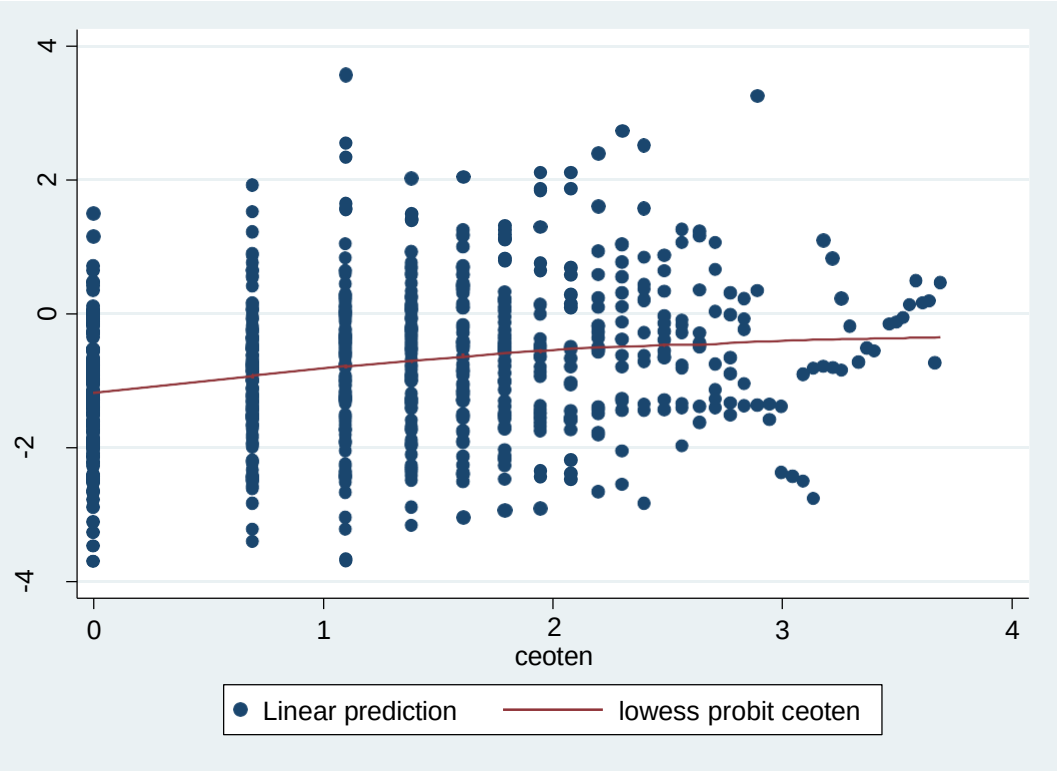
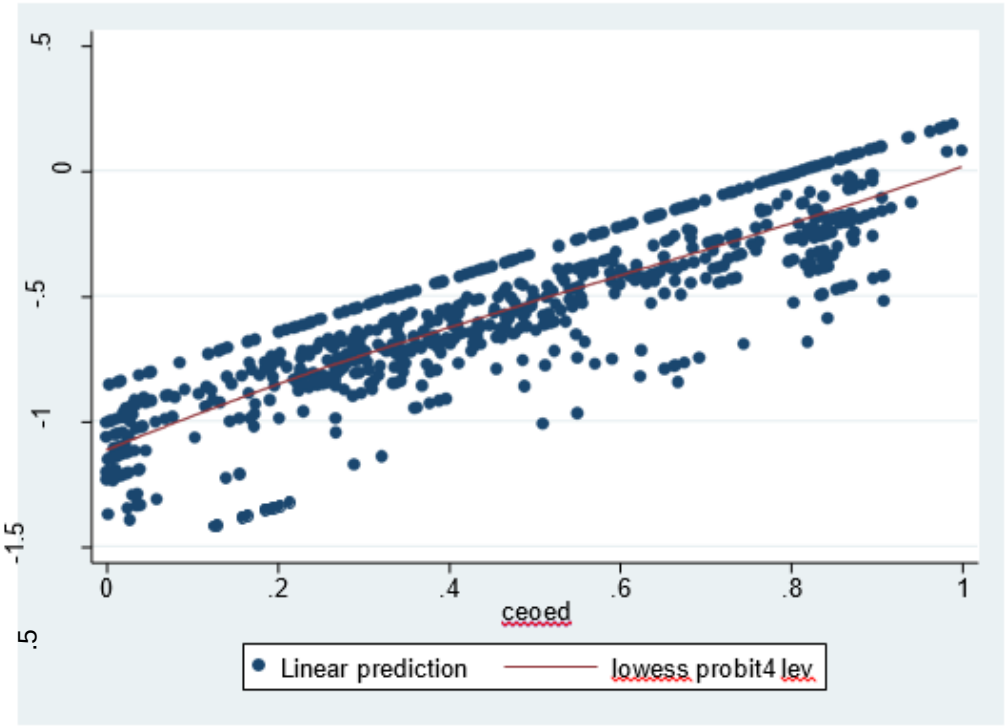


Variable	SQRT VIF	R-VIF	Tolerance	Squared
fa	1.19	1.09	0.8411	0.1589
fs	1.03	1.01	0.9726	0.0274
lev	1.09	1.04	0.9213	0.0787
roa	1.08	1.04	0.9249	0.0751
ceoage	1.07	1.03	0.9339	0.0661
ceogen	1.06	1.03	0.9435	0.0565
ceoed	1.10	1.05	0.9096	0.0904
ceoten	1.09	1.05	0.9152	0.0848
bgd	1.05	1.03	0.9498	0.0502
ceoage_bgd	1.09	1.04	0.9204	0.079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Appendix III: NACOSTI Research License

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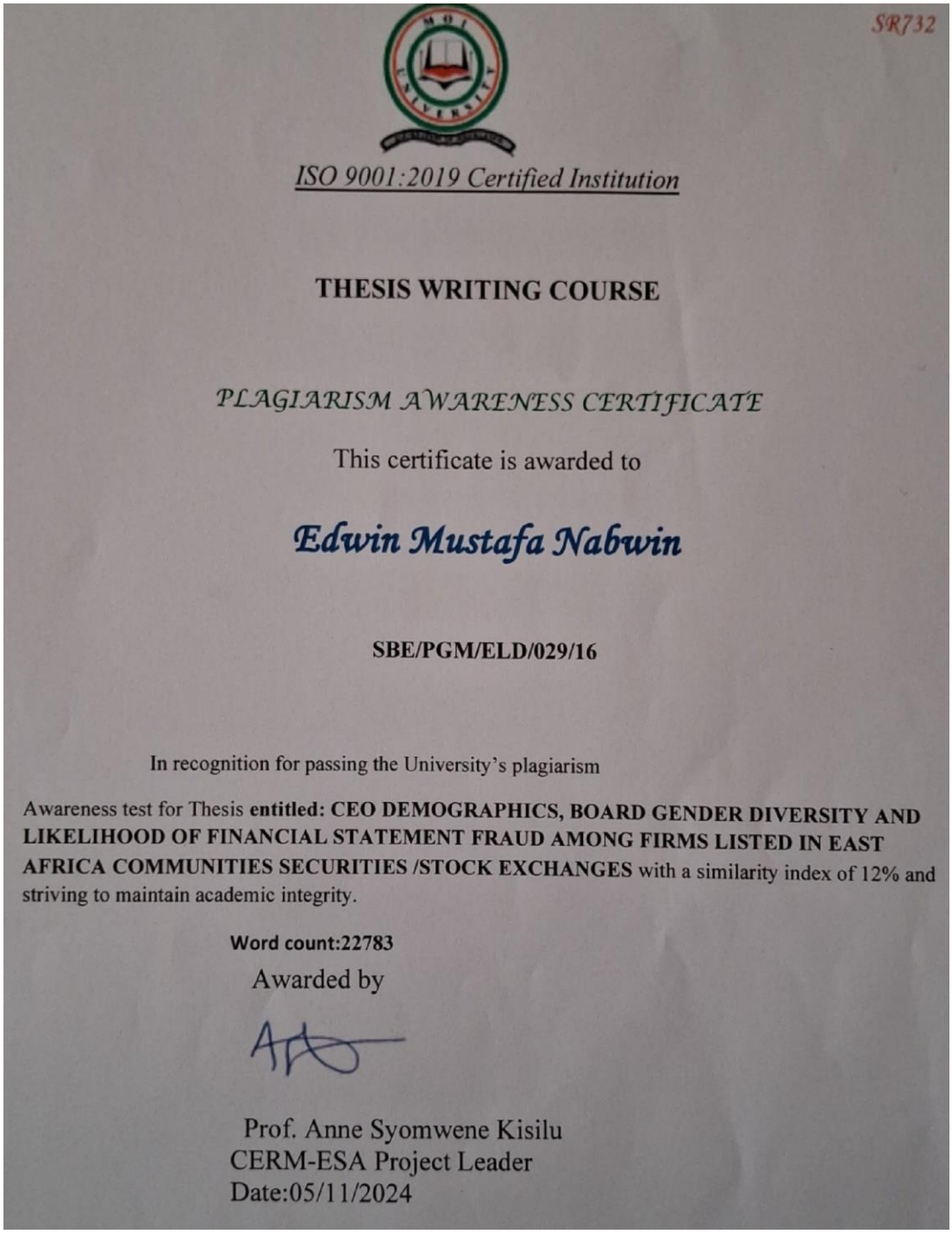

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Word count:22783

Awarded by

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CERM-ESA Project Leader
Date:05/11/2024