

UNIVERSITY OF GHANA

COLLEGE OF HUMANITIES

**FORENSIC ACCOUNTING AND FRAUD DETECTION IN GHANA'S PUBLIC
SECTOR. THE MODERATING ROLE OF CASHLESS POLICY AND INTERNAL
CONTROLS**



BY

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON, IN
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DECLARATION

I, Akolmolga Nsoh Sampson, hereby declare that this work is the result of my research and has not been presented by anyone for any academic award in this or any other university. All references used in this work have been fully acknowledged.



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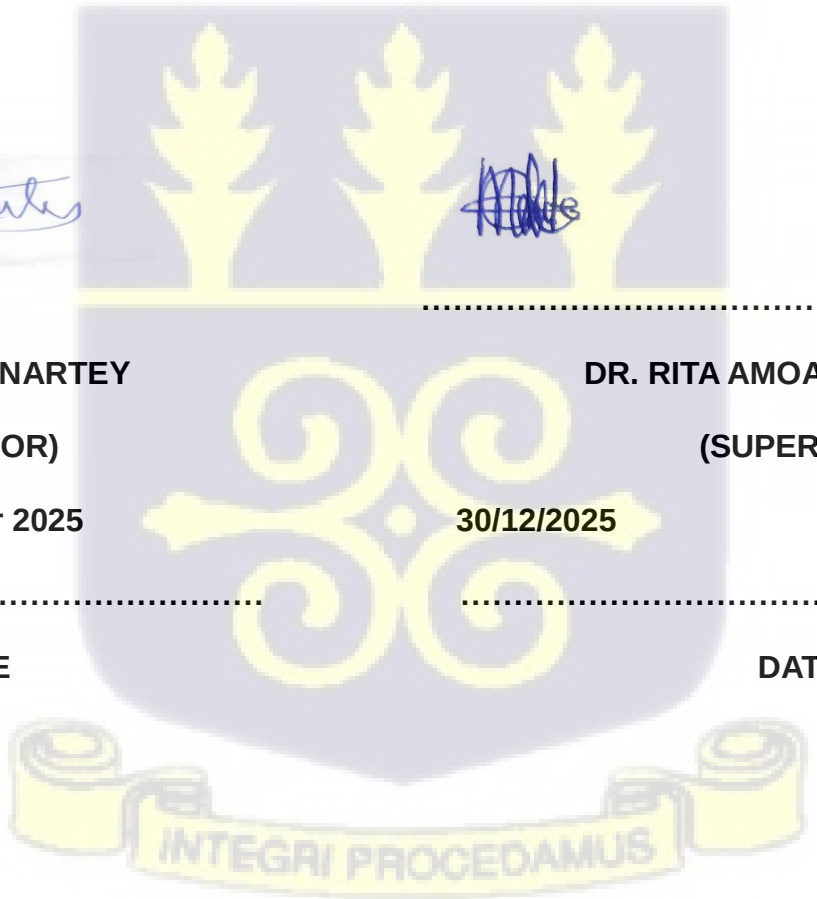
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CERTIFICATION

We hereby certify that this thesis was supervised in accordance with the laid down procedures by the University of Ghana

	
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DEDICATION

This work is lovingly dedicated to my mother Akolmolga Yinime and my entire family for their support and prayers. I also dedicate this thesis to my friends and loved ones whose unwavering support, encouragement, and prayers gave me the motivation to persevere through every challenge. Finally, to all lecturers, most especially to my supervisors, your help and training made this journey a success. May God bless you all.



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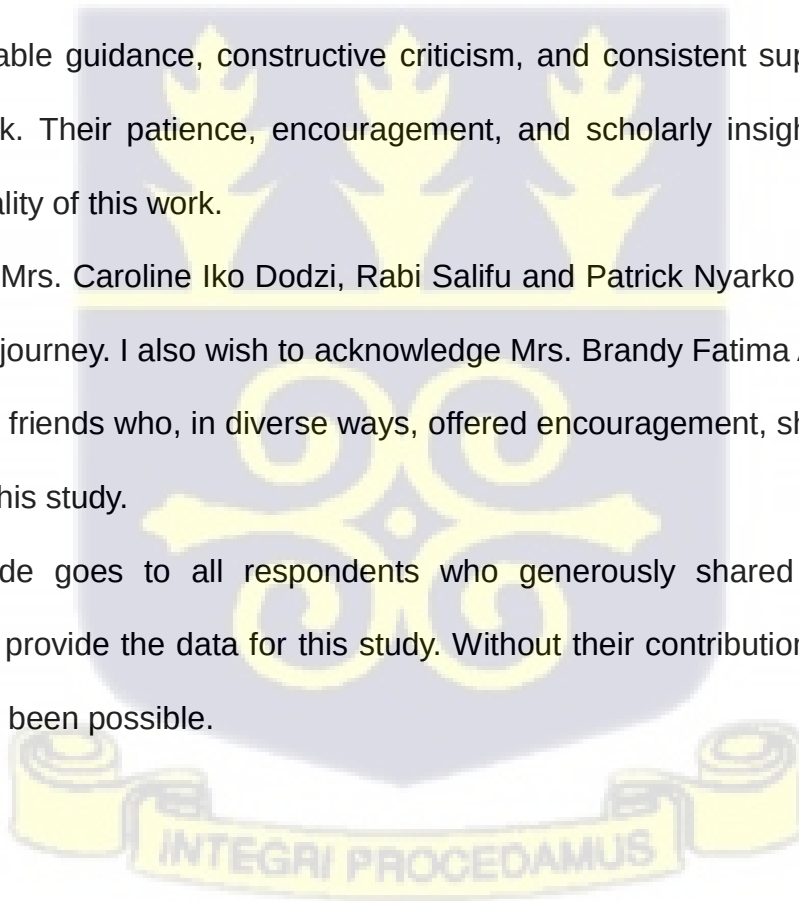


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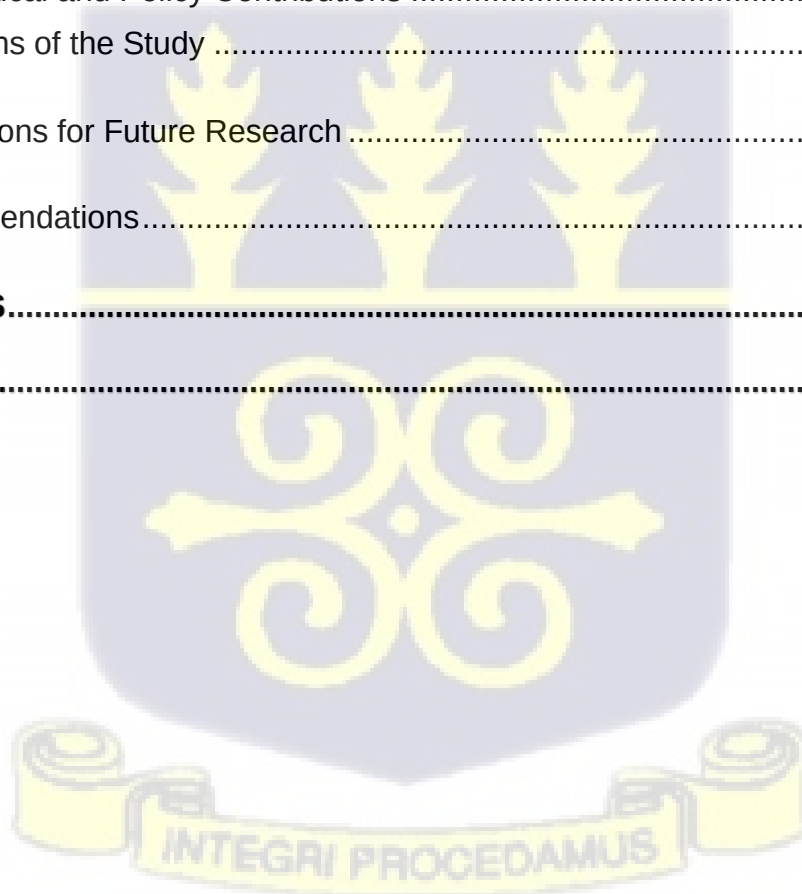
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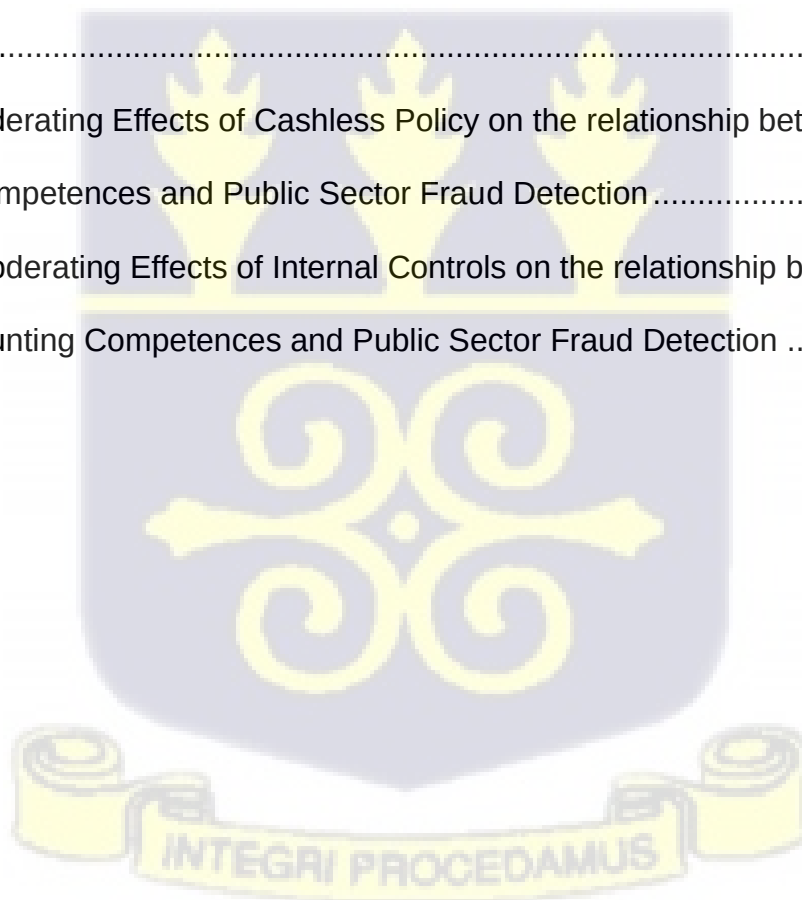
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LIST OF ABBREVIATIONS

ANAPR- Analytical Proficiency

EFFEOC- Effective Oral Communication

EFFEWC- Effective Written Communication

UNDORB- Understanding Organizational Behavior

INVINT- Investigative Intuitiveness

SPELEKN- Specific Legal Knowledge

AUDS- Auditing Skills

CP- Cashless policy

IC- Internal controls

FD- Fraud Detection

FAC- Forensic Accounting Competences

ACFE – Association of Certified Fraud Examiners

ACAGD – Accountant-General's Department

AG – Auditor-General

CHRAJ – Commission on Human Rights and Administrative Justice

COSO – Committee of Sponsoring Organizations of the Treadway Commission

EOCO – Economic and Organized Crime Office

GIFMIS – Ghana Integrated Financial Management Information System

GHANEPS – Ghana Electronic Procurement System

ICAG – Institute of Chartered Accountants, Ghana

MDAs – Ministries, Departments, and Agencies

OSP – Office of the Special Prosecutor

IFAC – International Federation of Accountants

AVE - Average Variance Extracted

BoG - Bank of Ghana

CA - Cronbach Alpha

CB-SEM - Co-variance Based Structural Equation Modelling

PLS-SEM- Partial Least Squares Structural Equation Modelling

COSO – Committee of Sponsoring Organizations

CR - Composite Reliability



ABSTRACT

This study investigates the influence of forensic accounting competencies on fraud detection in Ghana's public sector, with a particular focus on the moderating roles of cashless policy and internal controls. Despite the existence of audit and oversight institutions, persistent financial irregularities continue to undermine accountability, necessitating deeper examination of how professional expertise interacts with institutional reforms to mitigate fraud. Guided by the Fraud Triangle Theory, Agency Theory, and Institutional Theory, the study employed quantitative research design. Structured questionnaires were administered to 150 forensic accounting practitioners, and the data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to ensure robustness in measurement and structural assessment.

The findings reveal that all key forensic accounting competencies, analytical proficiency, oral and written communication, investigative intuitiveness, legal knowledge, auditing skills, and understanding of organizational behavior positively and significantly impact fraud detection. Effective written communication emerged as the strongest predictor, highlighting the critical role of reporting and documentation in ensuring accountability. Investigative intuitiveness and legal knowledge also demonstrated strong influences, underscoring the importance of professional judgment and compliance frameworks. Regarding the moderating variables, cashless policy exerted a significant but negative moderating effect, suggesting functional overlaps between digital reforms and forensic practices. In contrast, internal controls provided a full positive moderating effect, indicating that forensic competencies are most effective when embedded within strong institutional frameworks.

The study advances theory by disaggregating competencies and offers practical guidance for policymakers and practitioners in Ghana and across Sub-Saharan Africa



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Fraud in the public sector is a global concern that undermines governance, disrupts service delivery, and erodes public trust in institutions (Alhassan, 2020). According to the Association of Certified Fraud Examiners (Ahmed, Senturk, & Ali, 2025), organizations lose approximately 5% of their revenue annually to occupational fraud, with the public sector being one of the most affected due to its complex bureaucratic structures and high exposure to discretionary decision-making. In developed economies like the United States and the United Kingdom, forensic accounting has emerged as a crucial tool in combating these financial crimes by applying investigative techniques rooted in accounting, law, and auditing to uncover irregularities (Kranacher, & Riley, 2019). However, while developed countries have made significant progress in institutionalizing forensic accounting, many developing and emerging economies particularly in Africa continue to grapple with systemic fraud in the public sector. The African Union estimates that over \$148 billion is lost annually to corruption and financial mismanagement in Africa, often facilitated by weak institutions and poor internal controls (African Union, 2023, Hope, 2023).

In Africa, high-profile cases of procurement fraud, payroll ghosting, and embezzlement of public funds have made headlines despite anti-corruption efforts (Odeyemi et al., 2024). For instance, Ingbaifegha et al. (2024) conducted a study in Nigeria and found out that Ghost names populate the countries payroll system and Forensic accounting positively eliminate the payroll fraud. While forensic accounting is gaining attention across the

continent, its application remains sporadic, largely due to limited professional expertise, underdeveloped regulatory frameworks, and lack of political will (Franca et al., 2023).

In the African context, studies have shown that forensic accounting can enhance fraud detection in the public sector when practitioners possess the necessary competencies such as analytical skills, legal knowledge, investigative techniques, and communication expertise and when supported by strong institutional frameworks (Fitriyah & Sidharta, 2013; Ataribanam, 2024). Unfortunately, many African governments continue to view forensic accounting as a reactive tool, primarily used after fraud has occurred, rather than as a proactive and preventive mechanism (Sargiacomo et al., 2024). Moreover, the lack of integration between forensic professionals and financial technologies limits their ability to trace digital fraud trails, which are becoming increasingly common in e-governance environments (Franca et al., 2023).

Ghana's public sector has been consistently challenged by fraud-related issues despite the existence of oversight institutions such as the Ghana Audit Service, Office of the Special Prosecutor, and the Commission on Human Rights and Administrative Justice (CHRAJ). The 2022 Auditor-General's report revealed that ministries, departments, and agencies (MDAs) incurred losses exceeding GH¢1.8 billion due to financial irregularities, including unearned salaries, procurement fraud, and unsupported payments (Auditor-General Report, 2022; Avedzi, 2024). These financial malpractices severely undermine development efforts and fiscal credibility (Alhassan, 2020; Agyemang et al., 2023). Despite growing awareness of the importance of forensic accounting in curbing such trends, Ghana has yet to fully integrate forensic practices into its public financial management systems (Afriyie et al., 2023).

Recent policy initiatives have sought to address these challenges through digitization and institutional reforms. Two key moderating factors are the cashless policy and internal control systems. Ghana's digitization initiatives such as GIFMIS, GHANEPS, and biometric payroll systems which represent a shift towards a cashless public finance environment. These systems create digital audit trails that enhance forensic accountants' ability to detect fraud (Agyapong et al., 2023). Yet, if poorly implemented, they also introduce new risks such as cyber-enabled fraud. Thus, the extent of cashless policy adoption moderates the relationship between forensic accounting and fraud detection. COSO, (2013) defined internal controls as processes implemented by management to provide reasonable assurance regarding the achievement of objectives related to operations, reporting, and compliance, and play a fundamental role in preventing and detecting fraud (Dickins, & Fay, 2017). In Ghana, weak internal control systems have been cited repeatedly as enablers of financial misconduct, with recurring lapses in supervision, monitoring, and accountability mechanisms (Okoye & Gbegi, 2013). Studies indicate that forensic accounting is significantly more effective in environments where strong internal controls exist to support the detection and prevention of irregularities (Clark, 2018).

This study is grounded in the Fraud Triangle Theory (Cressey, 1953), which highlights opportunity as a key driver of fraud; Institutional Theory (DiMaggio & Powell, 1983), which emphasizes the role of norms, rules, and systems in shaping behavior; and Agency Theory (Jensen & Meckling, 1976), which explains how information asymmetry enables corruption.

1.2 Problem Statement

Fraud in Ghana's public sector continues to present a significant challenge to public financial management, governance, and institutional credibility (Alhassan, 2020). Auditor-General's reports consistently highlight recurring irregularities such as ghost names on payrolls, unauthorized payments, procurement breaches, and misappropriation of funds. For instance, in 2022 alone, financial irregularities across Ministries, Departments, and Agencies (MDAs) amounted to more than GH¢1.8 billion, many of which were repeat offenses from previous years (Auditor-General Report, 2022). Earlier reports also reflect similar patterns; in 2021, the Auditor-General detected irregularities amounting to GH¢17.48 billion, representing a 36% increase from 2020 figures. These findings suggest that fraud is not only persistent but also systemic and continues to undermine fiscal accountability and public trust in Ghana's governance institutions (Agyemang et al., 2023).

Although several institutions such as the Ghana Audit Service, the Office of the Special Prosecutor, and the Commission on Human Rights and Administrative Justice (CHRAJ) are tasked with oversight, fraud thrives due to structural inefficiencies, weak compliance culture, and a lack of proactive detection mechanisms (Agyemang et al., 2023). Traditional audit procedures, while important, tend to focus on compliance and reporting, and are less effective in uncovering premeditated or collusive fraud designed to exploit control loopholes (Afriyie et al., 2023). Consequently, there is growing recognition of the need for specialized investigative approaches, particularly forensic accounting, to strengthen Ghana's anti-fraud framework.

Forensic accounting, which combines auditing, accounting, investigative, and legal expertise, is increasingly recognized globally as an effective mechanism for fraud

detection and litigation support (Kranacher & Riley, 2019). In advanced economies such as the United States and the United Kingdom, forensic accounting has become institutionalized within public oversight systems, enabling the detection and prosecution of complex fraud cases (Kaur et al., 2023). However, in developing economies such as Ghana, the integration of forensic accounting remains minimal, fragmented, and underdeveloped (Ali et al., 2024; Kaur et al., 2023). In practice, forensic techniques are often applied only after fraud has already occurred rather than as part of preventive financial governance (Umar et al., 2020). While forensic investigations such as the 2023 National Service payroll audit, which uncovered over 64,000 ghost workers and a GH¢429.8 million loss to the state, demonstrate the potential of forensic accounting, the discipline is not yet fully institutionalized in Ghana's public sector (Ministry of Finance, 2025).

Existing literature emphasizes that forensic accounting is not a monolithic concept but a set of competencies, including analytical proficiency, investigative intuition, legal expertise, auditing knowledge, and communication skills (Afriyie et al., 2022; Kaur et al., 2023). Yet, there remains limited empirical understanding of which specific competencies matter most in Ghana's public sector, and under what institutional conditions they are most effective (Afriyie et al., 2022). Without such clarity, reforms risk being generic and failing to build the specialized forensic capacity required to combat entrenched financial crime.

Importantly, the effectiveness of forensic accounting does not occur in isolation. It is shaped by broader institutional moderators, particularly the robustness of internal control systems and the adoption of cashless policy. Internal controls, as defined by COSO

(2013), are processes designed to ensure operational efficiency, reliable reporting, and compliance with laws and regulations. In Ghana, however, weak internal controls characterized by poor segregation of duties, inadequate supervision, and failure to act on audit recommendations have been consistently identified as enablers of fraud (Edheku & Akpoveta, 2020). Evidence suggests that forensic accounting produces stronger outcomes in environments where robust internal controls provide access to reliable information and complement investigative efforts (Clark, 2018).

At the same time, Ghana's push toward a cashless public finance architecture through systems such as the Ghana Integrated Financial Management Information System (GIFMIS), biometric payroll verification, and electronic procurement (GHANEPS) creates digital audit trails that enhance transparency and traceability (Lyra, Pinheiro, & Bacao, 2021). These reforms are designed to reduce opportunities for fraud linked to cash handling and improve financial governance (Apreku-Djan, Quansah, & Frimpong, 2022). However, the extent to which forensic accountants are adequately trained and resourced to analyze digital records and interface with automated systems remains unclear (Agyapong et al., 2023). If forensic professionals lack the skills or tools to utilize digital data effectively, the benefits of cashless reforms may remain muted.

Although prior studies have examined forensic accounting competencies and fraud detection, existing literature treats institutional mechanisms such as cashless systems and internal controls mainly as direct predictors rather than contingent variables. This study responds to calls in business research to examine *how* institutional mechanisms condition primary relationships rather than merely whether they influence outcomes (Namazi & Namazi, 2016).

Drawing on Namazi and Namazi (2016), moderating variables explain conditions under which a relationship strengthens or weakens. In this study, internal controls represent governance strength that can amplify the effectiveness of forensic competencies, while the cashless policy represents institutional automation that may either complement or substitute traditional forensic practices

Despite the significance of these moderators, there is limited empirical study in Ghana that examines the interaction between forensic accounting competencies, internal controls, and cashless policy in fraud detection (Afriyie, Musah & Gakpetor, 2022). This gap is critical, as it limits the ability of policymakers and institutions to design targeted reforms that strengthen forensic practices within Ghana's public sector.

1.3 Purpose of Study

The primary objective of this study is to examine the effect of forensic accounting competencies on fraud detection in Ghana's public sector, with a specific focus on the moderating role of cashless policy and internal control system.

1.4 Research Objectives

1. To investigate the influence of forensic accounting competencies on fraud detection in Ghana's public sector.
2. To evaluate the moderating role of cashless policy in the relationship between forensic accounting competencies and fraud detection in Ghana's public sector.

3. To examine the moderating role of internal control systems in the relationship between forensic accounting competencies and fraud detection in Ghana's public sector.

1.5 Research Questions

1. To what extent do forensic accounting competencies influence fraud detection in Ghana's public sector?
2. What is the moderating effect of cashless policy on the relationship between forensic accounting competencies and fraud detection in Ghana's public sector?
3. What is the moderating effect of internal control systems on the relationship between forensic accounting competencies and fraud detection in Ghana's public sector?

1.6 Significance of the Study

This study is significant for advancing theory, practice, and policy on fraud prevention in Ghana's public sector. Theoretically, it enriches forensic accounting literature by breaking down the field into specific competencies analytical proficiency, investigative intuitiveness, legal knowledge, auditing skills, and communication skills and empirically testing their effects on fraud detection. Few prior studies have examined these competencies separately within Ghana's public sector, making this research a valuable contribution (Kaur et al., 2023).

The study also introduces a moderation model that considers institutional factors. Cashless policy initiatives, which shift transactions to digital platforms, create audit trails and enhance transparency. Similarly, strong internal controls ensure reliable financial

data and reduce fraud risks. By testing these moderating effects, the study provides a holistic understanding of the conditions under which forensic accounting is most effective (Ogunode & Dada, 2022).

Practically, the findings will guide human resource development in the public sector by identifying the competencies that matter most for fraud detection. This can inform training, recruitment, certification programs, and continuous professional development for forensic accountants. It also highlights how internal controls, and digital systems can either strengthen or limit forensic effectiveness.

For policymakers and anti-corruption agencies such as the Ghana Audit Service, Office of the Special Prosecutor, and CHRAJ, the study offers evidence-based strategies to align institutional reforms with investigative capacity (Umar et al., 2020).

Finally, the research adds to the discourse on digital transformation in financial management, showing how systems like GIFMIS and e-procurement can support fraud detection (Afriyie et al., 2023). Its lessons extend beyond Ghana, serving as a benchmark for other developing countries facing similar challenges.

1.7 Scope of the study

This study focuses on the relationship between forensic accounting competencies and fraud detection in Ghana's public sector. It examines how skills such as analytical proficiency, communication, and legal knowledge interact with institutional mechanisms particularly cashless policy reforms and internal control systems, to influence fraud detection effectiveness. Primary data was collected from public sector employees involved in financial reporting, auditing, and fraud prevention, reflecting the study's

emphasis on addressing accountability, transparency, and governance challenges in state institutions vulnerable to financial irregularities (ACFE, 2020).

The scope is deliberately limited to Ghana's public sector, excluding private organizations, multinational corporations, and NGOs, even though these may also face fraud risks. Additionally, while cashless policy and internal controls were incorporated as moderators, other factors such as political interference, ethical culture, and technological literacy were excluded. These delimitations ensure analytical focus but may constrain generalizability, positioning the study within a specific institutional and geographical context

1.8 Organization of the Study

This study is structured into five main chapters, each focusing on a key aspect of the research.

Chapter One: Introduction: This chapter presents the study background, problem statement, research objectives, research questions, and significance of the study. Additionally, it provides an overview of the study's structure.

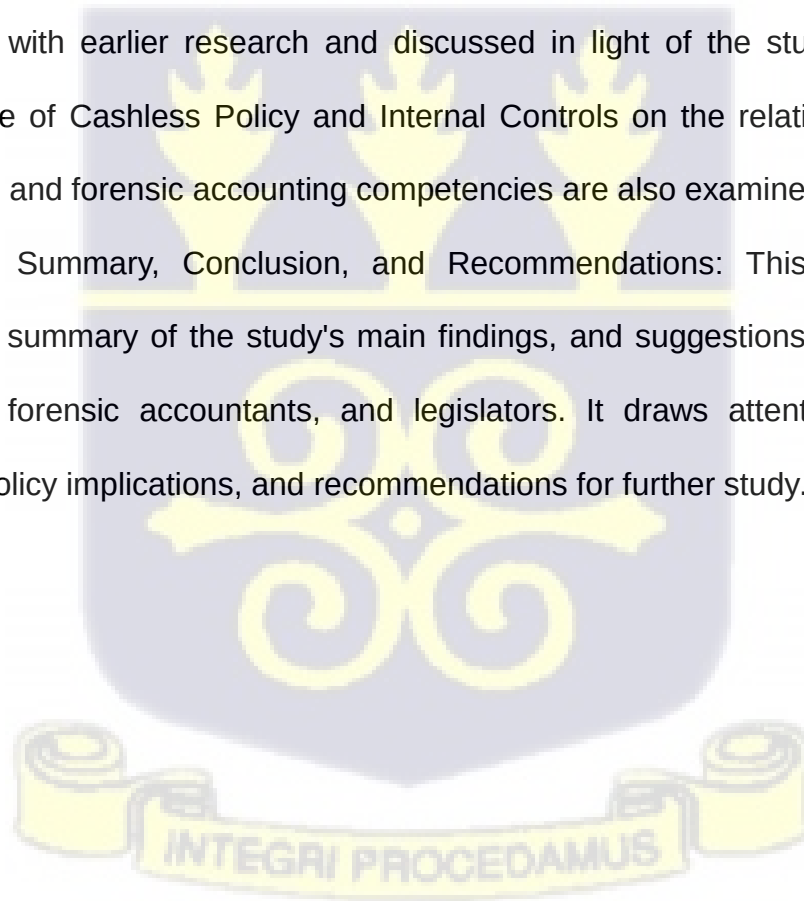
Chapter Two: Literature Review: This chapter critically reviews the body of research on fraud detection and forensic accounting in Ghana's public sector. The Fraud Triangle Theory, Institutional Theory and Agency Theory are among the important theoretical frameworks that are reviewed. To identify knowledge gaps and support the need for this research, empirical studies on fraud detection, forensic accounting competencies like Analytical Proficiency, Legal Knowledge, Effective communication Skills, Understanding

Organizational Behavior, Investigative Intuitiveness, Auditing Skills and the moderating role of Cashless Policy and Internal Controls in fraud investigations are also reviewed.

Chapter Three: Research Methodology: The research design, data collection procedures, sampling strategies, and analytical approaches are described in this chapter. It explains the quantitative methodology of the study, the structured questionnaires used, and the statistical methods used to examine the data. It also discusses the study's ethical considerations.

Chapter Four: Data Analysis and Discussion: This chapter presents the data analysis results using Logit Regression Analysis, descriptive and inferential statistics. The results are compared with earlier research and discussed in light of the study's goals. The moderating role of Cashless Policy and Internal Controls on the relationship between fraud detection and forensic accounting competencies are also examined.

Chapter Five: Summary, Conclusion, and Recommendations: This chapter offers conclusions, a summary of the study's main findings, and suggestions for government organizations, forensic accountants, and legislators. It draws attention to practical applications, policy implications, and recommendations for further study.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This literature review looks at the definitions of key terms such as forensic accounting, fraud detection, public sector fraud, Cashless Policy and Internal Control systems. It also looks at the theoretical frameworks that support this research, the empirical review that highlights previous studies, the hypothesis and the conceptual frameworks under the topic of the study “Forensic Accounting and Fraud Detection in Ghana’s Public Sector. The Moderating Role of Cashless Policy and Internal Control Systems”.

2.1 Conceptual Review

2.1.1 Forensic Accounting

Forensic accounting is a specialized discipline that combines accounting, auditing, and investigative skills to detect fraud, analyze financial transactions, and provide support in legal proceedings (Hakimi et al., 2024; ACFE, 2020). Unlike traditional auditing, which mainly focuses on verifying financial records, forensic accounting applies advanced investigative techniques to expose weaknesses in financial systems, uncover fraudulent practices, and resolve legal disputes (Afriyie et al., 2023). Its growing relevance is linked to the rise of corporate scandals, financial crimes, and globalization, which have increased the demand for transparency and accountability (Afriyie et al., 2022). Forensic accountants work across diverse sectors, including banking, insurance, law enforcement, and government, where they analyze financial data, prepare reports, and offer expert testimony in courts of law (Mert, 2022; Ali et al., 2024). This expanding role has also

prompted calls for integrating forensic accounting into higher education to meet the rising demand for skilled professionals (Oleiwi, 2023).

In the public sector, forensic accounting is particularly important in combating corruption and promoting financial transparency. It strengthens internal controls, detects early warning signs of fraud, and improves public accountability (Bologna & Lindquist, 2016; Afriyie et al., 2023). Empirical evidence from countries such as Indonesia and Nigeria demonstrates that applying forensic accounting practices significantly reduces fraud cases in government organizations (Fitriyah & Sidharta, 2018; Olaoye, 2020). To maximize its effectiveness, scholars recommend that governments establish forensic accounting units within ministries, provide legal backing for investigations, and incorporate forensic accounting into university curricula (Olaoye, 2020). Such measures can enhance fraud detection, reduce misuse of public funds, and build stronger governance systems (Remeikienė & Gasparenienė, 2023).

2.1.2 Fraud Detection

Fraud detection refers to the systematic process of identifying, investigating, and preventing financial irregularities, deceptive practices, and unlawful transactions within an organization (Abdulrahman et al, 2020). It plays a central role in safeguarding institutional integrity, protecting financial resources, and ensuring compliance with regulatory obligations (Kumar, 2022). Fraudulent practices can take diverse forms, including procurement fraud, financial statement manipulation, bribery, payroll fraud, and asset misappropriation, all of which undermine trust in organizational governance (ACFE,

2022). In the context of public institutions, fraud detection becomes even more critical, given the implications for public confidence, fiscal discipline, and sustainable development.

Effective fraud detection involves both proactive and reactive measures. Proactive approaches emphasize early identification of suspicious trends before they escalate into significant fraudulent acts. This includes techniques such as continuous monitoring of transactions, predictive analytics, and risk-based assessments that exploit large datasets to uncover anomalies (Afriyie et al., 2023). Reactive mechanisms, by contrast, focus on investigations after fraudulent activity has occurred, often through whistleblower reports, external audits, forensic accounting reviews, and legal enforcement processes (Wells, 2014; Bhasin, 2013). A balance between these two approaches ensures that organizations not only prevent but also effectively respond to incidents of fraud.

Technological advancements have significantly reshaped modern fraud detection systems. Artificial intelligence (AI), machine learning (ML), and blockchain are increasingly employed to strengthen monitoring frameworks and enhance anomaly detection (Kinanti et al., 2023). AI-powered algorithms can process vast amounts of financial data in real time, detecting unusual transactions or behavioral patterns with higher accuracy and speed than traditional methods (Kumar, 2022). Similarly, blockchain technology introduces immutable and transparent financial records that make it more difficult to manipulate data without detection. These innovations have elevated the capacity of organizations, especially in the public sector, to reduce risks associated with corruption and fraud.

In addition to technological tools, contemporary fraud detection strategies incorporate legal, forensic, and criminological perspectives. Forensic accounting techniques, court data analysis, and risk profiling are now considered integral to assessing vulnerabilities and identifying fraudulent actors (Kaur et al., 2023; Olaniyan et al., 2021). The effectiveness of these measures depends heavily on strong institutional frameworks, including reliable internal controls, robust audit systems, and supportive regulatory environments (ACFE, 2022).

The public sector is particularly vulnerable to fraud due to complex bureaucracies and weak oversight mechanisms. Cases such as procurement manipulation, payroll padding, bribery, and unauthorized expenditures undermine public trust and divert critical resources away from national development priorities (Agyemang et al., 2023). For this reason, the ACFE (2022) emphasizes the importance of regular fraud risk assessments, whistleblower protections, and stringent internal controls as essential safeguards.

Overall, fraud detection is not merely a technical exercise but a multidimensional process requiring collaboration between technological tools, forensic expertise, and governance structures. In the Ghanaian public sector, where corruption and financial irregularities remain pressing concerns, strengthening fraud detection systems is a prerequisite for promoting transparency, accountability, and effective service delivery.

2.1.3 Public Sector Fraud

Fraud in the public sector refers to dishonest acts committed by individuals or organizations to obtain unauthorized benefits, frequently in connection with government resources, government employees, or institutions (Okafor et al., 2020). According to The

Association of Certified Fraud Examiners (2022), fraud is defined as "any dishonest and deceptive means that led to the acquisition of money, property, or an advantage that the recipient would not normally be entitled to," which includes acts like the theft of government property and the presentation of inflated invoices by business owners. In the public sector, fraud typically takes many different forms, such as procurement fraud, payroll fraud, asset misappropriation, and financial statement fraud (ACFE, 2022; Shodeinde et al., 2024).

Procurement fraud involves the manipulation of government contracts through falsification offer or even the falsification of supplier references (Transparency International, 2023). Payroll fraud includes actions such as adding fictitious employees, fabricating work hours, or raising wages beyond what is permitted (ACFE report, 2022; Alhassan, 2020). Asset misappropriation occurs when public funds or government resources are stolen or used for private gain, whereas financial statement fraud involves purposeful manipulation of financial records to conceal poor financial management (Shodeinde et al., 2024; Ali et al., 2024). Fraud has serious consequences for the public sector, including financial losses, decreased institutional effectiveness, and a decline in public trust in government operations (ACFE, 2022). Fraud affects governance structures by diverting funds intended for public services, impeding economic development, and escalating inequality (Okafor et al., 2020). According to ACFE, (2022) fraud in the public sector primarily appears in the procurement, payroll, accounting, and asset management, which pose serious risks to the provision of public services and economic stability. For instance, the United Kingdom has signaled significant difficulties related to the fraud of promises, amounting to £20.2 billion pounds over three years, which has significantly

strained national finances (Transparency International, 2023). To combat fraud in the public sector, strict anti-fraud controls must be put in place, forensic accounting systems must be strengthened, and governmental institutions must foster a culture of accountability and transparency (Ali et al., 2024). Public sector entities can decrease fraudulent activities and enhance institutional integrity by combining regulatory frameworks and rigorously implementing anti-fraud measures (Shodeinde et al., 2024; ACFE, 2022).

2.1.4 Internal Controls

Internal controls represent a structured system of policies, procedures, and practices designed by organizations to safeguard assets, ensure the accuracy and reliability of financial reporting, enhance operational efficiency, and ensure compliance with statutory and regulatory requirements (COSO, 2017; Albrecht et al., 2015). The Committee of Sponsoring Organizations of the Treadway Commission (COSO) defines internal control as “a process, effected by an entity’s board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the categories of operations, reporting, and compliance” (COSO, 2017, p. 3). This definition underscores that internal controls are not a one-time mechanism but rather an ongoing, dynamic process that must adapt to organizational and environmental changes.

Within the public sector, internal controls hold particular importance because of the scale of public resource management and the heightened risks of misuse of funds. Effective internal control systems ensure fiscal accountability, reduce waste, and improve

governance effectiveness (Eze & Okoye, 2019). The COSO framework outlines five interrelated components of internal control environment, risk assessment, control activities, information and communication, and monitoring activities (COSO, 2017). These elements work collectively to create a comprehensive system that prevents, detects, and corrects irregularities in both financial and operational activities. For instance, the control environment sets the tone of ethical conduct, while risk assessment enables the identification of potential fraud vulnerabilities, and monitoring ensures continuous improvement.

From the perspective of fraud detection and prevention, internal controls act as the frontline defense against misappropriation of assets, manipulation of records, and other forms of financial misconduct (Albrecht et al., 2019; ACFE, 2022). Weak or poorly enforced controls create loopholes that allow fraudulent activities to thrive, particularly in government institutions where oversight may be limited or compromised (Shodeinde et al., 2024). A lack of segregation of duties, inadequate reconciliation processes, and weak audit trails can all provide opportunities for corruption to occur undetected (Ali et al., 2024). Conversely, well-designed internal control systems make it more difficult for fraudsters to exploit institutional weaknesses by embedding accountability at multiple levels of financial management.

In Ghana, internal controls have gained increasing attention as part of broader public financial management reforms. Agencies such as the Controller and Accountant General's Department (CAGD) and the Ghana Audit Service (GAS) have emphasized the critical role of robust internal control frameworks in reducing fraud, ensuring compliance, and improving the credibility of public financial reporting (Ataribanam, 2024)).

Strengthening these systems has been identified as essential for enhancing fiscal discipline and restoring public confidence in governance. Internal controls serve not only as mechanisms for fraud prevention but also as governance tools that reinforce institutional integrity. In the context of Ghana's public sector, where corruption and financial irregularities remain pressing concerns, the establishment and continuous strengthening of internal control systems provide a necessary foundation for sustainable accountability, transparency, and improved service delivery.

2.1.5 Cashless Policy

A cashless policy refers to a deliberate strategy undertaken by governments, central banks, or regulatory bodies to minimize circulation and reliance on physical cash by promoting the use of electronic payment systems (Mamudu & Gayovwi, 2019). Such systems include mobile money platforms, debit and credit cards, point-of-sale (POS) terminals, automated teller machines (ATMs), and internet banking channels (Mamudu & Gayovwi, 2019; Bank of Ghana, 2023). The overarching objective of a cashless policy is to enhance the efficiency, security, and transparency of financial transactions while simultaneously reducing the risks associated with cash handling. By encouraging digital transactions, policymakers seek to promote financial inclusion, strengthen payment infrastructure, and foster greater accountability across both public and private sectors (Eze & Okoye, 2019).

In the Ghanaian context, the implementation of cashless policy initiatives has been championed by the Bank of Ghana under the framework of its Financial Sector Digitization Strategy. This initiative forms part of broader efforts to modernize the financial sector and

integrate digital technologies into routine financial operations (Bank of Ghana report, 2023). The Bank of Ghana report, (2023) emphasizes that the adoption of cashless systems can help reduce leakages in government revenues, improve the monitoring of public funds, and support fiscal discipline. By limiting dependence on physical cash, the policy is also aligned with Ghana's national digitalization agenda, which seeks to foster economic growth through innovation and enhanced financial accessibility.

One of the most significant advantages of a cashless policy is its potential to mitigate fraudulent practices and financial crimes. Traditional cash-based transactions often create loopholes that enable embezzlement, bribery, and money laundering. In contrast, digital payments leave behind verifiable electronic records that can be traced and audited. These electronic trails facilitate stronger oversight and provide forensic accountants with valuable data for detecting irregularities (Shodeinde et al., 2024). According to Mamudu & Gayovwi, (2019), the reduction of "unaccounted cash flows" in public institutions significantly curtails opportunities for internal fraud and enhances the capacity of audit mechanisms.

In the public sector, particularly in Ghana, the integration of cashless systems serves as a moderating factor that strengthens institutional frameworks for fraud detection and prevention. When combined with robust forensic accounting competencies and well-designed internal controls, the cashless policy amplifies accountability and reduces discretion in financial transactions (Ali et al., 2024). This is because automated systems minimize human interference in sensitive financial processes, thereby lowering the risk of collusion and manipulation. By promoting transparency and reducing reliance on manual

cash handling, cashless reforms not only contribute to operational efficiency but also reinforce public trust in state institutions.

Overall, Mamudu & Gayovwi, (2019) argued that cashless policy is more than a technological innovation; it is a governance mechanism that enhances accountability, reduces opportunities for financial malpractice, and complements forensic accounting practices. In the context of Ghana's public sector, its strategic adoption provides a critical safeguard against fraud while supporting broader national goals of digital transformation and sustainable financial management.

2.2 Theoretical Review

2.2.1 Fraud Triangle Theory

The Fraud Triangle Theory, developed by Donald Cressey in 1953, provides a foundational framework for understanding the underlying drivers of fraudulent behavior. The theory posits that three interrelated components pressure, opportunity, and rationalization must coexist for an individual to engage in fraudulent activity (Cressey, 1953; Dorminey et al., 2012).

Pressure, also referred to as motivation, involves the internal or external forces compelling individuals to commit fraud. In Ghana's public sector, these pressures may include mounting personal debt, unrealistic performance expectations, or the desire to maintain social status. Financial hardship among public servants, combined with socio-political expectations, often generates strong incentives for unethical conduct (Dorminey et al., 2012).

Opportunity is the most controllable element of the fraud triangle and emerges from weaknesses in institutional frameworks such as poor internal controls, inadequate audit mechanisms, weak regulatory oversight, and political interference (Ataribanam, 2024). In Ghana, fraud opportunities in the public sector are often created by manual payment systems, lack of segregation of duties, and limited real-time financial monitoring.

This is where the moderating role of internal controls and cashless policy becomes critical. Strong internal controls, when properly designed and enforced, reduce the loopholes that create opportunities for fraud (COSO, 2017; Alhassan, 2020). Similarly, the implementation of a cashless policy promoting electronic transactions over cash-based dealings enhances transaction transparency and reduces discretionary abuse, thereby limiting the opportunity for fraud (Bank of Ghana, 2023; Mamudu & Gayovwi, 2019).

Rationalization refers to the psychological justification fraudsters use to legitimize their actions. Public officials in Ghana may rationalize their involvement in fraud by citing low wages, a belief that “everyone is doing it,” or the perception that their actions do not significantly harm the public purse (Kulmie, 2023). This mindset perpetuates a culture of impunity and weakens institutional accountability.

The Fraud Triangle Theory is particularly relevant to this research because it highlights how forensic accounting can effectively address the root causes of fraud. Forensic accountants use investigative techniques, litigation support, and fraud risk assessments to identify and reduce pressures, limit opportunities, and challenge rationalizations for fraud (Ali et al., 2024). In this regard, forensic accounting strengthens Ghana’s public

sector fraud detection systems by increasing financial transparency, uncovering anomalies, and providing evidence for prosecution.

Moreover, the integration of forensic accounting with digitized systems under a cashless policy enhances traceability and reduces cash-based leakages, making it more difficult for fraudsters to rationalize their behavior without being detected. Simultaneously, effective internal control systems act as a preventive mechanism that discourages fraudulent intentions from materializing by closing systemic gaps and establishing accountability structures (Albrecht et al., 2019; Shodeinde et al., 2024).

This theoretical framework also allows for the examination of governance structures and leadership commitment. Political will plays a vital role in prevention of fraud by reinforcing internal controls, enforcing anti-fraud policies, and ensuring compliance. As Olaniyan et al. (2021) assert, strong political will can significantly reduce fraud opportunities by institutionalizing transparency and accountability across government departments.

2.2.2 Institutional Theory

Institutional Theory, as advanced by DiMaggio and Powell (1983), provides a useful theoretical lens for analyzing how external institutional environments such as political structures, regulatory bodies, and professional norms influence the behavior of organizations, including public institutions. The theory posits that organizational practices are shaped by institutional pressures aimed at achieving legitimacy, stability, and conformity to societal expectations (Scott, 2008). In the context of fraud detection in Ghana's public sector, Institutional Theory helps to explain how regulatory, normative,

and mimetic forces influence the adoption and effectiveness of forensic accounting practices, especially when moderated by internal controls and cashless policy reforms.

According to DiMaggio and Powell (1983), Coercive Isomorphism arises when organizations adapt to formal rules, laws, and governmental directives. In Ghana, this is evident in how public sector institutions respond to anti-corruption mandates, financial accountability laws, and political oversight. Forensic accounting practices are often shaped by the presence or absence of political will to enforce anti-fraud laws and strengthen institutional oversight mechanisms (Ali, Khan & Irfan, 2022; Ankamah, 2018). The success of these anti-corruption interventions depends heavily on the government's ability to limit political interference and empower regulatory agencies like the Economic and Organized Crime Office (EOCO) and the Office of the Auditor-General (Agyemang et al., 2023).

Normative Isomorphism refers to the influence of professional standards, educational qualifications, and industry norms on organizational behavior (Scott, 2013). In Ghana, forensic accounting is shaped by both domestic and international accounting standards, including those issued by the Institute of Chartered Accountants, Ghana (ICAG), and global bodies such as the International Federation of Accountants (IFAC). These standards influence public sector audit procedures, fraud detection techniques, and internal financial controls. However, the actual implementation of forensic audit findings is often undermined when political interests take precedence over professional and ethical standards (Olaniyan et al., 2021).

Mimetic Isomorphism occurs when organizations emulate successful practices from other contexts, especially in periods of uncertainty (DiMaggio & Powell, 1983). Ghanaian public

institutions may seek to replicate forensic accounting models used in countries like Singapore and Rwanda, where anti-corruption frameworks have shown notable results. However, the effectiveness of such mimicry is contingent on whether Ghana's institutional environment supports transparency, electronic financial systems, and independent forensic investigations (Ataribanam, 2024). This underscores the importance of institutional readiness and system design including the implementation of cashless policies and robust internal controls as enablers for successful fraud detection.

Institutional Theory is especially relevant to this study because it underscores that forensic accounting is not an isolated technical function but is embedded within broader institutional and governance contexts that either facilitate or hinder its effectiveness. For instance, the successful deployment of forensic tools depends on whether public institutions are supported by strong regulatory frameworks, autonomous audit institutions, and effective internal control systems (COSO, 2017; Alhassan, 2020). When supported by a cashless public finance system, forensic auditors can leverage electronic audit trails, minimize manual transaction risks, and ensure real-time fraud detection.

Furthermore, Institutional Theory highlights how organizational legitimacy can be influenced by institutional norms, cultural expectations, and public perceptions. In environments where corrupt practices are normalized, forensic audits may face resistance or non-compliance. This resistance can diminish the credibility of audit outcomes and limit their deterrent effect (Muhumuza, 2016). Conversely, institutions that promote a culture of integrity, digital transparency through cashless policies, and rigorous internal controls are more likely to adopt and enforce forensic accounting recommendations (Agyemang et al., 2023).

2.2.3 Agency Theory

Agency Theory, introduced by Jensen and Meckling (1976), provides a key framework for understanding governance and accountability within organizations. It explains the relationship between principals, who delegate authority, and agents, who are expected to act in the principals' best interests. However, due to self-interest and information asymmetry, agents may pursue personal goals that diverge from those of the principals, creating risks of opportunistic behavior, fraud, and mismanagement. This conflict is particularly relevant in the public sector, where citizens and government authorities serve as principals and public officials act as agents responsible for managing state resources. The theory underscores the importance of accountability mechanisms such as monitoring, reporting, and internal controls to address these conflicts. Tools like audits, separation of duties, and oversight structures reduce moral hazards and improve transparency. In the context of forensic accounting, Agency Theory highlights why competencies such as analytical skills, legal knowledge, and effective communication are essential. These skills equip forensic accountants to detect discrepancies, bridge information gaps, and safeguard stakeholders' interests (Muhumuza, 2016).

Research has demonstrated the applicability of Agency Theory to governance and fraud detection. For instance, forensic accounting interventions can act as safeguards that align agent behavior with principal expectations (Ataribanam, 2024). In Ghana, where weak accountability structures and fraud remain challenges, the theory offers a useful lens for examining how forensic accounting interacts with institutional reforms such as cashless policies and internal control systems (Remeikienė & Gaspareniene, 2023).

Again, Agency Theory explains fraud detection challenges in the public sector through information asymmetry between public officials (agents) and the state (principal). Forensic accounting competencies, particularly written communication and analytical skills, serve as monitoring mechanisms that reduce information asymmetry and enhance accountability. This explains why competencies differ in their effectiveness in detecting fraud.

Nonetheless, Agency Theory has limitations. It assumes rational, self-interested behavior while overlooking cultural, political, and ethical influences that may undermine monitoring systems. In contexts with collusion or political interference, its explanatory power is weakened. This study therefore applies Agency Theory as a primary framework but acknowledges its limitations, integrating it with complementary perspectives to provide a broader understanding of how governance environments shape the effectiveness of forensic accounting practices.

2.3 Conceptual Framework

This study's conceptual framework illustrates the relationship between forensic accounting competences (independent variable) and fraud detection (dependent variable) in Ghana's public sector, moderated by cashless policy and internal control systems.

Forensic accounting competences refer to the specialized skills, knowledge, and investigative expertise required to detect, prevent, and investigate fraudulent financial activities (Ali et al., 2024). These include analytical proficiency, communication (oral and written), understanding organizational behavior, investigative intuition, specific legal

knowledge, and auditing skills. In Ghana's public sector, where fraud is persistent, the competence of forensic accountants within government oversight bodies is critical. Beyond technical ability, practitioners must also understand regulatory frameworks and governance structures (Shodeinde et al., 2024; Alhassan, 2020). Thus, the framework assumes that enhanced forensic accounting competences positively influence fraud detection effectiveness.

Fraud detection, as the dependent variable, refers to the ability of public institutions to identify, prevent, and respond to fraudulent practices. It involves timely recognition of irregularities, whistleblower responses, analysis of audit trails, and subsequent corrective or legal action (ACFE, 2022). In Ghana, widespread cases such as procurement fraud, payroll manipulation, and asset misappropriation (Albrecht et al., 2019; Ali et al., 2024) demonstrate the urgent need for improved fraud detection systems. The framework posits that higher forensic competences will strengthen early detection and reduce financial mismanagement.

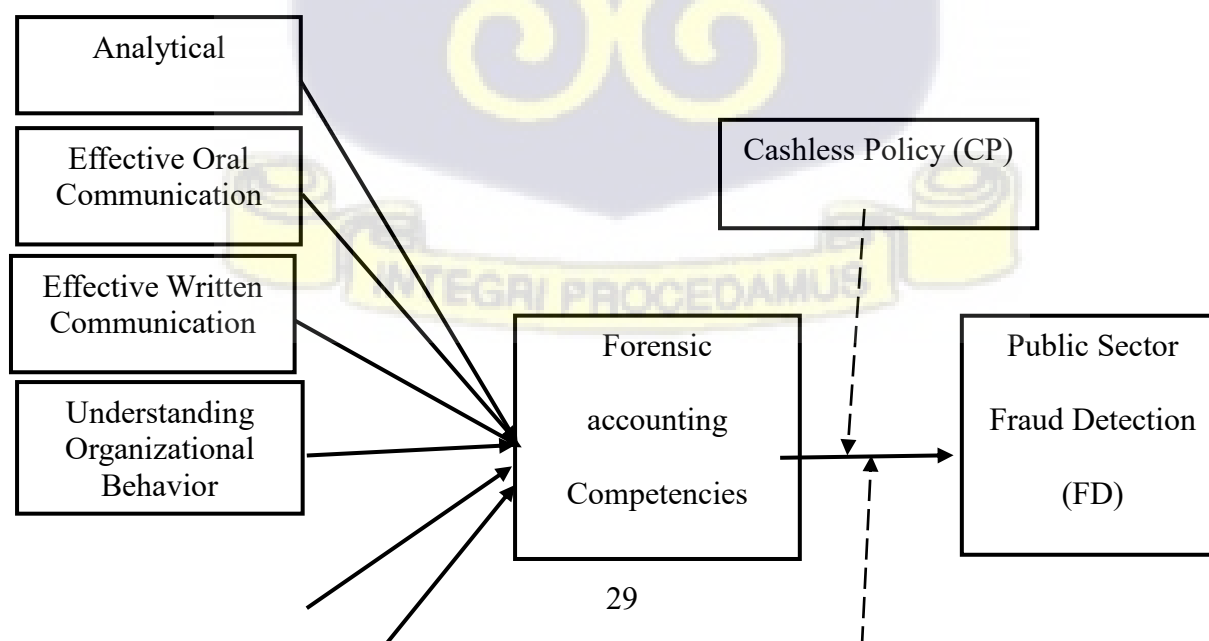
Cashless policy serves as a moderating variable by enhancing transaction transparency and traceability. It minimizes physical cash use and promotes digital platforms such as mobile money and e-payments, which generate reliable electronic records (Mamudu & Gayovwi, 2019; Bank of Ghana, 2023). These digital trails support forensic accountants in conducting more effective investigations. Therefore, a robust cashless policy strengthens the relationship between forensic competences and fraud detection.

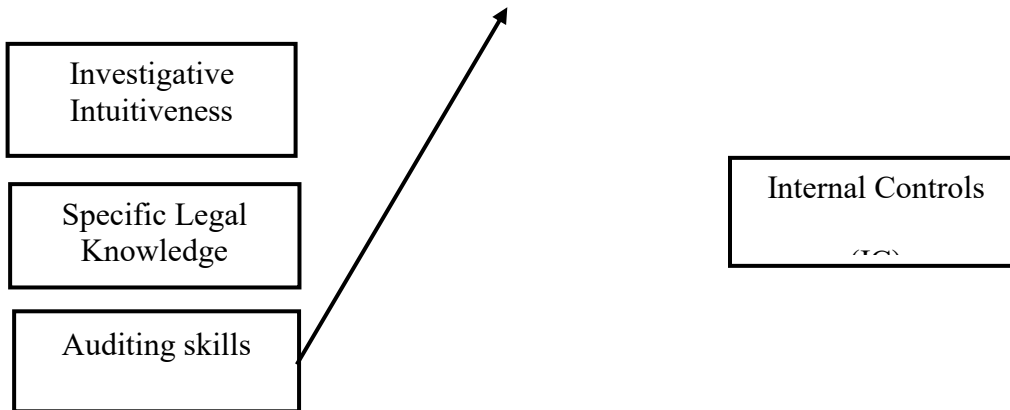
Internal controls also act as a moderating variable, representing the procedures and systems designed to prevent, detect, and address fraud. These include segregation of duties, authorization protocols, financial monitoring, and internal audits (COSO, 2017;

Dorminey et al., 2012). Strong internal controls complement forensic work by creating structures that reduce opportunities for fraud. Conversely, weak systems diminish the effectiveness of even highly competent forensic accountants (Alhassan, 2020). The framework is underpinned by three theories. The Fraud Triangle Theory (Cressey, 1953) explains fraud through pressure, opportunity, and rationalization, with forensic practices and controls reducing opportunities. Institutional Theory (DiMaggio & Powell, 1983) emphasizes how regulations, norms, and external pressures shape organizational adoption of forensic accounting. Finally, Agency Theory (Jensen & Meckling, 1976) highlights principal-agent conflicts and how oversight, controls, and forensic skills reduce moral hazards.

In sum, the framework integrates competencies, institutional mechanisms, and governance theories to explain how fraud detection can be strengthened in Ghana's public sector.

Figure 2.1: Conceptual Framework 1





2.4 Empirical Review and Hypothesis Development

2.4.1 Analytical Proficiency in Fraud Detection

Analytical proficiency has emerged as a critical competency in forensic accounting, particularly for detecting fraudulent activities concealed within complex financial transactions. Rooted in the Fraud Triangle Theory (Cressey, 1953), analytical skills address the “opportunity” element of fraud by enabling forensic accountants to identify hidden anomalies and irregularities that traditional audits may overlook. The ability to critically examine financial and non-financial data is therefore central to strengthening fraud detection capacity.

Empirical research provides substantial evidence of this relationship. Curtis (2008) found that forensic accountants with strong analytical skills are more adept at using investigative tools and interpreting data-driven evidence. Similarly, Kranacher and Riley (2019) emphasized that analytical reasoning enhances both investigative efficiency and the reliability of fraud risk assessments. In Nigeria, Okoye and Gbegi (2013) demonstrated a positive association between analytical abilities and fraud detection effectiveness,

showing that skilled forensic accountants uncovered fraud schemes beyond the reach of routine audits.

However, scholars also highlight important limitations. Ijeoma (2015) observed that in Sub-Saharan Africa, weak institutional frameworks, inadequate technological tools, and poor regulatory oversight restrict the effectiveness of analytical proficiency. Even highly trained accountants may struggle to maximize their expertise without access to modern databases, forensic software, or supportive governance systems. Afriyie et al. (2023) further noted that in Ghana, forensic investigations are often descriptive, constrained by limited integration of advanced analytics and artificial intelligence into public financial management. Franca et al. (2023) similarly pointed to mismatches between acquired competencies and structural inefficiencies such as bureaucratic delays, poor record-keeping, and political interference, which reduce the practical impact of technical skills. Comparative evidence reinforces these insights. Wells (2014) showed that organizations adopting advanced analytical practices such as predictive modeling and data mining are more successful in early fraud detection. Franca et al. (2023), studying the Caribbean, confirmed that strong analytical skills improved detection of procurement fraud and payroll manipulation. Yet, Afriyie et al. (2023) cautioned that analytical skills alone are insufficient, as cultural and ethical contexts also influence fraud risks.

The literature thus presents a dual perspective: while analytical proficiency enhances fraud detection, its effectiveness depends heavily on institutional and technological support. For Ghana, a gap remains as most studies are descriptive and do not empirically test how analytical skills interact with weak audit systems and political interference. To address this gap, the present study investigates the impact of analytical proficiency on

fraud detection in Ghana's public sector, while considering the moderating roles of cashless policy reforms and internal control systems.

Based on the theoretical insights from the Fraud Triangle Theory, the supportive empirical evidence from related contexts, and the identified institutional challenges in Ghana, the following hypothesis is formulated:

H1: Analytical proficiency has a significant positive effect on fraud detection in the Ghanaian public sector.

2.4.2 Effective Oral Communication on Fraud Detection

Effective oral communication is recognized as a fundamental competency in forensic accounting, particularly in fraud detection where timely and accurate information sharing is critical. Agency Theory (Jensen & Meckling, 1976) underscores its importance by highlighting how oral communication helps reduce information asymmetry between principals (citizens or State) and agents (public officials). Fraud often thrives on the concealment of information, and through interviews, interrogations, and presentations, forensic accountants can bridge this gap, ensuring that fraudulent activities are disclosed and acted upon (Afriyie et al., 2023).

Empirical research supports the value of oral communication in fraud detection. Bayong et al. (2024) found that investigators with strong oral communication skills were more effective at eliciting confessions and clarifying irregular transactions. Similarly, Albrecht et al. (2019) noted that clear articulation of fraud issues in non-technical language improves understanding among decision-makers, enabling more effective anti-fraud actions. Wells

(2014) also highlighted structured interviews as a highly effective investigative tool for uncovering fraud.

However, several studies stress that oral communication is not equally effective in all contexts. Afriyie et al. (2023) and Sa'id et al. (2020) argued that in environments with weak governance or political interference, oral communication may have limited value, as reports or testimonies can be ignored or suppressed. Agyemang et al. (2023) found that while oral communication was linked to fraud prevention in Nigeria, it was not statistically significant in actual fraud detection outcomes unless supported by formal reporting and enforcement mechanisms. Conversely, Okoye and Gbegi (2013) demonstrated that oral communication enhanced investigative efficiency when combined with structured forensic processes.

In Ghana, empirical literature on oral communication and fraud detection is limited. Studies available tend to focus broadly on forensic accounting without isolating communication skills (Afriyie et al., 2023). Yet anecdotal evidence suggests weak reporting channels, hierarchical structures, and inadequate whistleblower protections reduce the effectiveness of oral communication in exposing fraud (World Bank, 2023). This underscores the need for systematic investigation of its role within Ghana's public sector, especially as reforms such as audit committee strengthening and whistleblower mechanisms are being introduced (Ghana Audit Service, 2023).

The literature highlights two critical insights: oral communication is a vital forensic competency, but its effectiveness is context-dependent, requiring robust institutional support. Second, while communication enhances reporting and awareness, it must be backed by systems that translate information into tangible anti-fraud outcomes.

Building on theoretical foundations and empirical evidence, this study argues that oral communication has the potential to significantly influence fraud detection in Ghana's public sector, provided that institutional mechanisms support the process. By empirically testing this relationship, the study aims to fill a notable gap in literature and provide insights for both theory and practice. Consequently, the following hypothesis is proposed:

H2: Effective oral communication has a significant positive effect on fraud detection in the Ghanaian public sector

2.4.3 Effective Written Communication on Fraud Detection

Fraud detection in the public sector extends beyond technical expertise to include effective written communication, which provides a formal and permanent record of evidence through audit reports, investigation memos, and official correspondence (Bayong et al., 2024; Afriyie et al., 2023). Institutional Theory (DiMaggio & Powell, 1983) frames this competency by emphasizing how organizations adopt formalized reporting practices to enhance legitimacy, ensure compliance, and strengthen accountability. Within this framework, written communication functions as both a technical and governance tool, documenting irregularities while signaling transparency and reinforcing institutional norms (Dewayanto, 2023).

Empirical evidence highlights its importance in fraud detection. Dewayanto (2023) showed that accurate and detailed documentation supports decision-making and judicial proceedings, deterring fraud by raising the likelihood of exposure. Similarly, Rezaee and Riley (2019) argued that written reports aligned with regulatory expectations strengthen

oversight and help mitigate fraud risks. By establishing audit trails, documentation not only enables investigations but also provides preventive deterrence.

Nonetheless, scholars warn of contextual limitations. Khersiat (2018) noted that in environments with weak enforcement or bureaucratic inefficiencies, reports may be ignored, manipulated, or underutilized. Shodeinde et al. (2024) similarly stressed that without strong internal controls, even high-quality reports can be suppressed by vested interests. Thus, written communication requires supportive governance structures to translate documentation into meaningful anti-fraud outcomes.

Comparative studies illustrate this contrast. In developed countries such as Canada, comprehensive documentation frameworks enhanced preventive and corrective measures, making fraud easier to detect (Khersiat, 2018). In Sub-Saharan Africa, however, Okoye and Gbegi (2013) found that while reports aided detection in Nigeria, delays and incomplete documentation reduced effectiveness. Likewise, Owusu et al. (2021) observed that political interference in developing economies often diminishes the utility of written records.

In Ghana, empirical research has given limited attention to written communication as a distinct forensic competency. Existing studies focus more on analytical and auditing skills (Afriyie et al., 2023). Yet, evidence from the Auditor-General's reports and Ghana Audit Service indicates that bureaucratic bottlenecks and weak reporting frameworks undermine anti-fraud measures (World Bank, 2023). This highlights the need for systematic investigation into whether effective documentation, supported by strong oversight, improves fraud detection outcomes.

By situating written communication within both Institutional Theory and the empirical realities of Ghana, this research seeks to fill a notable gap and provide insights into how documentation practices can be strengthened to improve anti-fraud mechanisms. Accordingly, the following hypothesis is proposed:

H3: Effective written communication has a significant positive effect on fraud detection in the Ghanaian public sector.

2.4.4 Understanding Organizational Behavior on Fraud Detection

Fraud detection in the public sector is strongly influenced by organizational behavior, which encompasses individual and group dynamics such as leadership, motivation, communication, power relations, and informal networks (Kinanti et al., 2023). In institutions where bureaucratic structures, political patronage, and cultural factors shape workplace practices, understanding employee behaviors becomes essential for detecting fraud (Albrecht et al., 2020). Within forensic accounting, organizational behavior provides insight into how employees either align or misalign their actions with institutional goals, complementing technical approaches such as audits.

Agency Theory (Jensen & Meckling, 1976) provides the theoretical basis for this link, explaining how agents may pursue self-interest at the expense of principals, creating moral hazard and information asymmetry. Observing behavioral cues such as avoidance of oversight, secrecy, or disregard for internal controls can help forensic accountants identify early signs of fraudulent activity (Albrecht et al., 2020).

Empirical studies confirm the value of behavioral analysis in fraud detection. Olaniyan et al. (2021) found that behaviors such as secrecy in operations, reluctance to disclose

financial information, and excessive outsourcing served as early warning indicators of fraud in Ghana. Albrecht et al. (2020) similarly emphasized “red flag behaviors,” including lifestyle incongruities and rationalizations, as predictors of fraud. These findings highlight the practical role of behavioral observation in complementing forensic investigations.

However, limitations are widely noted. Afriyie et al. (2023) cautioned that behavioral cues may be misinterpreted, particularly in weak governance environments where biases or poor systems distort perceptions. Shodeinde et al. (2024) added that actions such as delegation may reflect legitimate managerial practice rather than fraud, raising the risk of false positives. Thus, organizational behavior must be assessed alongside strong internal controls to ensure reliability.

Comparative studies further demonstrate contextual differences. In advanced economies, behavioral analysis complements robust audit frameworks. Schuchter and Levi (2016) found that unusual behavior in European institutions often triggered systematic investigations within strong legal structures. In contrast, in developing countries such as Nigeria and Kenya, weak governance and political interference often limit the effectiveness of behavioral assessments (Okoye & Gbegi, 2013).

In Ghana, organizational behavior is particularly complex due to cultural norms, informal networks, and political patronage, which can undermine reporting systems and discourage whistleblowing (Okoye & Gbegi, 2013). These factors create opportunities for fraud to go undetected, underscoring the need to integrate behavioral analysis with forensic competencies and institutional reforms.

By situating this inquiry within Agency Theory and integrating insights from global and regional empirical studies, the research seeks to determine how behavioral analysis can

complement forensic accounting competencies and institutional controls in mitigating fraud. Accordingly, the following hypothesis is proposed:

H4: Understanding organizational behavior has a significant positive effect on fraud detection in the Ghanaian public sector.

2.4.5 Investigative Intuitiveness on Fraud Detection

Fraud detection often extends beyond structured audit procedures, standardized controls, or digital tracking systems, requiring forensic accountants to exercise professional judgment in ambiguous situations (Edheku & Akpoveta, 2020; Kranacher et al., 2020). Within this context, investigative intuitiveness defined as the ability to apply critical thinking, professional skepticism, and instinctive judgment has gained recognition as an important forensic competency. This “gut feeling” approach allows professionals to uncover hidden or unconventional fraud patterns that formal procedures may overlook. Theoretically, investigative intuitiveness draws on the Fraud Triangle Theory (Cressey, 1953), particularly the “opportunity” and “rationalization” dimensions of fraud, which often manifest through subtle cues rather than clear data. Obicci (2025) argues that intuition enables forensic accountants to identify discrepancies and behavioral anomalies that serve as red flags. By bridging technical analyses and behavioral insights, intuitiveness strengthens the fraud detection process.

Empirical studies affirm their value. Kranacher et al. (2020) highlighted that intuition helps detect fraud concealed in complex systems, while Obicci (2025) emphasized its role in rapid decision-making under uncertainty. Edheku and Akpoveta (2020) further noted that in countries like Ghana, where forensic technologies are underdeveloped, intuitive

reasoning often compensates for weak institutional frameworks by enabling investigators to “connect the dots.”

Despite these benefits, scholars highlight notable limitations. Kinanti et al. (2023) and Edheku & Akpoveta (2020) caution that intuition is inherently subjective, vulnerable to biases, stereotypes, and misinterpretations. Overreliance on instinct may lead to false positives if not corroborated by evidence. Critics thus advocate integrating intuition with systematic methodologies to ensure accuracy and reliability.

The rise of digital auditing technologies also complicates the debate. AI, big data, and algorithmic audits now provide objective indicators of fraud risk, reducing reliance on human intuition (Kinanti et al., 2023). Yet, many scholars argue that intuition remains relevant, as fraudsters continually develop new methods that may evade automated systems. Intuitiveness therefore complements rather than replaces technology (Edheku & Akpoveta, 2020).

In Africa, empirical evidence underscores its importance. Studies from Nigeria and Kenya reveal that forensic accountants often rely on intuition due to weak audit trails, political interference, and enforcement challenges (Okoye & Gbegi, 2013). In Ghana, despite reforms like GIFMIS, fraud detection remains constrained by limited resources and bureaucratic inefficiencies (World Bank, 2023), conditions that make intuitive reasoning particularly useful. However, little research has explicitly examined this competency in Ghana, highlighting a critical gap.

Given these theoretical insights, empirical findings, and contextual considerations, the present study seeks to investigate the role of investigative intuitiveness in fraud detection within Ghana's public sector. It argues that while intuition should not replace systematic

methods, it may provide an additional dimension of professional judgment that strengthens the ability of forensic accountants to identify and respond to fraud.

Accordingly, the following hypothesis is proposed:

H5: Investigative intuitiveness has a significant positive effect on fraud detection in the Ghanaian public sector.

2.4.6 Specific Legal Knowledge on Fraud Detection

Fraud detection in the public sector requires more than technical and analytical skills; it also depends on forensic accountants' ability to interpret and apply relevant laws, regulations, and judicial procedures (Afriyie et al., 2023). Specific legal knowledge ensures that investigations follow due process, evidence is admissible in court, and forensic findings withstand judicial scrutiny (Ali et al., 2024). Without such knowledge, even sophisticated forensic techniques risk being ineffective in practice.

Institutional Theory (DiMaggio & Powell, 1983) provides a useful lens for explaining the role of legal knowledge in fraud detection. Legal knowledge aligns forensic practices with institutional norms, rules, and frameworks, thereby enhancing legitimacy and enforceability. It bridges institutional gaps by connecting fraud detection mechanisms with legal provisions such as financial reporting standards, anti-corruption frameworks, and whistleblower protection laws. Thus, forensic accountants with strong legal expertise are better equipped to ensure credible and enforceable fraud detection outcomes.

Empirical studies from that of Ali et al. (2024) found that forensic accountants with legal training in Ghana were more effective in navigating the complexities of the public sector, improving evidence admissibility and collaboration with enforcement agencies. Similarly,

Bhasin (2013) reported that in India, legal literacy among forensic professionals significantly strengthened fraud detection, particularly in procurement and payroll systems. These findings underscore the role of legal knowledge in enhancing the credibility and impact of anti-fraud measures.

However, challenges remain in weak governance environments. Alhassan (2020) observed in Nigeria that although forensic accountants often possess legal expertise, systemic inefficiencies, weak enforcement, and political interference undermine its effectiveness. Bayong et al. (2024) and Odeyemi et al. (2024) similarly noted that systemic corruption and judicial delays often frustrate forensic professionals, limiting the translation of legal knowledge into tangible fraud detection outcomes. These findings suggest that legal expertise alone is insufficient unless supported by robust institutional reforms and effective enforcement mechanisms.

Nevertheless, scholars like Sargiacomo et al. (2024) argue that legal knowledge remains indispensable, especially when integrated with other competencies such as analytical skills, communication, and investigative intuitiveness. Legal expertise ensures that forensic investigations are not only technically accurate but also legally defensible, strengthening collaboration with prosecutors and contributing to successful convictions.

In Ghana, legal frameworks such as the Public Financial Management Act (2016) and the Whistleblower Act (2006) aim to enhance accountability, yet their enforcement is inconsistent (World Bank, 2023). This paradox highlights the importance of empirically investigating the role of legal knowledge in Ghana's public sector, where strong legal provisions exist but institutional weaknesses persist. Accordingly, the following hypothesis is proposed:

H6: Specific legal knowledge has a significant positive effect on fraud detection in the Ghanaian public sector.

2.4.7 Auditing Skills on Fraud Detection

Auditing skills are widely recognized as a cornerstone of fraud detection, particularly in public sector financial management. These skills involve examining financial records, assessing compliance with policies, and identifying anomalies that may signal fraudulent activity (Adelakun et al., 2024). The Fraud Triangle Theory (Cressey, 1953) frames the auditor's role as crucial in reducing the "opportunity" for fraud by evaluating internal controls, testing compliance, and identifying red flags. Auditing therefore enhances accountability and transparency, minimizing opportunities for misconduct.

Empirical studies affirm the centrality of auditing in fraud detection. Bawuah (2024) found that auditors in Ghana who utilized digital auditing tools, including Computer-Assisted Auditing Techniques (CAATs), were more successful in uncovering fraud in government organizations. Similarly, Albrecht et al. (2020) argue that the integration of auditing with advanced data analytics significantly improves fraud detection, especially in large and complex organizations. These findings highlight the dynamic nature of auditing, where technological innovation expands the scope and effectiveness of traditional auditing practices.

However, literature also underscores limitations. Studies in Nigeria revealed that reliance on traditional manual audits often failed to identify sophisticated schemes such as cyber-enabled fraud (Bawuah, 2024). Likewise, Afriyie et al., (2023) observed that in weak institutional environments, auditing alone is insufficient without strong governance and

enforcement mechanisms. Comparative research further illustrates these variations: while continuous auditing practices in the United States effectively reduced fraud opportunities (Kranacher et al., 2020), auditors in Nigeria struggled with political interference and lack of independence. These findings stress that auditing effectiveness is heavily shaped by institutional and cultural contexts.

In Ghana, reforms such as the Ghana Integrated Financial Management Information System (GIFMIS) have increased the demand for auditors capable of adapting to digital environments (Afriyie et al., 2023). While digital tools enhance fraud detection capacity, weak enforcement remains a challenge (Bologna & Lindquist, 2016). Scholars argue that auditing is most effective when integrated with forensic competencies and supported by strong internal controls (Jimoh, 2022

Auditing skills remain fundamental to fraud detection but must evolve with technological advances and institutional reforms. In Ghana's public sector, their effectiveness depends on the interplay between professional competence, digital innovations, and governance systems.

In line with the theoretical and empirical foundations reviewed, the following hypothesis is proposed:

H7: Auditing skills has significantly positive effect on fraud detection in Ghana's public sector.



2.4.8 Moderating Roles of Cashless Policy in the Forensic Accounting -Fraud

Detection Relationship

The shift toward cashless systems has become a major reform in financial management, particularly in developing economies such as Ghana. Cashless policies are designed to reduce leakages, enhance transparency, and strengthen accountability by replacing physical cash transactions with digital alternatives (Vutumu, 2024). Within the context of forensic accounting, cashless systems create traceable transaction records that improve the capacity of forensic accountants to detect irregularities and reduce opportunities for fraud.

Institutional Theory (DiMaggio & Powell, 1983) provides a suitable lens for understanding the moderating role of cashless policies. The theory suggests that organizational practices are shaped by institutional rules, norms, and structures that provide legitimacy and direction. Cashless policies, therefore, represent institutional mechanisms that align financial management with transparency and accountability norms. By embedding digital processes, these policies reduce transaction opacity, create audit trails, and reinforce institutional legitimacy, thereby enhancing the effectiveness of forensic accounting practices in fraud detection.

Empirical evidence by Mamudu and Gayowwi (2019) found that in Ghana, cashless systems significantly improved fraud detection when combined with effective auditing tools. Similarly, Umar, Ibrahim, and Eriki (2020) observed that digital payments in Nigeria enhanced transparency by making financial flows more visible and less prone to manipulation. These findings align with the institutional logic that new governance mechanisms, such as digital reforms, strengthen fraud control structures.

However, other studies caution that the effectiveness of cashless systems is highly context dependent. Agyapong et al. (2021) noted that in Sub-Saharan Africa, limited digital literacy, poor infrastructure, and weak system integration undermine the effectiveness of cashless reforms. Okafor et al, (2020) similarly reported that in Kenya, poor enforcement and limited technical expertise reduced the expected benefits, leading to persistent fraud despite digitalization. Comparative studies further highlight that while cashless reforms in India improved fraud detection (Vutumu, 2024), they also introduced new risks such as cyber fraud, requiring stronger institutional frameworks and regulatory oversight.

Despite these insights, few studies have directly examined the moderating role of cashless policies in the forensic accounting–fraud detection nexus. Much of the literature has focused either on forensic competencies or the independent impact of digital reforms (Afriyie et al., 2023). This gap is critical in Ghana, where initiatives such as the Ghana Integrated Financial Management Information System (GIFMIS) and mobile money platforms are reshaping public financial management.

The present study addresses this gap by examining whether cashless policies strengthen the relationship between forensic accounting competencies such as analytical proficiency, communication, legal knowledge, and auditing and fraud detection in Ghana’s public sector. By situating the analysis within Institutional Theory, the study posits that cashless systems function as governance mechanisms that enhance transparency, reinforce accountability structures, and thereby amplify the effectiveness of forensic accountants.

Accordingly, the following hypotheses are formulated to guide the empirical analysis:

H8a: Cashless policy positively moderates the relationship between analytical proficiency and fraud detection in Ghana's public sector.

H8b: Cashless policy positively moderates the relationship between Effective Oral communication and fraud detection in Ghana's public sector.

H8c: Cashless policy positively moderates the relationship between Effective written communication and fraud detection in Ghana's public sector.

H8d: Cashless policy positively moderates the relationship between understanding organizational behavior and fraud detection in Ghana's public sector.

H8e: Cashless policy positively moderates the relationship between investigative intuitiveness and fraud detection in Ghana's public sector.

H8f: Cashless policy positively moderates the relationship between specific legal knowledge and fraud detection in Ghana's public sector.

H8g: Cashless policy positively moderates the relationship between Auditing skills and fraud detection in Ghana's public sector.

2.4.9 Moderating Roles of Internal Controls in the Forensic Accounting -Fraud Detection Relationship

Internal control systems constitute one of the most essential mechanisms for safeguarding assets, enhancing accountability, and mitigating fraud risks in organizations. According to the COSO (2013) framework, internal controls are not limited to administrative checks but represent integrated governance structures that ensure risk management, compliance, and operational integrity. Within the forensic accounting–fraud detection relationship, these controls provide the institutional foundation that enables

professional competencies such as auditing, analytical proficiency, legal knowledge, and communication skills to translate into measurable detection outcomes (Sargiacomo et al., 2024). As Aksoy & Uzay, (2021) argue, without robust internal controls, the effectiveness of even the most sophisticated forensic expertise may be compromised.

Agency Theory (Jensen & Meckling, 1976) provides a useful lens for situating the moderating role of internal controls. The theory posits that conflicts of interest between principals (citizens or oversight authorities) and agents (public officials) are exacerbated by information asymmetry and divergent objectives. Internal controls mitigate these challenges by providing accountability structures that align agent behavior with institutional goals, thereby reducing opportunities for fraud. In this regard, internal controls act as governance safeguards that complement forensic accounting competencies and strengthen their fraud detection potential.

Empirical evidence consistently reinforces this proposition. Eze and Okoye (2019) demonstrated that in Ghana's public sector, forensic accounting effectiveness is significantly enhanced by the presence of strong control systems. Similarly, Olaoye (2020), drawing on evidence from Nigerian institutions, observed that internal controls amplified the relationship between professional skepticism and documentation practices, enabling timely fraud detection. Conversely, Okoye and Gbegi (2013) showed that in environments where controls were absent or poorly enforced, forensic accountants struggled to detect fraud effectively, irrespective of their technical skills. Albrecht et al. (2020) further contend that internal controls provide the operational bridge between professional expertise and institutional resilience against fraud.

Comparative studies highlight that while strong internal controls consistently reinforce forensic competencies, their effectiveness is contingent upon institutional context. Afriyie et al. (2023) found that U.S. organizations with robust internal controls demonstrated higher detection rates when supported by forensic accounting. In South Africa, Agyemang et al. (2023) reported similar synergies. However, in Ethiopia and other Sub-Saharan African nations, control systems were often undermined by corruption, weak enforcement, and bureaucratic inefficiencies, thereby limiting their moderating impact (Afriyie et al., 2023).

Despite consensus on their importance, few studies have explicitly examined the moderating role of internal controls between specific forensic accounting competencies and fraud detection outcomes. In Ghana, where political patronage, resource constraints, and cultural dynamics shape institutional practices, this remains an underexplored area. Addressing this gap, the present study investigates how internal controls interact with forensic competencies, including analytical proficiency, communication, legal expertise, investigative intuition, and auditing skills to influence fraud detection outcomes in the public sector. By grounding this inquiry in Agency Theory, internal controls are conceptualized as accountability mechanisms that reduce agency problems and strengthen the alignment of professional expertise with anti-fraud objectives. Based on this review, the following hypotheses are formulated:

H9a: Internal control systems positively moderate the relationship between analytical proficiency and fraud detection in Ghana's public sector.

H9b: Internal control systems positively moderate the relationship between Effective Oral communication and fraud detection in Ghana's public sector.

H9c: Internal control systems positively moderate the relationship between Effective written communication and fraud detection in Ghana's public sector.

H9d: Internal control systems positively moderate the relationship between understanding organizational behavior and fraud detection in Ghana's public sector.

H9e: Internal control systems positively moderate the relationship between investigative intuitiveness and fraud detection in Ghana's public sector.

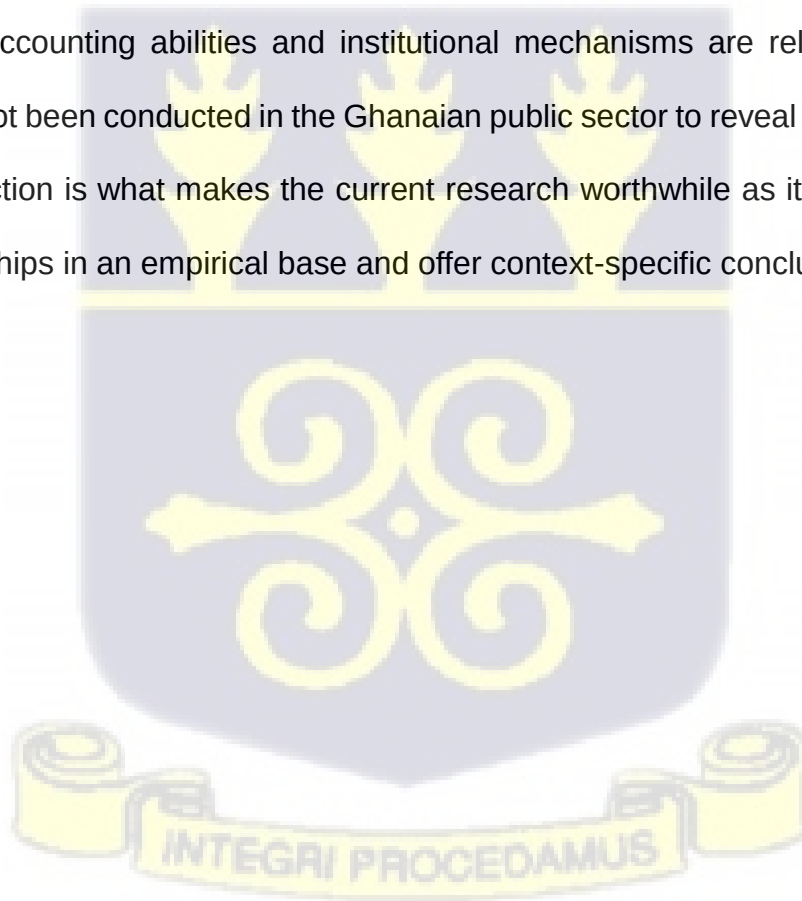
H9f: Internal control systems positively moderate the relationship between specific legal knowledge and fraud detection in Ghana's public sector.

H9g: Internal control systems positively moderate the relationship between Auditing skills and fraud detection in Ghana's public sector.

2.5 Chapter Summary

This chapter was a review of the literature that was applicable to the study. It commenced by having a conceptual overview of the important constructs, such as forensic accounting, fraud detection, public sector fraud, internal controls, and cashless policy. The review identified that forensic accounting, in terms of skills like analytical skills, communication, investigative intuition, legal expertise, and auditing competencies is essential in deterring fraud in government institutions. It was argued that fraud detection was both a reactive and proactive procedure and its significance in mitigating procurement fraud, payroll manipulation, asset misappropriation and financial statement in the Ghana governmental sector. Moderating mechanisms were also discussed as internal controls and cashless policy which increased transparency, accountability, and opportunities to commit fraud because of provision of traceable records in digital format and effective governance

frameworks. The theoretical review was based on the Fraud Triangle Theory, Institutional Theory, and Agency Theory, which altogether elucidate the motivation behind the occurrence of fraud, the institutional setting surrounding forensic practices, and the principal-agent dilemma underlying the governance of the public sector. This was followed by the development of a conceptual framework to depict the hypothesized relationships between the forensic accounting competences, fraud detection and moderating effects of cashless policy and internal controls. The empirical review summarized the existing research on all forensic accounting competences and their impact on detecting fraud, as well as revealing research gaps. It focused on the fact that despite the literature showing that forensic accounting abilities and institutional mechanisms are relevant, empirical studies have not been conducted in the Ghanaian public sector to reveal these dynamics. This disconnection is what makes the current research worthwhile as it attempts to test these relationships in an empirical base and offer context-specific conclusions.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter outlines the methods and procedures that the researcher used to address the study objectives. The first section presents research paradigms, followed by research design in terms of population sample, and data analysis. The chapter concludes with a summary.

3.1 Research Paradigm

This study was guided by the positivist paradigm, which emphasizes objectivity, measurability, and hypothesis testing through empirical evidence (Takona, 2024; Saunders, Lewis, & Thornhill, 2019). The positivist stance was adopted because the research sought to examine the causal relationships between forensic accounting competences and fraud detection in Ghana's public sector, as well as the moderating role of cashless policy and internal controls. This paradigm aligns with the study's quantitative design, as it allows the use of structured questionnaires, statistical modeling, and generalizable findings (Bell, Bryman, & Harley, 2022). By employing positivism, the study ensures that data collection and analysis remain objective, with minimal researcher bias, and that conclusions are drawn based on verifiable statistical evidence (Ryan, 2018).

3.2 Research Approach

This study employed a quantitative research approach consistent with the positivist paradigm. The choice of this approach was informed by the study's objective to test

hypotheses and establish causal relationships between forensic accounting competences and fraud detection in Ghana's public sector, while examining the moderating effects of cashless policy and internal controls. Quantitative research was suitable because it enables the use of structured survey instruments, objective measurement, and statistical modeling to draw generalizable conclusions (Takona, 2024; Saunders, Lewis, & Thornhill, 2019). A deductive reasoning process was applied, whereby theoretical assumptions from prior literature were formulated into hypotheses and empirically tested using survey data and Partial Least Squares-Structural Equation Modeling (PLS-SEM). This ensured objectivity, replicability, and validity of findings within the Ghanaian public sector context (Hair et al, 2021).

3.3 Research Design

This study employed a quantitative, cross-sectional survey design to examine the relationship between forensic accounting competences and fraud detection in Ghana's public sector, as well as the moderating roles of cashless policy and internal controls. A quantitative design was appropriate because the study sought to test hypotheses and measure relationships among clearly defined variables using numerical data, consistent with the positivist paradigm (Takona, 2024; Saunders, Lewis, & Thornhill, 2019).

The survey strategy was adopted because it allows the collection of standardized data from a sizable sample, making it possible to statistically test the hypothesized relationships (Yin, 2018). This approach was particularly suitable for engaging forensic accounting practitioners and other key stakeholders in Ghana's public sector, as it

enabled systematic assessment of their perceptions and experiences regarding fraud detection mechanisms.

The design was descriptive and explanatory descriptive in profiling respondents' characteristics and reporting levels of forensic accounting competences, and explanatory in testing the hypothesized causal links between forensic accounting competences, fraud detection, and the moderating effects of cashless policy and internal controls. Combining these elements, the research design ensured objectivity, replicability, and generalizability of the findings to the broader Ghanaian public sector context (Babbie, 2020).

3.4 Unit of Analysis

The unit of analysis for this study is the individual level, focused on public sector employees directly involved in fraud detection and prevention. This choice was appropriate because the study examined the behavioral and perceptual aspects of forensic accounting competences, cashless policy, and internal controls in relation to fraud detection. Data were collected from auditors, accountants, legal experts, compliance officers, and other financial staff within Ghana's public sector who are actively engaged in forensic accounting practices and anti-fraud initiatives. Focused on individuals allows the study to capture their experiences, attitudes, and professional competences, which collectively influence the effectiveness of fraud detection mechanisms. This aligned with prior research in governance and forensic accounting that emphasized the critical role of individual-level actions and perceptions in shaping institutional fraud control outcomes (Franca et al., 2023; Takona, 2024).

3.5 Population and Sample Size

The population for this study comprised public sector professionals in Ghana who are functionally engaged in forensic-related financial roles, rather than all individuals holding general accounting qualifications. Specifically, the study targeted personnel involved in fraud investigation, internal audit, compliance, financial examination, and internal control assessment within selected public sector institutions. These roles require the application of forensic accounting competencies, such as analytical skills, investigative techniques, evidence documentation, and professional judgment in fraud-related matters.

Accordingly, possession of a professional accounting qualification alone (such as ICAG, ACCA, CPA, or CMA) was not considered sufficient for inclusion in the study. Instead, These include professionals from forensic accountants who had different educational qualifications and also possessed the following professional qualifications such as Association of Chartered Certified Accountants (ACCA), Certified Management Accountants (CMA), Chartered Accountants (CA), Certified Forensic Accounting Professionals (CFAP), Chartered Professional Accountants (CPA), Certified Forensic Investigation Professionals (CFIP), Certified Fraud Examiners (CFE), Certified Forensic Auditors (CFA) and who are forensic accounting practitioners. While many respondents held professional and forensic-related certifications, eligibility was determined primarily by role-based expertise and experience in forensic or investigative functions within the public sector. This approach ensured that the sample accurately reflected individuals with relevant forensic competencies rather than general accounting professionals.

The estimated population of 300 eligible professionals was derived from staff records and functional unit listings of selected public sector institutions where forensic and fraud-related activities are routinely performed. These institutions included selected Ministries,

Departments and Agencies (MDAs), the Auditor-general's Department, and selected State-Owned Enterprises with established internal audit, compliance, and investigative units. The population estimate was based on the number of staff assigned to audit, compliance, investigation, and financial oversight roles within these institutions, excluding personnel without direct forensic or fraud-related responsibilities.

Using Yamane's (1967) formula for finite populations and applying a 95% confidence level with a 5% margin of error, the sample size was calculated as follows:

$$n = 300 / (1 + 300(0.05)^2)$$

$$n = 300 / (1 + 0.75)$$

$$n = 300 / 1.75 = 171$$

Accordingly, 171 respondents were targeted as the study sample, which was considered adequate to generate statistically valid and representative findings on the hypothesized relationships.

3.6 Sampling Technique

The study employed a purposive sampling technique to ensure that only individuals with relevant expertise in financial oversight, forensic accounting, and fraud detection were included. This non-probability method was appropriate because access to a complete sampling frame of all public sector professionals was not feasible, and the study required participants with specialized knowledge who could provide informed responses (Saunders, Lewis, & Thornhill, 2019). Purposive sampling also allowed the researcher to deliberately target auditors, accountants, compliance officers, and legal experts actively engaged in forensic accounting and fraud detection activities. As the study focused on

this specific group, it minimized irrelevant responses and enhanced the validity of its findings (Takona, 2024).

3.7 Data and Sources of Data

The study relied exclusively on primary data, collected directly from professionals actively engaged in forensic accounting and fraud detection within Ghana's public sector. A structured questionnaire was used as the main instrument because it allowed the researcher to collect standardized responses from a large and diverse group, making it suitable for quantitative analysis (Saunders, Lewis, & Thornhill, 2019). The questionnaire contained both multiple-choice and Likert-scale items, carefully designed to capture views on forensic accounting competences, fraud detection, cashless policy, and internal controls.

This method was chosen because structured questionnaires are effective for ensuring consistency in measurement and for analyzing large samples which are consistent with recent studies on public sector governance and fraud detection (Franca et al., 2023). Included in the participants are professionals from Association of Chartered Certified Accountants (ACCA), Certified Management Accountants (CMA), Chartered Accountants (CA), Certified Forensic Accounting Professionals (CFAP), Chartered Professional Accountants (CPA), Certified Forensic Investigation Professionals (CFIP), Certified Fraud Examiners (CFE), Certified Forensic Auditors (CFA) and are forensic accounting practitioners. ensuring that the data reflected informed perspectives necessary for examining the moderating role of cashless policy and internal controls.

3.8 Measurement of Study Constructs

This study relied on validated measurement scales from prior research, with minor modifications to suit the Ghanaian public sector context.

The dependent variable, Fraud Detection, was assessed using scales adapted from forensic accounting and auditing studies (Edheku & Akpoveta, 2020; Yuri & Sari, 2022).

Indicators focused on the effectiveness and timeliness of detection, as well as the extent to which forensic accounting practices uncover fraudulent activities in public institutions.

The independent variable, Forensic Accounting Competences, was measured using scales from prior studies (Okoye & Gbegi, 2013; Bhasin, 2016; Albrecht et al., 2012; Edheku & Akpoveta, 2020; Alhassan, 2020; Afriyie et al., 2023; Franca et al., 2023).

Competence was operationalized through seven dimensions: analytical proficiency, oral and written communication, understanding organizational behavior, investigative intuitiveness, legal knowledge, and auditing skills.

The moderating variables were Cashless Policy and Internal Controls. Cashless Policy was measured using items adapted from Mamudu & Gayovwi (2019), capturing adoption, usage, and effectiveness in reducing fraud. Internal Controls were assessed using the COSO (2013) framework and scales from Dickins & Fay (2017), covering control environment, risk assessment, control activities, information systems, and monitoring.

Control variables included demographics (age, education, years of experience) and organizational characteristics (size, digitization level).

All constructs were measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), consistent with prior forensic accounting studies.

3.9 Questionnaire Design

A structured questionnaire was developed as the primary data collection instrument to align with the study's objectives. The tool combined closed-ended questions and Likert-scale statements to ensure standardized responses and enable statistical analysis.

The questionnaire was divided into four sections. Section A captured respondents' demographics, including gender, age, educational qualification, and professional experience. These variables provided contextual background and served as control variables in the analysis.

Section B measured Forensic Accounting Competences (FAC) across seven dimensions: analytical proficiency, oral and written communication, understanding organizational behavior, investigative intuitiveness, legal knowledge, and auditing skills. Items were adapted from validated forensic accounting studies to ensure reliability.

Section C focused on Fraud Detection (FD), assessing respondents' views on the effectiveness of mechanisms for detecting procurement fraud, payroll fraud, asset misappropriation, and financial statement fraud in their organizations.

Section D addressed the moderating constructs. Cashless Policy (CP) items captured the level and effectiveness of Ghana's reforms such as GIFMIS, e-procurement, biometric payroll, and electronic payments in curbing fraud. Internal Controls (IC) items, adapted from the COSO framework, assessed the control of environment, risk assessment, control activities, information systems, and monitoring. All construct items were measured using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

3.10 Administration of Questionnaire

The questionnaires were administered to employees of selected Ghanaian public sector institutions after obtaining official permission from relevant authorities within Ministries, Departments, and Agencies (MDAs). A combination of distribution strategies was used to maximize participation. Questionnaires were hand-delivered to staff in audit, finance, and internal control departments, as these units provided respondents with the most relevant expertise for the study. Additionally, professional networks and contacts within institutions were used to facilitate access and secure authorization for wider distribution.

To encourage candid responses, the researcher personally explained the purpose of the study to some respondents and assured them of confidentiality. Participants were given adequate time to complete the questionnaires, with some returning them immediately and others later.

In total, 171 questionnaires were distributed, and 161 were returned, yielding a response rate of 94%. After excluding incomplete responses of less than 90% completion, 150 valid questionnaires were retained for analysis, representing 87% of usable responses.

3.11 Data Analysis Technique

The data analysis followed a two-step procedure. First, descriptive statistics were performed using SPSS to clean the dataset, summarize respondents' demographic characteristics, and provide an overview of the distribution of responses. This step ensured that the data was accurate, consistent, and ready for advanced analysis.

Second, Partial Least Squares Structural Equation Modelling (PLS-SEM) was applied to test the study's hypotheses. PLS-SEM was selected because it is suitable for predictive

models with multiple constructs and moderating variables, and it performs well with medium-sized samples such as this study. The analysis began with assessing the measurement model through indicator reliability, internal consistency (Cronbach's alpha and composite reliability), convergent validity (average variance extracted), and discriminant validity (Fornell–Larcker criterion and HTMT).

Once the measurement model was validated, the structural model was tested to estimate path coefficients and their significance using bootstrapping. Additional checks included variance inflation factors (VIF) for multicollinearity, R^2 for explanatory power, f^2 for effect sizes, and Q^2 for predictive relevance. Finally, the moderating effects of Cashless Policy and Internal Controls on the relationship between Forensic Accounting Competences and Fraud Detection were examined using interaction terms and multi-group analysis where appropriate.

3.12 Structural Equation Modelling

Structural Equation Modelling (SEM) was used to test the study's hypotheses because it enables simultaneous assessment of measurement models and structural paths in complex models with multiple constructs and moderators. Between the two SEM approaches covariance-based (CB-SEM) and partial least squares (PLS-SEM) this study applied PLS-SEM. This choice was based on the predictive orientation of the research, the multidimensional nature of forensic accounting competences, the inclusion of moderation effects, and the moderate sample size ($n = 161$), which PLS-SEM handles more effectively (Hair et al., 2021).

The analysis was conducted in two stages. First, the measurement model was validated by testing indicator reliability, internal consistency (Cronbach's alpha, rho_A, composite reliability), convergent validity (AVE), and discriminant validity (Fornell-Larcker criterion and HTMT). Indicators with weak loadings were carefully reviewed and retained or removed only when justified by improvements in validity and reliability.

Second, the structural model was evaluated. Path coefficients were estimated and tested for significance using bootstrapping, while R^2 , f^2 , and Q^2 were examined to assess explanatory power, effect sizes, and predictive relevance. Multicollinearity was checked through VIF values, and global model fit indices were also reported.

Given the central role of moderation, the analysis included testing the conditional effects of Cashless Policy (CP) and Internal Controls (IC) on the relationship between Forensic Accounting Competences (FAC) and Fraud Detection (FD). Multi-group analysis was applied for CP where categorical distinctions existed, while latent-variable interaction techniques were used for IC. Interaction effects were interpreted through bootstrapped coefficients, marginal effects, and slope analysis to determine whether moderators strengthened or weakened the FAC-FD relationship.

All analyses were performed using SPSS (for descriptive statistics and preliminary cleaning) and SmartPLS (for SEM). This approach ensured robust testing of both direct and moderated relationships, allowing the study to provide context-specific insights into how forensic accounting competences contribute to fraud detection under varying institutional conditions.

3.13 Co-variance Based Structural Equation Modelling (CB-SEM)

Covariance-Based SEM (CB-SEM) is primarily used to confirm theoretical models by reproducing the covariance matrix and assessing overall model fit (Hair et al., 2017). It operates through maximum likelihood estimation and is most effective when the objective is theory testing under strict assumptions such as large sample sizes and multivariate normality (Wong, 2013).

In the context of this study, CB-SEM could have been applied to confirm the theoretical assumption that forensic accounting competences (analytical proficiency, communication, investigative, and auditing skills) influence fraud detection, while institutional mechanisms such as cashless policy reforms and internal controls moderate these relationships. However, CB-SEM was not adopted as the main technique because the study is predictive in orientation, involves moderation effects, and is based on a moderate sample size ($n = 161$), conditions under which PLS-SEM performs more robustly (Hair et al., 2011; Hair et al., 2021).

3.14 Partial Least Squares Structural Equation Modelling (PLS-SEM)

Partial Least Squares SEM (PLS-SEM) was adopted as the primary analytical technique for this study. Unlike CB-SEM, which emphasizes theory confirmation, PLS-SEM is prediction-oriented, flexible with sample size, and robust against non-normal data (Hair et al., 2021; Ringle et al., 2023). These features align with the study's context, where the sample size ($n = 161$) is moderate, and the constructs include both reflective and formative measures.

Specifically, forensic accounting competences (FAC) and fraud detection (FD) were modeled as reflective constructs, while cashless policy (CP) and internal controls (IC) were treated as formative constructs. PLS-SEM is well suited for such mixed specifications and is particularly effective for testing moderation effects, making it appropriate for examining how CP and IC condition the relationship between FAC and FD (Ali et al., 2022; Sarstedt et al., 2022).

3.15 Ethical Considerations

Ethical considerations formed a central pillar of this research, given the sensitivity of its subject matter, which focuses on forensic accounting practices, fraud detection, and the moderating influence of internal controls and cashless policy within Ghana's public sector. Before any data collection began, the researcher sought and obtained formal ethical clearance. This approval ensured that the study conformed to established ethical standards in line with both national research protocols and international best practices for social science research (Takona, 2024).

Since the study involved public sector employees, who often operate within highly regulated institutional environments, it was crucial to handle data collection with utmost care. Fraud detection, internal controls, and digital payment reforms are sensitive topics, and participants could have perceived them as carrying professional or reputational risks. To mitigate these concerns, the researcher implemented a series of ethical safeguards. Respondents were provided with clear information regarding the objectives of the study, the voluntary nature of their participation, and the fact that they could withdraw at any stage without facing negative consequences.

Confidentiality and anonymity were strictly maintained throughout the research process. No identifying details such as names, job titles, or specific organizational affiliations were collected or disclosed in any part of the study. The responses were coded and stored securely to ensure data protection, with access limited exclusively to the researcher. This approach safeguarded participants from any potential professional disadvantage or institutional repercussions that could arise from their involvement in the study.

Furthermore, participants were assured that the data collected would be used strictly for academic purposes and not shared with third parties outside the scope of the research. Informed consent was obtained before the administration of questionnaires, with participants indicating their willingness to contribute after understanding the research purpose and ethical guarantees. The ethical measures adopted ranging from obtaining clearance, ensuring voluntary participation, guaranteeing confidentiality, and protecting participants from harm enhanced the credibility and integrity of the study. By prioritizing the rights and dignity of respondents, the research adhered to ethical standards essential for generating trustworthy and responsible academic knowledge.

3.16 Chapter Summary

This chapter introduced the research design used in examining the effect of forensic accounting competences in identifying fraud in the Ghanaian public sector using cashless policy and internal controls as moderators. The chapter has described the philosophical background of the study using a positivist paradigm and a quantitative deductive research approach. It also addressed research design, unit of analysis, population, sample size and sampling technique. The data and sources section revealed the use of primary data

that was gathered in form of structured questionnaires that were given to people working in the public sector. Constructs of the study, questionnaire design, and administration were outlined to guarantee validity and reliability. The chapter has also described the methods of analysis such as descriptive statistics and Partial Least Squares Structural Equation Modelling (PLS-SEM) as to why it was suitable for the study. Ethical concerns were also touched to make sure that the research standards were met.



CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter presents the results of the data analysis and interprets the findings in relation to the study objectives. The analysis begins with an examination of the demographic characteristics of the respondents, which provides important contextual insights into the sample. This is followed by an assessment of the measurement model, where validity and reliability tests are conducted to ensure that the constructs used in the study adequately capture the underlying theoretical dimensions. Descriptive statistics are then presented to summarize the distribution and central tendencies of the data, offering a preliminary understanding of the variables under investigation. The chapter further applies inferential statistical techniques, including structural equation modeling, to test the study's hypotheses and evaluate the relationships between forensic accounting competences, fraud detection, and the moderating roles of cashless policy and internal controls. The results are then discussed in detail, linking empirical evidence to the theoretical framework and prior literature to highlight key contributions of the study

4.1 Demographic Analysis

This section presents the demographic profile of the 150 valid respondents to evaluate the suitability of the sample for addressing the study's objectives. The analysis covers gender, age, marital status, education, and professional experience, offering essential context for interpreting perspectives on forensic accounting competences, internal control systems, and fraud detection in Ghana's public sector.

The gender distribution was highly imbalanced, with 88 percent male and 12 percent female respondents. This disparity reflects the male-dominated nature of accounting, auditing, and governance roles in the public sector and may influence perceptions of organizational controls and fraud detection.

In terms of age, most respondents were middle-aged or older, with 50.7 percent between 44–56 years, 23.3 percent between 31–43 years, and 22 percent aged 57–69 years. Only 3.3 percent were aged 18–30 years, while 0.7 percent were 70 and above. This suggests a mature and experienced workforce, strengthening the reliability of insights provided.

Regarding marital status, 68 percent were married, 24 percent single, 4.7 percent widowed, and 3.3 percent divorced or separated. This diversity reflects a mix of personal commitments that may shape workplace attitudes and compliance perspectives.

The sample was also highly educated, with 47.3 percent holding master's degrees, 14.7 percent bachelor's degrees, and 12 percent doctoral qualifications. Additionally, 21.3 percent had professional certifications.

Work experience levels were substantial: 41.3 percent had 7–13 years, 20 percent had 14–20 years, and 19.3 percent had 21–27 years, with smaller groups reporting less or over 28 years of experience.

Overall, the respondents were predominantly male, well-educated, professionally experienced, and largely middle-aged, enhancing the credibility of findings on technical issues such as internal controls and fraud detection.

Table 4. 1: Demographic Characteristic of Respondents

Variables	Frequency
percentage	

(100%)

Gender	Male	132	88
	Female	18	12
Age	18-30 years	5	3.3
	31-43 years	35	23.3
	44-56 years	76	50.7
	57-69 years	33	22
	70 and above	1	0.7
Marital Status	Married	102	68
	Single	36	24
	Divorced/Separated	5	3.3
	Widowed	7	4.7
	Other	1	0.7
Educational Level	Bachelor's Degree	22	14.7
	Master's Degree	71	47.3
	PHD	18	12
	Other Degree	7	4.7
	Non-Degree	32	21.3
Working Experience	0- 6 years	19	12.7
	7-13 years	62	41.3

14-20 years	30	20
21-27 years	29	19.3
Above 28 years	10	6.7

Source: Field Study (2025)

4.2 Descriptive Statistics

The descriptive analysis reveals moderately positive perceptions of fraud detection mechanisms within public sector organizations. Respondents were generally neutral on whether fraud is detected before major losses occur ($M = 3.13$, $SD = 1.151$), reflecting wide variability across institutions. Timeliness and reliability of detection were rated slightly higher ($M = 3.43$, $SD = 1.038$), while prompt response to fraud indicators was more strongly endorsed ($M = 3.52$, $SD = 0.581$). The highest-rated item indicated that fraud detection efforts reduce financial losses ($M = 3.67$, $SD = 0.582$), underscoring the belief that even reactive detection processes help mitigate damage. Overall, the results suggest that while organizations are responsive once fraud is identified, preventive measures remain less consistent.

With respect to forensic accounting competencies, respondents demonstrated confidence across multiple domains. Analytical proficiency scored highly ($M = 3.79$ – 3.99), showing strong ability to interpret data and apply investigative tools. Oral ($M = 3.70$ – 3.89) and written ($M = 3.82$ – 4.00) communication were also rated highly, with written skills seen as crucial for supporting follow-up audits. Understanding organizational behavior ($M = 3.70$ – 4.07) and investigative intuitiveness (all >4.25) were particularly strong, suggesting respondents possess both contextual insight and professional judgment. Legal

knowledge was similarly strong ($M = 4.10$ – 4.28), reflecting sound understanding of fraud-related laws. While auditing skills were generally rated high, one item ($M = 3.13$, $SD = 1.151$) revealed inconsistencies, highlighting a potential capacity gap in applying audit procedures to detect irregularities.

Perceptions of the cashless policy construct were broadly positive, with respondents agreeing that electronic systems reduce opportunities for fraud ($M = 3.97$, $SD = 0.672$) and enhance traceability through mobile payments ($M = 3.85$, $SD = 1.021$). However, higher variability in responses indicates uneven effectiveness, likely due to differences in technological readiness and institutional capacity. E-procurement platforms were also positively rated ($M = 3.79$, $SD = 0.872$), though their impact appears tempered by implementation challenges.

Finally, internal control mechanisms were rated favorably overall, with mean scores ranging from 3.70 to 3.99. Segregation of duties ($M = 3.99$, $SD = 0.807$) and robust internal procedures ($M = 3.97$, $SD = 0.802$) were most strongly endorsed. Authorization systems ($M = 3.79$) and internal audits ($M = 3.70$) were viewed as effective but with greater variability, suggesting inconsistencies in practice across organizations. These results indicate that while internal controls are widely recognized as essential, their implementation and enforcement may differ across institutions.

Table 4. 2: Descriptive Statistics of Constructs

Constructs/Indicators	Mean	Std.
Deviation		

Fraud detection				
FD1	Fraud is often detected before major losses occur.	3.13		1.151
FD2	The fraud detection process is timely and reliable.	3.43		1.038
FD3	My organization responds promptly to fraud indicators.	3.52		0.581
FD4	Fraud detection efforts reduce overall financial losses.	3.67		0.582
Analytical Proficiency				
ANAPR1	I am able to analyze complex financial data effectively.	3.85		1.021
ANAPR2	I can detect inconsistencies and suspicious patterns in financial reports.	3.79		0.872
ANAPR3	I can interpret large datasets to identify	3.97		0.802

	potential fraud indicators.		
ANAPR4	I use analytical tools to support fraud investigations.	3.99	0.807
Effective Oral Communication			
EFFEOC1	I can clearly explain fraud-related findings verbally	3.7	0.939
EFFEOC2	I am confident in conducting interviews related to fraud investigations.	3.79	0.894
EFFEOC3	I communicate investigative results effectively to stakeholders.	3.85	0.8
EFFEOC4	My oral reports are well understood by colleagues and superiors.	3.89	0.777
Effective Written Communication			

EFFEWC1	I prepared clear and detailed written reports on fraud investigations.	3.91	0.907
EFFEWC2	My written reports meet professional standards.	3.83	0.836
EFFEWC3	My reports help management taken action on fraud issues.	3.82	0.949
EFFEWC4	Written communication supports follow-up audits and investigations.	4	0.705
UNDORB1	I understand the informal networks within my organization.	3.81	0.922
UNDORB2	I can recognize behavior patterns that	4.07	0.803

	may signal fraudulent intent.		
UNDORB3	I understand how organizational culture affects fraud risk.	3.7	0.865
UNDORB4	I am aware of staff attitudes towards fraud detection policies.	3.96	0.767
Investigative Intuitiveness			
INVINT1	I often rely on intuition when something feels wrong in an investigation.	4.25	0.685
INVINT2	My instinct helps me identify red flags that data alone may miss.	4.36	0.755
INVINT3	I can sense when someone may not be truthful during interviews.	4.28	0.636
INVINT4	I trust my investigative	4.33	0.73

hunches in guiding

further inquiry.

Specific Legal Knowledge

SPELEKN1 I understand laws 4.1 0.801
related to financial
fraud and corruption.

SPELEKN2 I know the legal 4.28 0.646
procedures for
handling evidence.

SPELEKN3 I understand the 4.27 0.633
Whistleblower
Protection Laws.

SPELEKN4 I am familiar with the 4.22 0.75
legal consequences
of fraud in the public
sector.

Auditing Skills

AUDS1 I can conduct detailed 4.29 0.638
audit reviews to
detect fraud.

AUDS2 I am skilled in using 3.13 1.151
audit procedures to
uncover irregularities.

AUDS3	I understand compliance standards in public sector audits.	3.43	1.038
AUDS4	My auditing skills contribute to detecting and preventing fraud.	4.22	0.75
Cashless Policy			
CP1	Electronic payment systems reduce opportunities for fraud.	3.97	0.672
CP2	The shift to cashless transactions helps identify fraud faster.	3.83	0.896
CP3	Mobile payment records help trace suspicious transactions.	3.85	1.021
CP4	Electronic procurement	3.79	0.872

	platforms strengthen fraud detection.		
		Internal Control	
IC1	Internal control procedures in my organization are robust.	3.97	0.802
IC2	Segregation of duties helps reduce fraud risk.	3.99	0.807
IC3	Regular internal audits help prevent and detect fraud.	3.7	0.939
IC4	Authorization and approval systems detect anomalies.	3.79	0.894

Source: Field Study (2025)

4.3 Assessment of the Measurement model

Assessment of the measurement model is a critical step in structural equation modelling (SEM) as it determines whether the constructs adequately represent the underlying theoretical concepts. Construct validity ensures that the observed indicators accurately capture the intended latent variables. Hair et al. (2019) emphasize that measurement

model assessment involves examining both the validity and reliability of constructs, which must be carried out before evaluating the structural model.

In this study, a confirmatory factor analysis (CFA) was performed to evaluate the measurement model. The analysis considered indicator reliability, internal consistency reliability, and convergent validity. For indicator reliability, factor loadings of 0.70 or above were regarded as ideal; however, loadings between 0.50 and 0.70 were retained if their inclusion contributed to overall construct validity. Internal consistency reliability was assessed using Cronbach's alpha, rho_A, and composite reliability (CR), where values of 0.70 or higher indicate acceptable reliability. Convergent validity was established through the average variance extracted (AVE), with a minimum acceptable threshold of 0.50, confirming that each construct explains at least 50% of the variance in its indicators.

These results demonstrate that the indicators are reliable and valid representations of their respective latent variables, thus providing a strong foundation for proceeding with the evaluation of the structural model.

4.3.1 Indicator Reliability

The indicator reliability measures how strongly each measurement item associates with its corresponding construct. Within partial least squares structural equation modeling (PLS-SEM), indicator reliability is typically measured using factor loadings with ideal thresholds of 0.5, with 0.7 preferred for stronger loadings (Hair et al, 2017). The greater the factor loadings, the more the indicators are associated with the construct rather than the error variance, hence confirming their reliability. In this study, all the constructs, is

shown that the confirmatory factor analysis, had acceptable factor loadings which exceeded the threshold of 0.5, hence indicator reliability was acceptable.

4.3.2 Internal Consistency

Reliability analysis assesses the extent to which different indicators of a construct consistently measure the same underlying dimension. Internal consistency reliability is commonly evaluated, with a threshold of 0.70 widely regarded as acceptable (Yin,2018). Traditionally, Cronbach's alpha has been the most frequently applied measure of internal consistency. However, Cronbach's alpha has limitations, particularly in the context of PLS-SEM, as it assumes equal indicator loadings and often underestimates construct reliability.

To address these limitations, alternative measures such as Composite Reliability (CR) and Dijkstra–Henseler's rho (rho A and rho C) have been recommended (Hair et al., 2019). These reliability coefficients provide a more accurate estimation of internal consistency in models that incorporate complex constructs with varying indicator loadings.

In this study, construct reliability was assessed using both rho_A and composite reliability. The results indicated that all constructs exceeded the recommended threshold value of 0.70, thereby confirming strong internal consistency reliability across the measures. This suggests that the indicators employed in the study were reliable in capturing the latent constructs of forensic accounting competences, fraud detection, cashless policy, and internal controls.

4.3.3 Convergent Validity

Convergent validity describes the extent to which an indicator set for a single construct converge or share a high degree of variance. Fornell and Larcker (1981) suggests that to ascertain convergent validity, the average variance extracted (AVE) is used, with a threshold of 0.5 being the minimum acceptable. If AVE is above 0.5, the construct is assumed to explain more than half of the variance of the indicators, thus affirming convergent validity. The results of this study indicated that all constructs had AVE values which were greater than 0.6, well above the minimum threshold. This indicates that the indicators sufficiently converge to measure their intended constructs.

Table 4. 3: Confirmatory Factor Analysis

Factor	CA	CR	AVE
Analytical Proficiency	0.844	0.894	0.682
Audit Skills	0.797	0.894	0.635
Cashless Policy	0.8	0.867	0.62
Effective Oral Communication	0.818	0.88	0.648
Effective Written Communication	0.832	0.888	0.665
Investigative Intuitiveness	0.943	0.959	0.854
Internal Controls	0.883	0.92	0.742
Fraud Detection	0.807	0.854	0.745
Specific Legal Knowledge	0.895	0.928	0.762

Understanding	Organizational	0.81	0.879	0.655
Behavior				

CA-Cronbach Alpha; CR-Composite Reliability; AVE-Average Variance Extracted

Source: Field Study (2025)

4.4 Discriminant Validity

Discriminant validity refers to the extent to which a construct is empirically distinct from other constructs within a model (Fornell & Larcker, 1981). Establishing discriminant validity is essential to confirm that each construct represents a unique dimension of the conceptual framework rather than reflecting overlapping concepts. In structural equation modeling (SEM), the absence of discriminant validity suggests insufficient separation among constructs, which can bias parameter estimates and lead to invalid conclusions (Hair et al, 2021).

Several approaches are commonly used to assess discriminant validity. The Fornell–Larcker criterion requires that the square root of the average variance extracted (AVE) of each construct exceed its correlations with other constructs, thereby confirming that the construct shares more variance with its own indicators than with other constructs (Fornell & Larcker, 1981). Cross-loadings are also examined to ensure that each item loads more strongly on its intended construct than on others. More recently, the heterotrait–monotrait ratio of correlations (HTMT) has been recommended as a more reliable method. Sarstedt et al, (2022) propose that discriminant validity is established when HTMT values fall below 0.85 (strict criterion) or 0.90 (lenient criterion).

In this study, discriminant validity was evaluated using the Fornell–Larcker criterion, cross-loadings, and HTMT ratio, following the thresholds recommended in the literature (Fornell & Larcker, 1981; Hair et al., 2019). This provided strong evidence that the constructs of forensic accounting competences, fraud detection, cashless policy, and internal controls were empirically distinct.

4.4.1 Fornell-Larcker Criterion

The Fornell-Larcker criterion is one of the oldest and most frequently used techniques to establish discriminant validity. Fornell and Larcker (1981) defined discriminant validity as the square root of the average variance extracted (AVE) for a construct that is in excess of the correlations that construct has with the other constructs in the model. This means that a construct has more variance in its indicators than it does with other constructs which makes it valid and distinct. There is a Fornell-Larcker criterion that has persistently not played any useful role in advancing discriminant validity issues (Sarstedt et al, (2022).

4.4.2 Cross-Loadings

The cross-loadings approach evaluates discriminant validity by comparing the indicator's construct with other constructs in the model regarding its factor loadings on the construct. An indicator is said to load on its construct if it does so on any other construct in the model (Chin, 1998). This approach demonstrates item-level discriminant validity, thereby establishing that each item adequately measures the item it is supposed to measure at the construct level. Although the approach is simple, it has been criticized for its lack of sophistication on discriminant validity problems (Hair et al., 2017).

4.4.3 Heterotrait-Monotrait Ratio (HTMT)

The heterotrait-monotrait ratio of correlations (HTMT) as introduced by Henseler, Ringle, and Sarstedt (2015) is a non-structure approach to discriminant validity in PLS-SEM. HTMT is defined as the ratio of the correlation of the constructs (heterotrait) to the correlation within each construct (monotrait). The HTMT value is used to determine discriminant validity, which is the case when the HTMT value, most conservatively, is set at 0.85 and, more liberally, set at 0.90. Evidence seems to support that HTMT is more effective than the Fornell-Larcker criterion and cross-loadings, which has resulted in its greater acceptance in more recent publications (Sarstedt et al, 2022).

Table 4. 4: Fornell Larcker Criterion

	1	2	3	4	5	6	7	8	9	10
ANAPR	0.826									
AUDS	0.55	0.75								
CP	0.6	0.58	0.787							
EFFEOC	0.63	0.56	0.62	0.805						
EFFEWC	0.61	0.54	0.59	0.65	0.816					
INVINT	0.5	0.54	0.45	0.51	0.52	0.924				
IC	0.65	0.6	0.59	0.64	0.6	0.58	0.861			
FD	0.52	0.57	0.66	0.6	0.57	0.49	0.56	0.745		
SPELEKN	0.49	0.51	0.48	0.47	0.5	0.52	0.53	0.5	0.872	

UNDORB	0.3	0.32	0.35	0.41	0.38	0.39	0.44	0.37	0.36	1
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Source: Field Study (2025)

Table 4 presents the results of the Fornell-Larcker analysis for the ten constructs included in this study, namely: Analytical Proficiency (ANAPR), Audit Skills (AUDS), Cashless Policy (CP), Effective Oral Communication (EFFEOC), Effective Written Communication (EFFEWC), Investigative Intuitiveness (INVINT), Internal Controls (IC), Fraud Detection (FD), Specific Legal Knowledge (SPELEKN), and Understanding Organizational Behavior (UNDORB). The diagonal values represent the square roots of the AVEs for each construct, while the off-diagonal values indicate the inter-construct correlations. The results demonstrate that for each construct, the square root of the AVE exceeds the correlations with other constructs, thereby satisfying the Fornell-Larcker criterion. For example, the square root of AVE for Analytical Proficiency is 0.826, which is greater than its correlation with Internal Controls (0.65), Audit Skills (0.55), and other constructs. Similarly, Audit Skills reported a square root of AVE of 0.750, which is higher than its correlation with Internal Controls (0.60) and Investigative Intuitiveness (0.54). Cashless Policy also meets the threshold, with a square root of AVE of 0.787, surpassing its highest correlation of 0.66 with Fraud Detection. Effective Oral Communication and Effective Written Communication recorded square roots of AVE of 0.805 and 0.816 respectively, both higher than their inter-correlation (0.65) and all other associated constructs. Investigative Intuitiveness displayed the highest level of discriminant validity, with a square root of AVE of 0.924, well above all its correlations with other constructs. Internal Controls also demonstrated adequate discriminant validity ($\sqrt{\text{AVE}} = 0.861$), exceeding its correlations with constructs such as Analytical Proficiency (0.65) and Effective Oral

Communication (0.64). Fraud Detection met the criterion as well ($\sqrt{\text{AVE}} = 0.745$), with its highest correlation recorded at 0.66 with Cashless Policy. Specific Legal Knowledge and Understanding Organizational Behavior also satisfied the Fornell-Larcker requirement, with square roots of AVE at 0.872 and 1.000 respectively, both exceeding their corresponding inter-construct correlations. Overall, the analysis confirms that discriminant validity is established for all the constructs in the measurement model. This indicates that each construct captures a unique dimension of the theoretical framework, with minimal risk of conceptual or statistical overlap. As such, the measurement model demonstrates strong psychometric properties, and the constructs are deemed appropriate for further analysis within the structural model.

Table 4. 5: Cross Loadings

	ANA	AU	CP	EFFE	EFFE	FD	IC	INVI	SPELE	UNDO
	PR	DS		OC	WC			NT	KN	RB
ANAPR	0.658	0.53	0.7	0.454	0.403	0.5	0.5	0.35	0.238	0.060
1		7	67			29	19	6		
ANAPR	0.820	0.55	0.7	0.631	0.507	0.5	0.6	0.39	0.297	0.176
2		7	71			87	45	7		
ANAPR	0.908	0.67	0.5	0.743	0.640	0.4	0.9	0.67	0.623	0.454
3		6	51			74	07	2		

ANAPR	0.894	0.64	0.5	0.728	0.617	0.4	0.8	0.67	0.609	0.348
4		3	50			96	74	2		
AUDS1	0.640	0.88	0.5	0.589	0.642	0.4	0.6	0.72	0.691	0.282
		3	06			19	31	5		
AUDS2	0.110	0.09	0.1	0.199	0.149	0.2	0.1	-	-0.153	0.089
		1	33			65	11	0.05		
								0		
AUDS3	-	-	-	0.023	-0.025	0.1	-	-	-0.155	0.010
	0.151	0.10	0.0			18	0.0	0.27		
		0	48				68	8		
AUDS4	0.526	0.73	0.6	0.494	0.501	0.8	0.4	0.38	0.368	0.243
		6	77			79	46	8		
CP1	0.486	0.58	0.7	0.475	0.463	0.8	0.3	0.22	0.324	0.264
		3	70			58	88	9		
CP2	0.515	0.53	0.8	0.602	0.571	0.7	0.5	0.34	0.365	0.340
		8	40			94	22	7		
CP3	0.658	0.53	0.7	0.454	0.403	0.5	0.5	0.35	0.238	0.060
		7	67			29	19	6		
CP4	0.820	0.55	0.7	0.631	0.507	0.5	0.6	0.39	0.297	0.176
		7	71			87	45	7		

EFFEO	0.644	0.47	0.5	0.740	0.630	0.4	0.8	0.37	0.413	0.257
C1		5	43			65	16	1		
EFFEO	0.702	0.52	0.5	0.840	0.665	0.4	0.8	0.53	0.594	0.531
C2		8	63			41	45	2		
EFFEO	0.564	0.54	0.5	0.821	0.726	0.5	0.5	0.41	0.436	0.510
C3		0	45			08	68	1		
EFFEO	0.631	0.59	0.5	0.815	0.715	0.6	0.6	0.53	0.510	0.601
C4		8	56			19	29	1		
EFFEW	0.570	0.57	0.5	0.687	0.809	0.5	0.6	0.63	0.600	0.346
C1		8	18			20	17	1		
EFFEW	0.539	0.49	0.5	0.669	0.838	0.5	0.5	0.55	0.521	0.463
C2		5	86			00	75	8		
EFFEW	0.367	0.53	0.3	0.608	0.760	0.4	0.4	0.37	0.483	0.371
C3		3	75			33	83	3		
EFFEW	0.662	0.68	0.5	0.785	0.851	0.5	0.7	0.67	0.704	0.588
C4		7	33			42	07	6		
FD1	0.110	0.09	0.1	0.199	0.149	0.2	0.1	-	-0.153	0.089
		1	33			65	11	0.05		
								0		

FD2	-	-	-	0.023	-0.025	0.1	-	-	-0.155	0.010
	0.151	0.10	0.0			18	0.0	0.27		
		0	48				68	8		
FD3	0.526	0.73	0.6	0.494	0.501	0.8	0.4	0.38	0.368	0.243
		6	77			79	46	8		
FD4	0.486	0.58	0.7	0.475	0.463	0.8	0.3	0.22	0.324	0.264
		3	70			58	88	9		
IC1	0.908	0.67	0.5	0.743	0.640	0.4	0.9	0.67	0.623	0.454
		6	51			74	07	2		
IC2	0.894	0.64	0.5	0.728	0.617	0.4	0.8	0.67	0.609	0.348
		3	50			96	74	2		
IC3	0.644	0.47	0.5	0.740	0.630	0.4	0.8	0.37	0.413	0.257
		5	43			65	16	1		
IC4	0.702	0.52	0.5	0.840	0.665	0.4	0.8	0.53	0.594	0.531
		8	63			41	45	2		
INVINT	0.480	0.56	0.2	0.478	0.560	0.2	0.5	0.86	0.787	0.577
1		6	73			56	10	5		
INVINT	0.657	0.75	0.4	0.598	0.696	0.4	0.6	0.94	0.841	0.470
2		8	30			72	79	7		

INVINT	0.626	0.62	0.3	0.503	0.644	0.2	0.5	0.93	0.796	0.362
3		5	68			76	79	6		
INVINT	0.670	0.72	0.4	0.553	0.684	0.4	0.6	0.94	0.799	0.403
4		8	29			16	45	6		
SPELE	0.558	0.52	0.3	0.563	0.654	0.3	0.6	0.73	0.816	0.402
KN1		3	42			32	08	6		
SPELE	0.446	0.63	0.3	0.530	0.659	0.4	0.5	0.71	0.897	0.515
KN2		9	43			00	68	7		
SPELE	0.508	0.59	0.3	0.528	0.590	0.3	0.5	0.83	0.903	0.535
KN3		3	53			37	38	0		
SPELE	0.481	0.59	0.3	0.515	0.602	0.3	0.5	0.75	0.875	0.500
KN4		5	49			67	60	8		
UNDOR	0.291	0.29	0.2	0.540	0.557	0.3	0.4	0.48	0.468	0.860
B1		4	39			41	15	4		
UNDOR	0.254	0.23	0.2	0.450	0.442	0.2	0.3	0.45	0.530	0.886
B2		9	31			38	22	3		
UNDOR	0.344	0.22	0.2	0.358	0.257	0.2	0.3	0.14	0.166	0.508
B3		8	54			07	42	4		
UNDOR	0.285	0.28	0.2	0.575	0.478	0.3	0.4	0.41	0.559	0.915
B4		5	38			04	18	9		

Source: Field Study (2025)

Cross-loadings provide an additional assessment of discriminant validity by examining whether each measurement item loads more strongly on its associated construct than on other constructs. According to Hair et al, (2021), indicators should demonstrate their highest loadings on the constructs they are intended to measure, as this reflects convergent alignment and supports discriminant validity.

In this study, the results demonstrated that most indicators exhibited higher loadings on their respective latent constructs, thereby supporting discriminant validity. For example, within the Analytical Proficiency (ANAPR) construct, items such as ANAPR2 (0.820), ANAPR3 (0.908), and ANAPR4 (0.894) showed substantially higher loadings on ANAPR compared to other constructs, confirming that these indicators reliably capture the analytical proficiency dimension. Similarly, items under the Auditing Skills (AUDS) construct, including AUDS1 (0.883) and AUDS4 (0.736), loaded strongly on AUDS, providing evidence of congruence between the items and their intended construct.

The Cashless Policy (CP) construct also demonstrated strong item reliability, with CP2 (0.840) and CP4 (0.771) exhibiting higher loadings on CP than on other constructs. For Effective Oral Communication (EFFEOC), indicators such as EFFEOC2 (0.840) and EFFEOC3 (0.821) consistently loaded more strongly on their construct, while the Effective Written Communication (EFFEWC) construct displayed similar reliability, with EFFEWC2 (0.838) and EFFEWC4 (0.851) both reflecting strong internal alignments.

Other constructs such as Investigative Intuitiveness (INVINT) and Specific Legal Knowledge (SPELEKN) also exhibited very strong and consistent loadings, with items INVINT2 (0.947) and SPELEKN3 (0.903) showing the highest levels of association with their respective constructs. Finally, the Understanding Organizational Behavior

(UNDORB) construct demonstrated strong item reliability, with UNDORB4 (0.915) and UNDORB2 (0.886) loading strongly onto the construct.

Overall, the cross-loading results indicate that most items loaded more strongly onto their intended constructs than onto alternative constructs, providing robust evidence of discriminant validity which is in line with empirical studies of (Hair et al., 2021; Sarstedt et al, 2022).

Table 4. 6: Heterotrait-Monotrait Ratio (HTMT) – Matrix

	ANAPR	AUDS	CP	EFFE OC	EFFE WC	FD	IC	INVI NT	SPELE KN	UNDO RB
ANAPR	–									
AUDS	0.753	–								
CP	0.801	0.794	–							
EFFEO C	0.833	0.736	0.847	–						
EFFE WC	0.768	0.732	0.746	0.823	–					
FD	0.706	0.770	0.782	0.726	0.684	–				
IC	0.831	0.749	0.781	0.847	0.854	0.778	–			
INVINT	0.709	0.758	0.681	0.651	0.773	0.697	0.713	–		
SPELE KN	0.617	0.693	0.658	0.709	0.720	0.705	0.732	0.749	–	
UNDO RB	0.608	0.629	0.650	0.727	0.649	0.636	0.658	0.741	0.734	–

Source: Field Study (2025)

The heterotrait–monotrait (HTMT) ratio of correlations was employed to further assess discriminant validity among the study constructs. According to established guidelines,

discriminant validity is confirmed when HTMT values fall below 0.85 (conservative threshold) or 0.90 (liberal threshold) (Hair et al., 2021; Sarstedt et al, 2022).

As shown in Table 6, all HTMT ratios in this study were well within the acceptable threshold, thus providing strong evidence of discriminant validity. For instance, the HTMT values for ANAPR and AUDS (0.753), ANAPR and INVINT (0.709), and EFFEOC and INVINT (0.651) were all considerably below 0.85, suggesting a clear empirical distinction between these constructs. Similarly, the associations between CP and ANAPR (0.801), IC and EFFEOC (0.847), and EFFWC and EFFEOC (0.823) were below 0.90, confirming that the constructs are sufficiently distinct from one another.

Overall, the results indicate that each construct in the measurement model Forensic Accounting Competences, Fraud Detection, Cashless Policy, and Internal Controls is empirically unique and does not overlap excessively with others. This demonstrates that the study's constructs exhibit satisfactory discriminant validity, thereby reinforcing the robustness of the measurement model.

4.5 Assessment of Structural Model

The assessment of the structural model aims to analyze the latent correlational constructs to measure how well the research model accounts for the endogenous variables and their predictions. From the perspective of Hair et al. (2021), carrying out the structural model analysis for Partial Least Squares Structural Equation Modeling (PLS-SEM) entails the analysis of multicollinearity, common method bias, the determinant coefficient, and predictive relevance. Such tests, apart from confirming the constructs are valid for the

implications of the theory and management, it also guarantees that the findings are reliable.

4.5.1 Multicollinearity

The presence of Multicollinearity explains the correlation of multiple predictors within a model. Missing such a correlational variable can produce faulty diagnoses and conclusions (Ringle et al 2023). To measure collinearity within the constructs in a PLS-SEM model, the Variance Inflation Factor (VIF) is used. Multicollinearity is a potential issue for the construct when the VIF is above five (5). However, values that are less than three (3) are considered to have little to no multicollinearity (Hair et al., 2012). When VIF values are within the acceptable range, the model does not have discarded redundant issues to endogenous constructs.

4.5.2 Common Method Bias

Common Method Bias (CMB) can occur if the instrument or method of data collection rests entirely upon the constructs being measured, the hypothetical relationship may be over or under said to be measured (Hair et al., 2012). In PLS-SEM, the steps and the estimated techniques aim to resolve Common Method Bias (CMB). A common example can be provided by Harman's single-factor test where one examines whether variance in data could be synthesized by one single factor (Hair et al., 2012). Also, the full collinearity assessment which looks at the VIF suggests a score below 3.3 is evidence in CMB is unlikely to disturb the findings. Treating CMB carefully strengthens the claims being made about the model and the results.

4.5.3 Coefficient of Determination

The determination coefficient (R^2) is an important metric for analyzing the explanatory potential of the structural model. As posited by Hair et al. (2021), it is a proportion of the variance associated with the endogenous constructs that are accounted for' by the exogenous constructs. Khosla, (2021), for instance, classified R^2 values of 0.67, 0.33 and, 0.19 as high, moderate, and low, respectively. The higher the R^2 , the model is said to possess a greater proportion of variance, and thus, predictively accurate. These R^2 values must be accompanied by corresponding measures of predictive relevance to provide a thorough assessment of the model.

4.5.4 Validity of Predictive Relevance

Using the Stone-Geisser Q^2 test, the model's predictive relevance is calculated (Neuman, 2014). Predictive relevance is established through a blindfolding procedure, which omits and predicts data points to test the model's accuracy. If the Q^2 is greater than zero the model is said to possess predictive relevance for the endogenous construct (Hair et al., 2012). More specifically, Q^2 values of 0.02, 0.15, and 0.35 reflect small, medium, and large predictive relevance, respectively (Hair et al., 2012). In this case, the model not only articulates the relationships present model, but predicts potential future relationships based on this data.

Table 4. 7: VIF, R^2 and Q^2

Factor	VIF
ANAPR1	1.484
AUDS1	1.202
CP1	1.433
EFFEOC1	1.718
EFFEWC1	1.873
FD	1.396
IC3	2.059
INVINT1	3.059
SPELEKN1	1.862
UNDORB1	2.193
R^2	0.854
Q^2	0.300
Herman One-factor model test (42%)	

Source: Field Study (2025)

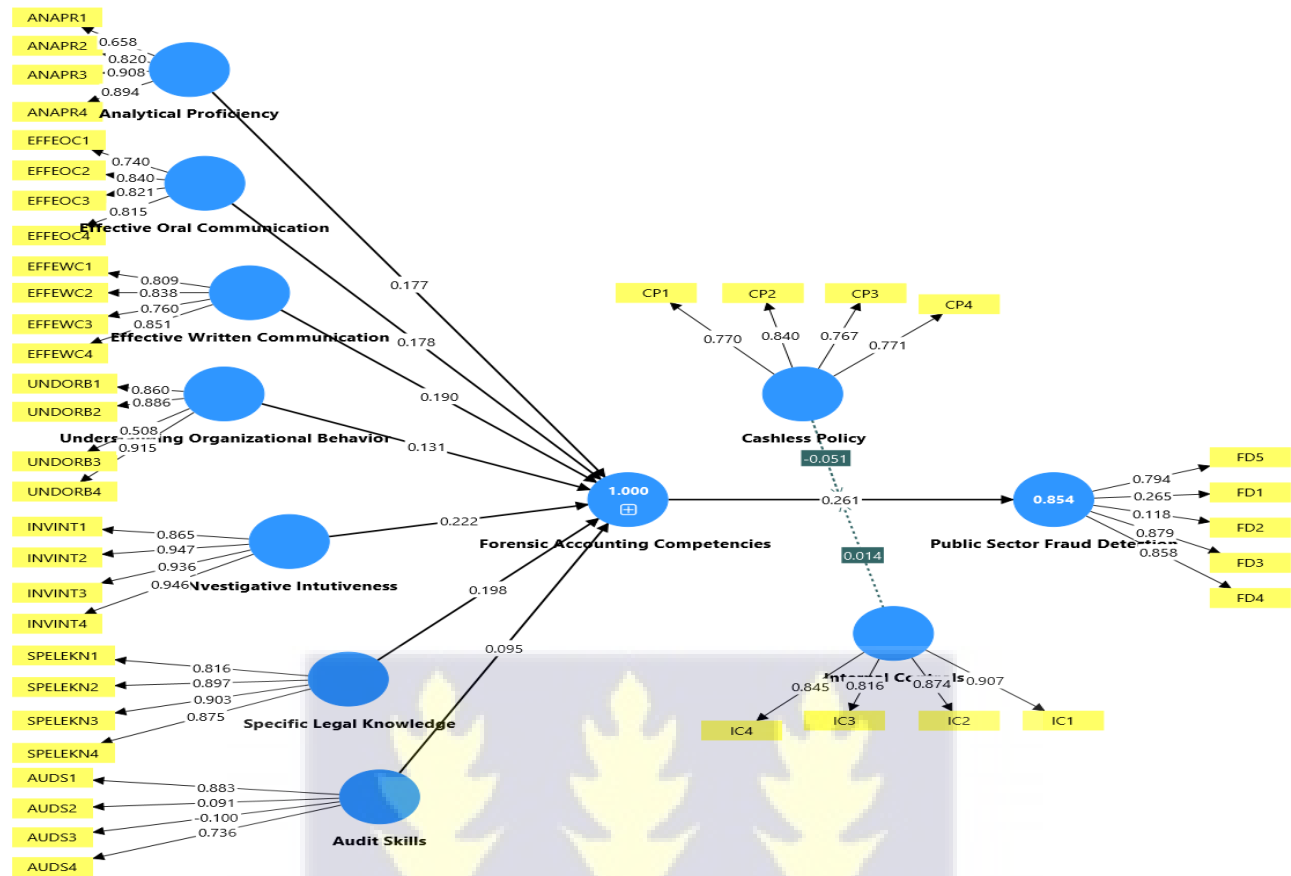
The results from the multicollinearity assessment indicate that all variance inflation factors (VIF) values are much lower than the usual cut-off value of 5, thus, supporting the interpretation that multicollinearity is not an issue in this study and that the indicators are separate and distinct in the assessment of their corresponding constructs (Hair et al., 2021). The coefficient of determination ($R^2 = 0.854$) indicates that the model accounts 85% of the variance of the endogenous constructs, which according to Chin (1998) is a sizeable amount of variance explained. Additionally, the predictive power of the model is substantiated by the Stone-Geisser Q^2 value ($Q^2 = 0.300$), which is above the 0.15

medium predictive cutoff and is approaching the 0.35 benchmark for large predictive relevance (Hair et al., 2021). This suggests that the model possesses strong out of sample predictive power. In terms of predictive power however, the results of Harman's one-factor test suggest that only one factor explains 42% of the variance, which is somewhat higher than the commonly accepted 40% threshold, which points to the likelihood of common method bias (Hair et al., 2012).

4.6 Path Diagram

After the measurement model was first evaluated, the structural model was checked very thoroughly. A Partial least-square (PLS) analysis was used to evaluate and empirically test structural theories and models. Standardized path coefficients are provided by PLS to show how significant and extensive the claimed causal links are. The estimated parameter of the proposed structural pathway should be statistically significant given the proposed direction of influence. As a non-parametric tool, bootstrapping analyses evaluate the precision of Partial Least Squares (PLS) techniques. A p-value is considered statistically significant if it falls below 0.05 significance level. All the research model's direct impacts are statistically significant, according to the bootstrapping Partial least-square (PLS) study. The underlying variance is indicated by the R-square values, which are displayed within the circles.

Figure 4. 2: Structural Equation Model 1



Source: Field Study (2025)

4.7 Test of Hypotheses

This section of the study proceeds with testing the various hypotheses formulated by the study in the preceding chapters. The hypotheses testing is conducted using partial least squares structural equation modelling.

Table 4. 8: Direct Effects of Forensic Accounting Competencies on Public Sector Fraud Detection

Hypothesis	Hypothesis Path	Path Coefficient	P Values	Decision
H1	Analytical Proficiency → Public Sector Fraud Detection	0.053	0.005	Supported
H2	Effective Oral Communication → Public Sector Fraud Detection	0.052	0.002	Supported
H3	Effective Written Communication → Public Sector Fraud Detection	0.183	0.000	Supported
H4	Understanding Organizational Behavior → Public Sector Fraud Detection	0.037	0.008	Supported
H5	Investigative Intuitiveness → Public Sector Fraud Detection	0.057	0.005	Supported

H6	Specific Legal Knowledge → Public Sector Fraud Detection	0.051	0.008	Supported
H7	Auditing Skills → Public Sector Fraud Detection	0.032	0.008	Supported

Source: Field Study (2025)

Table 4. 9: Moderating Effects of Cashless Policy on the relationship between Forensic Accounting Competences and Public Sector Fraud Detection

Hypothesis	Hypothesis Path	Path Coefficient	P Values	Decision
H8a	Analytical Proficiency × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)
H8b	Effective Oral Communication × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)
H8c	Effective Written Communication × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)

H8d	Understanding Organizational Behavior × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)
H8e	Investigative Intuitiveness × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)
H8f	Specific Legal Knowledge × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)
H8g	Auditing Skills × Cashless Policy → Public Sector Fraud Detection	-0.085	0.016	Supported (Partial Moderation)

Source: Field Study (2025)

Table 4. 10: Moderating Effects of Internal Controls on the relationship between Forensic Accounting Competences and Public Sector Fraud Detection

Hypothesis	Hypothesis Path	Path Coefficient	P Values	Decision
H9a	Analytical Proficiency × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)

H9b	Effective Oral Communication × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)
H9c	Effective Written Communication × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)
H9d	Understanding Organizational Behavior × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)
H9e	Investigative Intuitiveness × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)
H9f	Specific Legal Knowledge × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)
H9g	Auditing Skills × Internal Controls → Public Sector Fraud Detection	0.062	0.033	Supported (Full Moderation)

Source: Field Study (2025)

The structural model was evaluated using path coefficients (β) and p-values, applying the conventional significance threshold of $p \leq 0.05$ (Hair et al., 2021). The results confirm that

all hypothesized relationships (H1–H9) were statistically significant, thereby validating the proposed model.

For H1, Analytical Proficiency demonstrated a positive and significant effect on fraud detection ($\beta = 0.053$, $p = 0.005$). This result indicates that professionals who actively engage in analyzing complex financial documents are more likely to identify irregularities and enhance fraud detection outcomes.

H2 tested the effect of Effective Oral Communication, which also showed a positive and significant influence on fraud detection ($\beta = 0.052$, $p = 0.002$). This suggests that the ability to clearly and persuasively communicate investigative findings to relevant stakeholders strengthens the detection and reporting of fraudulent activities.

H3, Effective Written Communication, emerged as the strongest predictor of fraud detection ($\beta = 0.183$, $p < 0.001$). This finding underscores the critical role of accurate, clear, and well-documented reports in enabling decision-makers and enforcement agencies to initiate appropriate anti-fraud measures.

With respect to H4, Understanding Organizational Behavior had a positive and significant impact on fraud detection ($\beta = 0.037$, $p = 0.008$). This highlights the importance of recognizing behavioral cues, cultural dynamics, and informal networks in detecting potential fraud within public institutions.

H5, Investigative Intuitiveness, was found to positively and significantly affect fraud detection ($\beta = 0.057$, $p = 0.005$). The result suggests that professional skepticism and intuitive judgment complement technical methods in uncovering irregularities.

The test of H6 revealed that Specific Legal Knowledge significantly influenced fraud detection ($\beta = 0.051$, $p = 0.008$). This demonstrates that familiarity with legal frameworks enhances the enforceability of findings and ensures compliance with judicial processes. H7, Auditing Skills, also exhibited a positive and significant effect ($\beta = 0.032$, $p = 0.008$). This indicates that auditing methodologies, including compliance checks and risk assessments, are essential components of fraud detection in the public sector.

Regarding moderating effects, H8a–H8g revealed that Cashless Policy significantly moderated the relationship between forensic accounting competencies and fraud detection ($\beta = -0.085$, $p = 0.016$). The negative coefficient indicates partial moderation, meaning that while both competencies and cashless systems independently support fraud detection, their interaction weakens effectiveness. This suggests potential overlaps, as digital systems already provide transparent records that may reduce the incremental contribution of forensic methods.

Finally, H9a–H9g showed that Internal Controls fully moderated the forensic accounting–fraud detection relationship ($\beta = 0.062$, $p = 0.033$). This finding demonstrates that competencies alone are insufficient unless supported by strong institutional mechanisms such as segregation of duties, accountability structures, and routine monitoring. The positive moderation confirms that effective internal control systems are indispensable in enabling forensic expertise to translate into actionable fraud detection outcomes.

4.9 Discussion of Results

This study investigated the influence of forensic accounting competencies on fraud detection in Ghana's public sector, with the moderating roles of cashless policy and internal controls. The results of the Partial Least Squares Structural Equation Modeling

(PLS-SEM) revealed that all nine hypotheses (H1–H9) were statistically significant, thereby confirming the conceptual framework underpinning this research. This discussion elaborates on these findings, drawing on empirical evidence and the three theoretical perspectives Fraud Triangle Theory, Agency Theory, and Institutional Theory.

4.10 Forensic Accounting Competencies and Fraud Detection

The structural model demonstrated that forensic accounting competencies significantly and positively influence fraud detection. The coefficient of determination ($R^2 = 0.854$) indicated that forensic competencies, together with moderators, explained 85.4% of the variance in fraud detection. This is a highly predictive outcome, far exceeding the minimum benchmark of 0.26 for substantial explanatory power (Chin, 1998). The predictive relevance statistic ($Q^2 = 0.300$) also exceeded the recommended threshold of 0.15 (Hair et al., 2021), confirming the robustness of the model. These values reinforce the claim that forensic competencies play a decisive role in strengthening the fraud detection capacity of Ghana's public sector.

4.10.1: Analytical Proficiency

Analytical proficiency (H1) had a positive and significant effect on fraud detection ($\beta = 0.053$, $p = 0.005$). The descriptive statistics showed that respondents rated their analytical ability relatively high, with “interpreting large datasets” scoring a mean of 3.97 (SD = 0.802). This suggests that the ability to critically examine and interpret complex financial information supports early detection of anomalies and red flags.

The finding aligns with the Fraud Triangle Theory (Cressey, 1953), which identifies opportunity as a central enabler of fraud. Skilled forensic accountants are able to reduce such opportunities by detecting manipulations hidden in data. Afriyie et al, (2023) similarly argue that advanced analytical methods including Benford's Law, ratio analysis, and data mining enable fraud investigators to uncover irregularities that traditional auditing might miss. In Ghana's context, where financial transactions in the public sector are voluminous and sometimes opaque, analytical proficiency strengthens transparency and accountability.

4.10.2: Effective Oral Communication

Effective communication also emerged as a strong determinant of fraud detection. Oral communication (H2) was significant ($\beta = 0.052$, $p = 0.002$). Respondents rated this competency positively ($M = 3.70\text{--}3.89$), underscoring the importance of verbal interactions in fraud investigation. Through effective oral communication, forensic accountants can share findings, interrogate suspects, and collaborate with oversight authorities. This aligns with Agency Theory (Jensen & Meckling, 1976), where reducing information asymmetry is critical to aligning the interests of principals (citizens or government) and agents (public officials). Agyemang et al, (2023) supports this, noting that even accurate forensic findings can fail to yield corrective action if they are not persuasively communicated.

4.10.3: Effective Written Communication

Written communication (H3), however, was the strongest predictor of fraud detection ($\beta = 0.183$, $p < 0.001$). Respondents expressed confidence in their reporting skills, with “written communication supports follow-up audits and investigations” scoring $M = 4.00$ ($SD = 0.705$). Written reports are indispensable because they provide documented evidence that is admissible in court and accessible for future audits. This resonates with Institutional Theory (Scott, 2013), which highlights the role of formal documentation in building accountability structures. Bayong et al, (2024) similarly observed that detailed forensic reports ensure that investigative findings are not only preserved but also enforceable in legal and administrative proceedings.

4.10.4: Understanding Organizational Behavior

Understanding organizational behavior (H4) significantly influenced fraud detection ($\beta = 0.037$, $p = 0.008$). Respondents particularly valued the ability to recognize behavioral patterns ($M = 4.07$). This highlights the importance of understanding informal networks, workplace culture, and unwritten rules that may either conceal or expose fraudulent acts. The result is consistent with Institutional Theory (DiMaggio & Powell, 1983), which argues that organizational culture and norms strongly shape compliance behavior. Afriyie et al, (2023) similarly found that understanding workplace dynamics was vital for detecting fraud in Ghana’s bureaucratic institutions.

4.10.5: Investigative Intuitiveness

Investigative intuitiveness (H5) ($\beta = 0.057$, $p = 0.005$) was also highly rated, with descriptive means above 4.25. This competency reflects practitioners' reliance on instinct, professional judgment, and experience to guide investigations where documentary evidence is incomplete. Franca et al. (2023) argue that intuition complements data-driven approaches by allowing investigators to detect inconsistencies in testimonies and behaviors that numerical evidence alone may not reveal. In line with Fraud Triangle Theory, such intuition reduces the rationalization and concealment strategies fraudsters employ.

4.10.6: Specific Legal Knowledge

Specific legal knowledge (H6) was significant ($\beta = 0.051$, $p = 0.008$). Respondents reported strong legal competence ($M > 4.10$), particularly in areas such as evidence handling and whistleblower protection. This highlights that forensic investigations must align with legal frameworks if they are to result in enforceable sanctions. According to the Fraud Triangle Theory (Dorminey et al., 2012), the certainty of sanctions reduces the likelihood of fraud rationalization. Alhassan, (2020) also emphasized that investigations without a legal basis often collapse at the prosecution stage, making legal literacy a prerequisite for effective fraud detection.

4.10.7: Auditing Skills

Finally, auditing skills (H7), although the weakest predictor, remained significant ($\beta = 0.032$, $p = 0.008$). While respondents rated “conducting detailed audit reviews” highly (M

= 4.29), their ability to use audit procedures specifically to uncover irregularities was weaker ($M = 3.13$, $SD = 1.151$). This suggests a potential skills gap in leveraging audits proactively for fraud detection. Nevertheless, auditing is central to Agency Theory (Jensen & Meckling, 1976), which views it as a mechanism to monitor and control agent behavior. Sargiacomo et al. (2024) likewise argue that when auditing procedures are combined with forensic investigation techniques, fraud detection effectiveness is significantly improved.

4.10.8: Moderating Role of Cashless Policy

The study found that the cashless policy partially moderated the relationship between forensic accounting competencies and fraud detection, with a negative path coefficient ($\beta = -0.085$, $p = 0.016$). Descriptive statistics showed strong support for the policy ($M = 3.79$ – 3.97), indicating that respondents acknowledged the role of electronic systems in reducing opportunities for fraud.

From the Fraud Triangle Theory (Cressey, 1953), cashless systems directly reduce opportunity by minimizing cash handling and making transactions traceable. However, the negative moderation suggests functional overlap. While both cashless systems and forensic skills independently enhance fraud detection, their combined effect does not yield additional benefits. Automated systems may already capture irregularities, reducing reliance on human-led audits and manual investigative procedures.

This does not diminish the role of forensic professionals but rather redefines it. As Mamudu & Gayowwi, (2019) caution, technological solutions must complement—not replace—human expertise. Forensic accountants are increasingly required to interpret,

validate, and prosecute digital evidence, shifting their role toward digital forensics and strategic analysis. Thus, the findings highlight the evolving interplay between technology and professional expertise in fraud detection.

4.10.9: Moderating Role of Internal Controls

Internal controls exhibited a full moderating effect between forensic competencies and fraud detection ($\beta = 0.062$, $p = 0.033$). Respondents rated internal control mechanisms positively ($M = 3.70$ – 3.99), including segregation of duties, authorization processes, and supervisory reviews.

This finding reinforces the view that forensic competencies cannot achieve optimal impact unless situated within strong institutional frameworks. According to Institutional Theory (Scott, 2004), internal controls represent formal structures that embed accountability and compliance into organizational operations. Pham (2023) found that COSO-based internal control systems significantly reduce fraud risk, while Dickins & Fay, (2017) noted that forensic expertise is most effective when coupled with robust governance mechanisms. From the perspective of Agency Theory (Jensen & Meckling, 1976), internal controls reduce information asymmetry by ensuring constant monitoring and checks. Forensic accountants may detect anomalies, but without reporting structures, enforcement mechanisms, and control systems, their findings may remain unimplemented. The full moderation observed in this study emphasizes the necessity of institutionalized internal control systems for forensic work to yield meaningful outcomes.

4.11 Chapter Summary

This chapter presented the results of data analysis and discussed them in line with the study's objectives. It began with a demographic analysis of 150 valid respondents, revealing that the sample was largely male, highly educated, professionally experienced, and middle-aged, which enhanced the credibility of their perspectives on fraud detection and forensic practices in Ghana's public sector.

Descriptive statistics indicated moderately positive perceptions of fraud detection mechanisms, though preventive measures were less consistent. Forensic accounting competences were rated highly, particularly investigative intuitiveness, legal knowledge, and analytical proficiency, while auditing skills showed some gaps. Cashless policy and internal controls were also rated positively, though their effectiveness varied across institutions.

The measurement model was validated through reliability and validity tests, confirming that constructs were robust. Discriminant validity was established using the Fornell–Larcker criterion, cross-loadings, and HTMT ratio. The structural model showed no multicollinearity issues, explained 85.4% of the variance in fraud detection ($R^2 = 0.854$), and demonstrated predictive relevance ($Q^2 = 0.300$).

Hypothesis testing confirmed that all seven forensic accounting competences significantly enhanced fraud detection, with written communication emerging as the strongest predictor. Moderation analysis revealed that cashless policy partially moderated the relationship, while internal controls fully moderated it, emphasizing that competencies are most effective when supported by institutional mechanisms.

The findings indicated that forensic accounting competences significantly improve fraud detection, but their impact is amplified by strong internal controls and digital reforms, reinforcing the theoretical foundations of Fraud Triangle, Agency, and Institutional theories.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter presents the concluding aspects of the study on Forensic Accounting and Fraud Detection in Ghana's Public Sector: The Moderating Role of Cashless Policy and Internal Controls. It synthesizes the findings of the preceding chapter, highlighting how the objectives of the research were achieved. The chapter provides a concise summary of the study and draws conclusions based on the empirical results obtained. It further discusses the theoretical, practical, and policy implications of the findings within the broader context of public sector accountability in Ghana. In addition, the chapter outlines the contributions of the study to both scholarship and practice, acknowledges its limitations, and offers recommendations for policy, practice, and future research. The aim is to consolidate the insights generated by this study and situate them within the ongoing discourse on enhancing fraud detection and public financial management through forensic accounting.

5.1 Summary of the Study

The purpose of this study was to examine the influence of forensic accounting competencies on fraud detection in Ghana's public sector, with cashless policy and internal controls assessed as moderating factors. The study was motivated by the persistent problem of fraud and financial irregularities in Ghana's public institutions, despite existing audit mechanisms and financial regulations. Grounded in the Fraud Triangle Theory, Agency Theory, and Institutional Theory, the study investigated whether

forensic accounting competencies enhance fraud detection and how institutional and technological mechanisms condition their effectiveness.

A quantitative research design was adopted, using survey data collected from public sector professionals engaged in forensic-related accounting, auditing, and fraud detection functions. Data was analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results of the measurement and structural model assessments demonstrated satisfactory reliability, validity, and predictive relevance. The model explained 85.4% of the variance in fraud detection ($R^2 = 0.854$) and achieved a predictive relevance value of $Q^2 = 0.300$, indicating strong model robustness.

The empirical findings showed that all the examined forensic accounting competencies analytical proficiency, effective oral and written communication, understanding of organizational behavior, investigative intuitiveness, specific legal knowledge, and auditing skills had statistically significant and positive effects on fraud detection. Effective written communication emerged as the strongest predictor, highlighting the critical role of documentation and formal reporting in identifying and prosecuting fraud within the public sector. Investigative intuitiveness and legal knowledge also recorded high significance, underscoring the importance of professional judgment and legal awareness in forensic investigations.

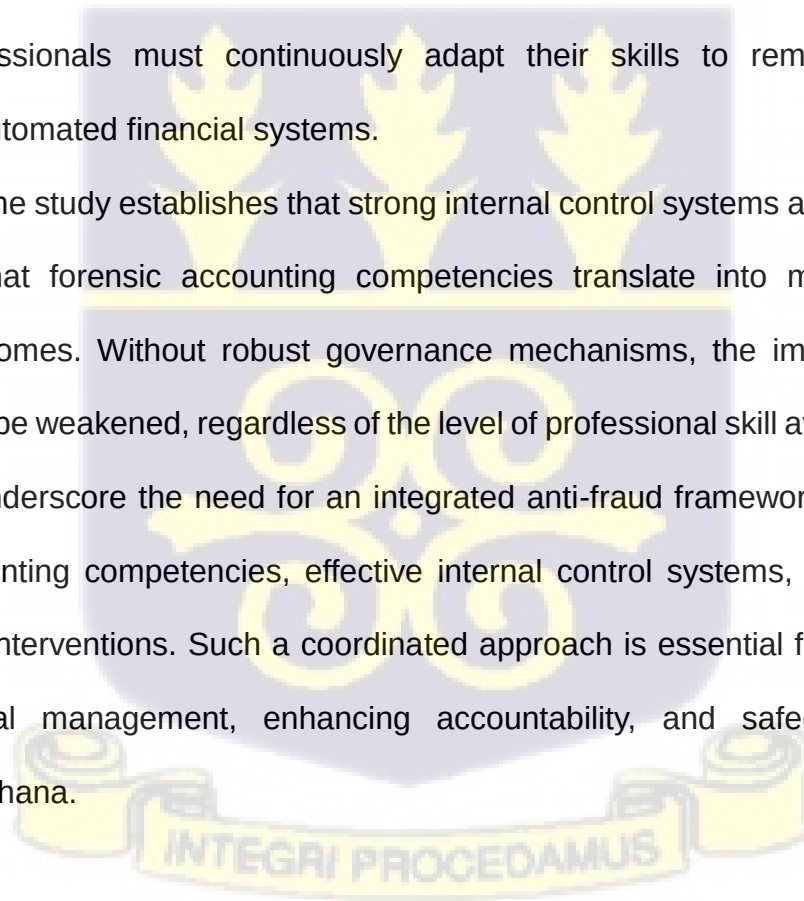
Regarding moderation effects, the cashless policy demonstrated a significant but negative moderating effect, suggesting that although both forensic competencies and electronic payment systems independently enhance fraud detection, their combined effect does not yield additional gains due to functional overlap. In contrast, internal controls significantly strengthened the relationship between forensic accounting

competencies and fraud detection, confirming the importance of governance structures in maximizing the effectiveness of forensic practices.

5.2 Conclusion of the Study

This study concludes that forensic accounting competencies play a crucial role in enhancing fraud detection in Ghana's public sector. However, the effectiveness of these competencies is strongly conditioned by the institutional and technological environment within which they operate. While the cashless policy reduces opportunities for fraud by limiting cash-based transactions, it simultaneously shifts the role of forensic accountants toward digital evidence analysis and technology-driven investigations. Consequently, forensic professionals must continuously adapt their skills to remain effective in increasingly automated financial systems.

Furthermore, the study establishes that strong internal control systems are indispensable in ensuring that forensic accounting competencies translate into meaningful fraud detection outcomes. Without robust governance mechanisms, the impact of forensic expertise may be weakened, regardless of the level of professional skill available. Overall, the findings underscore the need for an integrated anti-fraud framework that combines forensic accounting competencies, effective internal control systems, and appropriate technological interventions. Such a coordinated approach is essential for strengthening public financial management, enhancing accountability, and safeguarding public resources in Ghana.



5.3 Implications of Findings

The findings of this study carry important implications at theoretical, practical, and policy levels.

5.3.1 Theoretical Application

This study applies established theoretical frameworks namely the Fraud Triangle Theory, Agency Theory, and Institutional Theory to explain the dynamics of fraud detection within Ghana's public sector. Each of these frameworks provided a lens through which the findings were interpreted, and the results offered fresh insights that strengthen their relevance in contemporary fraud detection discourse.

First, the Fraud Triangle Theory (Cressey, 1953) is reinforced by the finding that forensic accounting competencies particularly analytical proficiency, legal knowledge, and auditing skills directly reduce the opportunity element of fraud. The study showed that forensic accountants with strong analytical and legal skills are better able to identify irregularities, expose manipulation, and ensure that cases result in enforceable sanctions. Moreover, the moderating role of cashless policy highlighted how systemic reforms can further minimize opportunities by reducing cash handling and creating digital trails. At the same time, the finding that cashless systems partially weaken the incremental impact of forensic skills illustrates how technological measures can reshape the fraud landscape, thereby extending the Fraud Triangle framework into a digital governance context.

Second, the findings provide further validation of Agency Theory (Jensen & Meckling, 1976; Eisenhardt, 1989), which emphasizes the problem of information asymmetry between principals (citizens and government authorities) and agents (public officials). The study found that competencies such as effective oral and written communication, together

with auditing skills, significantly enhance fraud detection by reducing asymmetry and improving transparency. In particular, the strong role of written communication demonstrates that clear and formalized reporting channels are critical for aligning interests and ensuring accountability. Similarly, the moderating role of internal controls illustrates how oversight structures act as mechanisms for monitoring agents' behavior, thereby strengthening the agency relationship in the public sector.

Finally, the study deepens the application of Institutional Theory (DiMaggio & Powell, 1983; Scott, 2013) in the context of fraud detection. The results showed that forensic accounting competencies yield optimal outcomes only when embedded within strong institutional frameworks such as internal controls. This supports the institutionalist argument that rules, norms, and governance mechanisms are indispensable in shaping organizational behavior. Importantly, the finding that understanding organizational behavior is a significant predictor of fraud detection highlights the role of informal norms and cultural practices in conditioning compliance. Thus, the study demonstrates that fraud detection is not solely a matter of technical expertise but also of institutional alignment, where formal systems and informal practices interact to determine effectiveness.

In summary, the theoretical implications of this study lie in its demonstration that fraud detection is best understood as an interplay between individual competencies, systemic governance structures, and organizational culture. The findings extend the relevance of the Fraud Triangle Theory, Agency Theory, and Institutional Theory by situating them within the realities of Ghana's public sector, where institutional weaknesses and emerging digital reforms coexist.

5.3.2 Practical Implications

The findings of this study carry important practical implications for forensic accountants, auditors, and other professionals engaged in fraud detection within Ghana's public sector. First, the results clearly demonstrate that forensic accounting competencies are indispensable tools for detecting fraud. Skills such as analytical proficiency, investigative intuition, and legal knowledge equip practitioners with the ability to detect irregularities, interpret financial data, and ensure that evidence meets prosecutorial standards. In practice, this means that forensic accountants must continuously sharpen these competencies through training, workshops, and professional development programs to remain effective in an increasingly complex fraud environment.

Second, the strong effect of written communication as the leading predictor of fraud detection points to the practical need for forensic professionals to focus on producing clear, comprehensive, and legally admissible reports. A well-documented report does not only facilitate internal investigations but also serves as critical evidence in disciplinary and judicial proceedings. This practical insight suggests that forensic accountants in Ghana should prioritize communication and reporting skills alongside technical expertise.

Furthermore, the relatively weaker effect of auditing skills compared to other competencies highlights a gap in practical application. While audits are traditionally associated with oversight, this study suggests that auditors in the public sector may not be fully leveraging audit procedures to uncover fraudulent activity. Practically, this calls for targeted capacity-building interventions to integrate forensic techniques into standard audit practices, ensuring that routine audits move beyond compliance checks to also serve as effective fraud detection mechanisms. In sum, the study underscores that

practical effectiveness in fraud detection requires a balanced skillset technical, communicative, legal, and behavioral continuously updated to meet evolving challenges.

5.3.3 Policy Implications

At the policy level, the study provides insights that are directly relevant to strengthening Ghana's public financial management systems. One of the most significant findings is the negative moderating effect of cashless policy. While the adoption of electronic payment systems reduces the opportunity for fraud by minimizing cash handling and improving transaction traceability, the overlap with forensic competencies suggests that policy reforms must be complemented with adequate professional capacity. This implies that government agencies should not only roll out cashless systems but also invest in developing digital forensic expertise within public institutions. Training forensic accountants to interpret, validate, and prosecute cases involving digital evidence is crucial for ensuring that these reforms achieve their intended outcomes.

The full moderating effect of internal controls further reinforces the importance of strengthening governance structures across public institutions. The study suggests that forensic accounting skills alone cannot deliver optimal results unless they operate within robust institutional frameworks. Policymakers must therefore ensure that strong internal control systems such as segregation of duties, effective authorization processes, independent audits, and functioning oversight committees are systematically embedded across ministries, departments, and agencies. This is consistent with ongoing public financial management reforms in Ghana but highlights the need for stricter enforcement and monitoring to prevent lapses.

Additionally, the findings underscore the policy relevance of integrating forensic accounting into national anti-corruption strategies. By formally recognizing forensic accounting as a critical tool in fraud detection and prevention, policymakers can ensure that forensic professionals are empowered with the legal authority, resources, and institutional support required to carry out their roles effectively. Finally, the study's results imply that collaboration between government, regulatory bodies, and professional accounting associations is essential in shaping policies that build forensic capacity, strengthen controls, and adapt to digital reforms. Such coordinated policy interventions will not only improve fraud detection but also enhance transparency, accountability, and public trust in Ghana's governance systems.

5.4 Contributions

This study makes several notable contributions to knowledge, methodology, and practice in forensic accounting and fraud detection, particularly within the context of Ghana's public sector.

5.4.1 Theoretical Application

The study applied three major existing theories of Fraud Triangle Theory, Agency Theory, and Institutional Theory within the context of a developing country's public sector. Specifically, the findings reinforce the Fraud Triangle Theory by demonstrating how forensic accounting competencies, especially analytical proficiency, legal knowledge, and auditing skills, minimize the "opportunity" element of fraud and strengthen deterrence through enforceable sanctions. The results also extend Agency Theory by highlighting

the importance of communication and internal controls in reducing information asymmetry between principals (citizens/government) and agents (public officials). Furthermore, the study strengthens Institutional Theory by showing that fraud detection outcomes depend not only on individual competencies but also on institutionalized governance frameworks and organizational norms. This theoretical integration advances the body of knowledge by situating the theories in a practical, technology-influenced environment and highlighting their combined explanatory power in the Ghanaian context.

5.4.2 Methodological Application

From a methodological perspective, the study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the relationship between forensic accounting competencies, cashless policy, internal controls, and fraud detection. The use of PLS-SEM enabled the study to simultaneously test multiple constructs and moderating effects with high reliability and validity. The explanatory power of the model ($R^2 = 0.854$) and predictive relevance ($Q^2 = 0.300$) demonstrate the robustness of the approach. This methodological contribution is valuable for future researchers in accounting and fraud detection studies in emerging economies, as it provides a tested and replicable framework for analyzing complex relationships among competencies, institutional factors, and fraud detection outcomes.

5.4.3 Practical and Policy Contributions

The study also makes important practical contributions. It provides evidence that forensic accounting competencies, particularly written communication, investigative intuition, and

legal knowledge are critical for detecting fraud in the public sector. For practitioners, the results underscore the need to enhance these competencies through continuous professional training and education. For policymakers, the study contributes to the design of more effective anti-fraud policies. It demonstrates that cashless reforms alone are not sufficient to eliminate fraud and must be complemented by professional forensic expertise. It also confirms that robust internal control systems are indispensable in ensuring that forensic work translates into actionable outcomes. These insights contribute to strengthening public financial management and anti-corruption strategies in Ghana and other developing countries facing similar governance challenges.

In sum, the contributions of this study span theoretical advancement, methodological innovation, and practical relevance. Together, these contributions provide a strong foundation for future research and policy design aimed at enhancing fraud detection and prevention in the public sector.

5.5 Limitations of the Study

While this study provides important insights into the role of forensic accounting competencies in fraud detection in Ghana's public sector, it is not without limitations. First, the study employed quantitative research design using a structured questionnaire. Although this allowed for the collection of standardized data and facilitated statistical analysis, it may have limited the depth of understanding that could have been gained from qualitative approaches such as interviews or case studies. Such approaches might have revealed richer insights into the practical challenges faced by forensic accountants in fraud detection.

Second, the study focused exclusively on Ghana's public sector. While this was deliberate to reflect the pressing issue of public sector fraud, it limits the generalizability of the findings to other contexts, such as the private sector or other developing countries. Differences in institutional frameworks, governance structures, and fraud risks across sectors and countries mean that the results may not be directly transferable without adaptation.

Third, the study concentrated on six core forensic accounting competencies and two moderating factors (cashless policy and internal controls). Although these constructs provide a comprehensive framework, there are other competencies and contextual factors such as ethical orientation, political will, and regulatory enforcement that may also influence fraud detection but were beyond the scope of this study.

Finally, the cross-sectional design of the study limits the ability to draw causal conclusions. Since the data were collected at one point in time, the study could not account for changes in fraud detection effectiveness over time or the long-term impact of reforms such as cashless policy adoption.

5.6 Suggestions for Future Research

Based on these limitations, several directions for future research are suggested. First, future studies could adopt a mixed-methods approach by combining surveys with interviews, focus groups, or case studies. This would provide a more nuanced understanding of how forensic competencies are applied in practice and the challenges professionals face in fraud detection.

Second, comparative studies across different sectors (public vs. private) or different countries could be conducted to test whether the relationships found in this study are held in other contexts. Such comparative research would enrich the literature by identifying contextual similarities and differences in how forensic accounting competencies influence fraud detection.

Third, future research could explore additional moderating or mediating factors that may influence the relationship between forensic competencies and fraud detection. These could include ethical culture, political will, regulatory strength, or organizational leadership, which are particularly relevant in developing country contexts.

Finally, longitudinal research could be undertaken to track changes over time. This would provide insight into how reforms such as the implementation of cashless systems or strengthening of internal controls impact fraud detection effectiveness in the long run. Such studies would help policymakers and practitioners understand the sustainability of fraud detection strategies.

5.7 Recommendations

Based on the findings, several recommendations are proposed. At the policy level, government agencies should strengthen internal control frameworks, ensuring that segregation of duties, authorization systems, and monitoring mechanisms are rigorously applied. Cashless reforms should be complemented with investment in forensic expertise, particularly in digital forensics, to ensure that electronic systems enhance rather than substitute forensic work. Forensic accounting should be formally integrated into national

anti-corruption strategies, with dedicated units established and empowered within public institutions.

Secondly, the findings highlight the importance of enhancing reporting standards, integrating forensic methods into audits, and leveraging both investigative intuition and behavioral insights to uncover fraud. Continuous professional development is essential to strengthen competencies, particularly in weaker areas such as auditing skills and emerging domains such as digital forensics.

Finally, academic and professional institutions should contribute by embedding forensic accounting and fraud detection into curricula, providing targeted training for professionals, and fostering collaborative research between academia, policymakers, and practitioners. Such measures will not only build capacity but also ensure that forensic accounting evolves in line with Ghana's governance challenges and digital reforms.



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APPENDIX

QUESTIONNAIRE ON FORENSIC ACCOUNTING AND FRAUD DETECTION IN GHANA'S PUBLIC SECTOR. THE MODERATING ROLE OF CASHLESS POLICY AND INTERNAL CONTROLS

This questionnaire is designed to solicit information on forensic accounting competencies on fraud detection and moderating role of cashless policy and internal controls. We seek your maximum cooperation and assure you that any information provided will remain confidential. Please respond by ticking the appropriate option in the spaces provided.

SECTION A

Demographic Information (Kindly tick the boxes applicable to you only)

1. Gender:
Male ☐ Female ☐
2. What is your age range?
18-30years ☐ 31-43years ☐ 44-56years ☐ 57-69years ☐ 70 and above ☐
3. Marital status:
Married ☐ Single ☐ Divorced/Separated ☐ Widowed ☐
4. Highest educational qualification:
Bachelor's Degree ☐ master's degree ☐ PhD ☐ Other Degree ☐ Non-Other Degree ☐
5. How many years of working experience?
0-6 years ☐ 7-13 years ☐ 14-20 years ☐ 21-27 years ☐ Above 28 years ☐

SECTION B

Forensic Accounting Competencies

On a scale of 1 – 5 (**1 = Strongly Disagree**, **5 = Strongly Agree**), kindly indicate to what extent you agree with the following statements.

Analytical Proficiency

		Strongly disagree				Strongly agree
		1	2	3	4	5
ANAPR 1	I am able to analyze complex financial data effectively					

ANAPR 2	I can detect inconsistencies and suspicious patterns in financial reports					
ANAPR 3	I can interpret large datasets to identify potential fraud indicators					
ANAPR 4	I use analytical tools to support fraud investigations					

Effective Oral Communication

		Strongly disagree				Strongly agree
		1	2	3	4	5
EFCEO C1	I can clearly explain fraud-related findings verbally.					
EFCEO C2	I am confident in conducting interviews related to fraud investigations					
EFCEO C3	I communicate investigative results effectively to stakeholders					
EFCEO C4	My oral reports are well understood by colleagues and superiors					

Effective Written Communication

		Strongly disagree				Strongly agree
		1	2	3	4	5
EFFEWC 1	I prepare clear and detailed written reports on fraud investigations					
EFFEWC 2	My written reports meet professional standards					
EFFEWC 3	My reports help management take action on fraud issues					

EFFEWC 4	Written communication supports follow-up audits and investigations					
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Understanding Organizational Behavior

		Strong ly disagr ee				Strong ly agree
		1	2	3	4	5
UNDOR B1	I understand the informal networks within my organization					
UNDOR B2	I can recognize behavior patterns that may signal fraudulent intent					
UNDOR B3	I understand how organizational culture affects fraud risk.					
UNDOR B4	I am aware of staff attitudes towards fraud detection policies					

Investigative Intuitiveness

		Strong ly disagr ee				Strong ly agree
		1	2	3	4	5
INVINT1	I often rely on intuition when something feels wrong in an investigation					
INVINT2	My instinct helps me identify red flags that data alone may miss					
INVINT3	I can sense when someone may not be truthful during interviews					
INVINT4	I trust my investigative hunches in guiding further inquiry					

Specific Legal Knowledge

		Strong ly				Strong ly agree
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		disagree				
		1	2	3	4	5
SPELEK 1	I understand laws related to financial fraud and corruption					
SPELEK 2	I know the legal procedures for handling evidence					
SPELEK 3	I understand Whistleblower Protection Laws					
SPELEK 4	I am familiar with the legal consequences of fraud in the public sector					

Auditing Skills

		Strongly disagree				Strongly agree
		1	2	3	4	5
AUDS1	I can conduct detailed audit reviews to detect fraud					
AUDS2	I am skilled in using audit procedures to uncover irregularities					
AUDS3	I understand compliance standards in public sector audits					
AUDS4	My auditing skills contribute to detecting and preventing fraud					

SECTION C

Dependent Variables

On a scale of 1 – 5 (**1 = Strongly Disagree**, **5 = Strongly Agree**), kindly indicate to what extent you agree with the following statements

Fraud Detection

		Strongly				Strongly agree

		disagree				
		1	2	3	4	5
FD1	Fraud is often detected before major losses occur					
FD2	The fraud detection process is timely and reliable					
FD3	My organization responds promptly to fraud indicators					
FD4	Fraud detection efforts reduce overall financial losses					

Moderating Variables

On a scale of 1 – 5 (**1 = Strongly Disagree**, **5 = Strongly Agree**), kindly indicate to what extent you agree with the following statements

Cashless Policy

		Strongly disagree				Strongly agree
		1	2	3	4	5
CP1	Electronic payment systems reduce opportunities for fraud					
CP2	The shift to cashless transactions helps identify fraud faster					
CP3	Mobile payment records help trace suspicious transactions					
CP4	Electronic procurement platforms strengthen fraud detection					

Internal Controls

		Strongly disagree				Strongly agree
		1	2	3	4	5
IC1	Internal control procedures in my organization are robust					

IC2	Segregation of duties helps reduce fraud risk					
IC3	Authorization and approval systems detect anomalies					
IC4	Regular internal audits help prevent and detect fraud					

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