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Impact of Internal Control on Fraud Deterrence in the
Palestinian government sector: The Moderating Role of
Forensic Accounting

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202216613

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Palestine, 11/2025

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Arab American University
Faculty of Graduate Studies
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Dissertation Approval

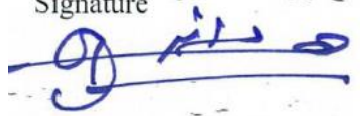


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Palestine, 11 / 2025

Declaration

I declare that, except where explicit reference is made to the contribution of others, this dissertation is substantially my own work and has not been submitted for any other degree at the Arab American University or any other institution.

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Dedication

In remembrance of my beloved father, Abdelrahim Al-Arabi, who has passed away, yet whose wisdom and light continue to guide me each day. I have obtained the true essence of patience, endurance, and diligence from you. Your presence remains in my heart, and your guidance persists in directing my path. May Allah grant you mercy and promote you to the highest rank in Paradise.

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To my cherished children: Dr. Yasmine, Engineer Mohamed, Abdelrahim, Hala, Mahmoud, and Ahmed, you represent the pinnacle of my endeavors and the source of my pride and joy in this life. I implore Allah to grant you prosperity, joy, and the fulfillment of your ambitions, and that you consistently remain the light of my eyes and the joy of my heart.

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I dedicate my humble work to all those recognized and to everyone who supported me, even with a simple kind word, continually striving to be worthy of your trust and expectations.

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Impact of Internal Control on Fraud Deterrence in the Palestinian government sector: The Moderating Role of Forensic Accounting

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Abstract

This study examines the impact of internal control, as outlined in the COSO framework, on fraud deterrence within the Palestinian government sector, with a focus on the moderating role of forensic accounting services. The primary objective was to assess the impact of COSO internal control frameworks on deterring fraud and to investigate whether forensic accounting enhances this impact. The study tool was a robust questionnaire designed for this purpose, containing 56 items distributed across nine areas that comprised the questionnaire. The questionnaire was administered to a simple random sample of 256 employees, comprising external auditing, the judiciary, and the Financial and Administrative Control Bureau, along with representatives from the Anti-Corruption Commission, Economic Prosecution, and the Financial Follow-up Unit.

The results indicated considerable variation in the implementation of internal controls across government institutions. The control activities received the highest mean score, followed by the control environment. By contrast, risk assessment, information and communication, and monitoring exhibited comparatively lower performance. The results show a statistically significant positive relationship between comprehensive internal control and fraud deterrence. According to the results, forensic accounting plays a vital moderating role in increasing the influence of internal control on fraud prevention. The explanatory power increased following the introduction of the moderator. The study found that the integration of strong internal control systems with forensic accounting constitutes an actual deterrent to fraud in the Palestinian government sector.

The study recommends the establishment of a resilient control framework based on integrity and transparency. the complete documentation of procedures and policies, and the formation of an autonomous Palestinian professional organization to oversee forensic accountants. The study also recommends using modern technologies for fraud detection, increasing specialized training programs for audit staff, improving collaboration between oversight and judicial agencies with clearly defined roles, and incorporating forensic accounting into university curricula.

Keywords: forensic accounting, internal control, fraud deterrence, coso, Palestinian public sector

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List of Definitions of Abbreviations

Abbreviations	Title
IC	Internal Control
CE	Control Environment
CA	Control Activities
RA	Risk Assessment
I&C	Information and Communication
MO	Monitoring
COSO	Committee of Sponsoring Organizations of the Treadway Commission
FD	Fraud Deterrence
FA	Forensic Accounting
FI	Fraud Investigation
IAC	Investigative Accounting
LS	Litigation Support
GLM	Generalized Linear Model
SEM	Structural Equation Modeling
SPSS	Statistical Package for the Social Sciences
VIF	Variance Inflation Factor
ANOVA	Analysis of Variance
OLS	Ordinary Least Squares
R ² (R-squared)	Coefficient of Determination

Chapter 1: Introduction

1.1 Research Background

Fraud is a financial crime that erodes public trust in the financial system and global economy. These offenses frequently transpire in both the public and private sectors and exert a detrimental impact, not only on the administrations involved but also on the economy as a whole. To avoid being exposed to fraud, organizations use various anti-fraud measures. These preventive controls include whistleblower programs, internal audits and controls, segregation of roles, and training on codes of conduct (ACFE, 2024).

Corruption and fraud have grown in importance in today's business world, presenting a serious risk to the public and governmental sectors everywhere. Fraud is becoming a major problem because it can result in monetary losses, harm to one's reputation, and legal issues. With their particular knowledge of auditing, accounting, and investigative procedures, forensic accountants play a central role in recognizing and examining fraudulent activities. They also provide evidence of court processes (Villaescusa & Amat, 2022).

Fraud is likely to cause financial loss, harm a person's reputation, and a loss of clientele (Honigsberg, 2020b). Fraud has a substantial negative influence on emerging countries, particularly Palestine, where the challenge is endless and continuous. Alternatively, financial fraud has led to massive economic collapse, controversies, and the bankruptcy of several establishments in many countries, such as Enron, WorldCom, Kmart, and Xerox (Alslaibi & Abdelkarim, 2024; Othman et al., 2015; Toms, 2019).

Fraud impacts organizations of all kinds, irrespective of their level of development, whether they are underdeveloped, developed, or developing (Ocansey, 2017). Fraud is a significant global issue. This is a significant issue in developing countries. Fraud has become so widespread that it is increasingly accepted as a common way of life in both commercial and public sectors (Gbegi & Adebisi, 2014). Fraud is a pernicious threat that may have a catastrophic effect on a country's corporate, social, and economic wellbeing of a country (Frank, 2019). The embezzlement and theft of money in public institutions poses

significant challenges to the attainment of developmental objectives in poor nations. (Mulugeta, 2024).

In recent years, the function of IC systems in the government sector during day-to-day operations has gained importance. The importance of IC systems has also been recognized. Globally, considerable attention has been devoted to internal management systems within organizations. Kisseih (2020).

The crucial objective of internal controls is to establish a framework for fostering accountability, transparency, and confidence in public institutions. Compliance efforts are mediators between environmental conditions and business actions (Adeleke & Segun, 2019; Afriyie et al., 2023).

The need for internal control is evident in all organizations, irrespective of their industry or their classification as public or private entities (Alazzabi et al., 2023). Control is universally acknowledged as an essential aspect of management that cannot be separated from or complements other managerial actions. The effectiveness and efficiency of management in fulfilling its objectives are measured by their ability to implement these functions, with control playing a crucial role. Therefore, control is an essential management function that serves as a gauge of success in attaining its goals (Alayasah, 2024). This function is applied at all levels of administration by designated authorities within this domain.

Arab countries have been stagnant for a decade in improving their image of corruption and its high levels, to the point that it has undermined anti-corruption efforts in the Middle East. The scores of Arab nations varied in the Corruption Perceptions Index, and the perceived degree of public-sector corruption in a nation was represented by its score, which ranged from 0 (very corrupt) to 100 (extremely clean)., with the United Arab Emirates receiving the highest score First in integrity of 68, followed by Qatar with a score of 58 Jordan 49, while the lowest scores were Yemen, 16, Syria, 13, and Somalia11(CPI, 2024).

Forensic Accounting (FA): The Role of Its Position in the Contemporary Economy. The FA showed its value in the late 1940s, particularly during World War II. However, it was not until the 1980s that standardized processes were established, coinciding with the publication of significant academic papers on the topic(Capraş & Achim, 2023).

FA has become a crucial tool in the worldwide struggle against state-organized and white-collar crimes. Investigating and prosecuting these crimes is made more difficult by their complex schemes, which frequently traverse international borders and take advantage of their legal weaknesses. On the contrary, state-sponsored criminal activities rooted in the public sector encompass illegal or unethical actions executed by government institutions or public officials (Dimitropoulos & Reading, 2025).

Maurice Peloubet originated the concept of forensic accounting in his 1946 article, the essential goal of the FA profession is to support the government and people through one of the most trying periods by offering a range of services that could sustain them (Howieson, 2018). Given the breadth of FA services, it is a multidisciplinary specialty (Gitonga, 2022; Hegazy et al., 2017).

The early 20th century witnessed significant deterioration in international monetary stability and the effective functioning of free market capitalism due to several company scandals, scams, and failures. Fraud, encompassing activities such as manipulating financial reports and acts of corruption, has emerged as a prominent and ongoing topic in news coverage in the 21st century Basse and Ahonkhai (2017). Embracing advanced auditing and investigation techniques, such as forensic accounting, seems to be a promising way to improve existing internal control systems. This is increasingly being recognized as an advanced procedure for mitigating the vulnerabilities of the organizational system. When it comes to protecting the integrity of the organization, the efficacy of FA in identifying and stopping fraudulent activity is particularly evident in situations where traditional internal controls may not suffice (Cheliatsidou et al., 2023).

Enhanced awareness of the role of FA in strengthening IC systems, as well as its use as a proactive measure to deter fraud. Forensic accountants serve essential functions. to improve accountability and transparency. Moreover, the FA guarantees the accountability and transparency of public institutions, as it provides accurate and detailed evidence on how public funds are utilized (Akhidime, 2020; Alsadah & Al-Sartawi, 2023; Ariyo-Edu & Woli-Jimoh, 2024).

The insufficient availability of forensic accountants remains one of the greatest bottlenecks hindering the region from properly utilizing forensic methodologies. Political uncertainty and the lack of a clear legal base for forensic work have also made forensic

accountants' roles less independent and objective. The introduction of FA in the internal control systems of public institutions will significantly enhance fraud detection and tackle financial mismanagement (Ariyo-Edu & Woli-Jimoh, 2024).

According to Lubis et al. (2024) public organizations must integrate forensic accounting practices into their internal control systems to mitigate the shortcomings of traditional auditing and oversight methods. However, forensic accounting not only detects fraudulent activity but also deters financial misconduct, demonstrating the assertion that any wrongdoing will be thoroughly investigated (Ariyo-Edu & Woli-Jimoh, 2024; Regina Dori et al., 2021).

The primary reasons why the public sector struggles to manage public resources effectively are chronic political instability, pervasive corruption, and poor internal controls. To combat fraud and strengthen accountability in public institutions, researchers have suggested that FA methods and strengthening internal control systems could provide viable solutions. In addition, providing insights and recommendations for stakeholders, government representatives, and policymakers is helpful in deferring fraud in the government sector and enhancing governance (Alaa Hussein & Naji Anton, 2025; Zeinaba et al., 2024).

FA is beneficial in Palestine because fraudulent and corruption measures are committed on multiple levels, and many methods are utilized. For financial misconduct, investigation statistics can study deeper and more complicated cases using a more comprehensive and systematic method of finding and addressing these fraudulence (Khalil, 2016).

According to Shumali and Awwad (2019) the public sector has its specific and perpetual challenges and is especially vulnerable to fraud, waste, and abuse hazards, which is especially important in countries such as Palestine, where the public sector not only carries the burden of delivering the necessary services to the population but is also a major employer; thus, to ensure that public resources are well managed and to achieve institutional objectives and goals with honesty, internal controls must be reliable and transparent. Implementing robust and effective internal control systems has proven challenging for the Palestinian Authority, which is responsible for overseeing and delivering essential public amenities to its citizens (Khalil, 2016).

The scarcity of resources and weak governance institutions in Palestine makes it very difficult to set up effective internal controls, thus aggravating existing problems. (Alrub, 2024)Recent studies have shown that strengthening these systems is a key step toward reducing fraudulent practices and promoting a culture of honesty in the government sector (Awad & Slim, 2024).

1.2 Research Problem

Fraud continues to seriously damage governments, businesses, and reputations worldwide (ACFE, 2024). Organizations continue to confront significant obstacles, despite efforts to reduce these losses through conventional anti-fraud policies. Because fraud impacts organizations of all sizes, sectors, and locations, it is imperative to place stronger, higher-level fraud controls. When an organization is free from fraud, it shows faith in its internal control system, strong internal control framework, quality accounting and reporting, and audit quality. Nevertheless, reports suggest that fraud still exists in many organizations(Aminat Arike, 2025; Kagias et al., 2022)

One of the contributions of this study is its examination of the effect of IC systems on fraud deterrence in the Palestinian government sector. This is not unwarranted, considering that the topic is particularly relevant in light of issues that continue to plague Palestine's public sector, associated with corruption, financial maladministration, and continued struggles for accountability and transparency in governmental institutions. Considering the complicated political and economic situation in Palestine, strengthening internal control measures has become a priority(Alslaibi, 2024). As the public sector plays an increasingly dominant role in fulfilling a population's need for basic services, it is more important than ever to ensure strong oversight.

Currently, there are no effective and long-lasting remedies to address this issue. There is no foolproof strategy to prevent fraud, but forensic accounting techniques could be one way to discourage fraud by making it less appealing to perpetrators. Several studies have evaluated the value of each of the three forensic accounting approaches in determining fraud cases; however, conflicting findings have been reported. The literature analysis also highlighted the actual use of FA in the United States and Britain, as well as the numerous

studies conducted worldwide on using internal control systems to identify and prevent fraud, with very little research conducted in Palestine.

Prior research has established a connection between fraud and internal control in industrialized nations. Such research is uncommon in developing nations, especially Palestine. Research on internal control as an independent variable has been conducted in Palestine; however, to the best of our knowledge, no studies have looked at how IC systems can deter fraud.

Finding a solution that can effectively plug the gap is necessary to address the deficiencies of conventional audit and investigative methods as well as the limitations of anti-fraud legislation. It is essential to highlight the significant research gap in examining the moderating role of forensic accounting in the relationship between the effects of internal control and fraud deterrence. This study adds to the accounting literature, especially because it is the first of its kind in Palestine. This study aims to address the following research question: What is the influence of IC, as measured by COSO, on deterring fraud in the Palestinian government sector, and what is the moderating role of forensic accounting services from the perspective of independent internal regulatory bodies, external auditors, and judicial bodies?

1.3 Research Questions

The study aims to answer the following questions:

1.3.1 Research Question One

1. How do internal control COSO components (control environment (EC), control activities (CA), risk assessment (RA), information and communication(I&C), monitoring (MO)) affect fraud deterrence in the Palestinian government sector from the perspective of the respondents?

1. How does the **control environment** affect fraud deterrence in the Palestinian government sector from respondents' perspective?
2. How do **control activities** affect fraud deterrence in the Palestinian government sector from respondents' perspective?

3. How does **risk assessment** affect fraud deterrence in the Palestinian government sector from respondents' perspective?
4. How does **information and communication** affect fraud deterrence in the Palestinian government sector from respondents' perspective?
5. How does **monitoring** affect fraud deterrence in the Palestinian government sector from respondents' perspective?

1.3.2 Research Question Two

2. Do forensic accounting services moderate the impact of internal control components on fraud deterrence in the Palestinian government sector?

1. Does forensic accounting services moderate the impact of the control environment on fraud deterrence in the Palestinian government sector?
2. Does forensic accounting services moderate the impact of control activities on fraud deterrence in the Palestinian government sector?
3. Does forensic accounting services moderate the impact of risk assessment on fraud deterrence in the Palestinian government sector?
4. Do forensic accounting services moderate the impact of information and communication on deterrence of fraud in the Palestinian government sector?
5. Does forensic accounting services moderate the impact of monitoring fraud deterrence in the Palestinian government sector?

1.4 Research Significance

The study's theoretical and practical significance can be separated into two categories:

1.4.1 Theoretical Significance

The importance of the current research is primarily to contribute to the research on fraud-deterrence theories. The present study was predicated on the observations of researchers in the field of the IC framework of 2003 and its role in FD, which has been ignored in Palestine. It attempts to fill the gap in the previous literature on how IC systems, according to the COSO 2003 framework, affect fraud deterrence and to clarify the role of FA services in FD and its moderating influence on the link between IC systems, according to the COSO 2003 framework, and fraud deterrence in the context of the public and governmental sectors.

1.4.2. Practical Significance

A review of previous studies shows that fraud devoted to both the private and public sectors does not stop at a certain limit, whether in developed or developing countries, and has increased in scope and size. Palestine is not far from committing fraud, particularly in state institutions. It is clear that many bodies use forensic accounting, but in an unorganized manner, including the Palestinian Anti-Corruption Commission, the Economic Crimes Units in the Palestinian Security Services, the Economic Crimes Prosecution, the Financial Follow-up Authority in the Palestinian Monetary Authority, the Financial and Administrative Control Bureau, and the Palestinian Judiciary, which makes this study have great results as follows:

The conclusions of this study will be crucial for policymakers in Palestine and the first authorities, the government itself, to formulate regulatory policies based on deterring fraud as well as using forensic accounting services that help executive authorities and regulatory bodies understand the steps of fraud and deter fraud through the interaction of IC and FA (Alslaibi et al., 2025) .The findings of this research will be very important for professional

bodies working within the domain of accounting to develop the accounting profession in Palestine and establish a special body for fraud examiners. Palestinian universities build future policies that include the specialization of forensic accounting and specialized subjects in internal control for teaching in Palestinian universities. Authorities working in the field of combating corruption and independent regulatory bodies: The study's findings will probably be relevant since the study works to solve its problem, which is the basis of the work of these institutions, as well as the courts.

An essential task of forensic accountants is to conduct an in-depth analysis of financial data. This research offers a reasonable basis for building the basic lines through the Palestinian Ministry of Justice to regulate the profession of fraud examiners and expert accountants to help judges, lawyers, prosecutors, and judicial workers solve the problem of not understanding financial data, which reduces time and effort and achieves greater justice. In addition, researchers and academics are interested in the forensic accounting field and anti-corruption, and all those interested in researching the subject of accounting in general. Thus, this study provides important information for future research.

1.5 Research objectives

In response to previous research problems worldwide of corruption and fraud in the governmental and public sectors, as well as the study of fraud in developing and developed countries, because it has become a problem of the era, a description and exploration of the relationship between IC elements within the framework of COSO 2003, and the extent of their impact on fraud deterrence. This experimental research seeks to examine or identify potential moderating variables within the framework of forensic accounting services that could play the role of the moderating variable in this study, through a review of the scientific literature that discusses the topics of IC, fraud, and FA services. The following is a list of the objectives of this study:

1.5.1 Objective One

1. Investigating the impact of COSO's internal control components (control environment, control activities, risk assessment, information and communication, and monitoring) on fraud deterrence in the Palestinian government sector.

1. Evaluation of the impact of the control environment on fraud deterrence in the Palestinian government sector.
2. Examining the impact of control activities on fraud deterrence in the Palestinian government sector.
3. Assessing the impact of risk assessment on fraud deterrence in the Palestinian government sector.
4. Examining the impact of information and communication on fraud deterrence in the Palestinian government sector.
5. Assessing the impact of monitoring on fraud deterrence in the Palestinian government sector.

1.5.2 Objectives Two

2. Analyzing the moderating role of forensic accounting on the impact of COSO's internal control components on fraud deterrence in the Palestinian government sector.

1. Exploring how forensic accounting moderates the impact of the control environment on fraud deterrence in the Palestinian government sector.
2. Exploring how forensic accounting moderates the impact of control activities on fraud deterrence in the Palestinian government sector.
3. Exploring how forensic accounting moderates the impact of risk assessment on fraud deterrence in the Palestinian government sector.
4. Exploring how forensic accounting moderates the impact of information and communication on fraud deterrence in the Palestinian government sector.
5. Exploring how forensic accounting moderates the impact of monitoring on fraud deterrence in the Palestinian government sector.

1.6 Research Hypotheses

This thesis examines the following hypotheses:

1.6.1 Hypothesis One

H₀₁: There is no statistically significant impact of internal control (COSO) components on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

Sub-hypotheses

H₀₁₋₁: There is no statistically significant impact of the control environment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₁₋₂: There is no statistically significant impact of control activities on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₁₋₃: There is no statistically significant impact of risk assessment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₁₋₄: There is no statistically significant impact of information and communication on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₁₋₅: There is no statistically significant impact of monitoring on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

1.6.2 Hypothesis Two

H₀₂: Forensic accounting does not moderate the impact of internal control (COSO) on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

Sub-hypotheses

H₀₂₋₁: Forensic accounting does not moderate the impact of the control environment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₂₋₂: Forensic accounting does not moderate the impact of control activities on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₂₋₃: Forensic accounting does not moderate the impact of risk assessment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₂₋₄: Forensic accounting does not moderate the impact of information and communication on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

H₀₂₋₅: Forensic accounting does not moderate the impact of monitoring on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

1.7 Research Justification

There are several justifications for conducting this study and examining its variables given the complex circumstances Palestine is experiencing and the international requirements for the Palestinian government to implement numerous financial reforms, combat corruption and fraud, and implement stringent controls to mitigate corruption within public and governmental institutions in Palestine.

Previous research has demonstrated an association between IC and fraud in developed countries. Nevertheless, such studies are rare in developing countries, particularly in Palestine. A few studies have been conducted in Palestine on IC as an independent variable; however, to the best of our knowledge, no study has examined FD through IC systems. Therefore, this study is the first to examine these variables to acquire a more profound comprehension of the capability of IC systems to reduce and deter fraud, according to the COSO 2003 framework.

One of the primary rationales for this investigation was to ascertain the moderating role of FA practices on the association between IC and fraud deterrence. This is new to the researcher's knowledge, as few studies have linked forensic accounting as a moderating variable in the association between study variables. This constitutes a scientific addition.

1.8 Thesis plan

This thesis comprises five chapters. The following is a description of each chapter:

1. Chapter 1 introduces the study's history, motivations, objectives, and contributions. It lists the possible gaps and explains why an ongoing study is necessary.
2. Chapter 2 deals with the literature on the subject of IC, forensic accounting, and fraud, and explores the empirical framework that discusses the relationship between these concepts.
3. Chapter 3 provides an explanation of the research methodology and its application, including research methods, study design, questionnaires, surveys, confidentiality, ethics guidelines, and data collection.
4. Chapter 4 presents the data analyses and results of this study. This chapter offers empirical findings on the degree to which the moderating variable of forensic accounting services influences the connection between fraud prevention and internal control.
5. Section 5 presents the results, limitations, contributions, recommendations, and suggestions for future research.

Chapter 2: Literature Review and Hypotheses Development

2.1 Theoretical framework

This study presents several theories explaining how FA aids in the prevention of fraud through internal control systems. These theories demonstrate how forensic tools increase the effectiveness of controls, and how robust controls can lower fraud. These theories also aid in our comprehension of how public institutions can be made more transparent and accountable. Among the most widely accepted theories on this subject are the following:

2.1.1 White Collar Fraud Theory

Sutherland's 1939 white-collar fraud theory describes crimes perpetrated by people who are respected in their field and have high social standing. It draws a distinction between crime in the upper- and lower-class criminality, which is typically perceived as the domain of the impoverished. Contrary to popular belief, Sutherland maintained that respectable businesses and professional individuals frequently disregarded these offenses. According to this theory, prosecutors are more forgiving white-collar offenses than criminal activity on the streets. In business and professions, betrayals of implied or delegated trust are the main focus of white-collar crimes (Sutherland, 1940).

White-collar crime is defined as illegal behavior committed by those in positions of trust and authority, typically within the framework of a workplace. These are peaceful offenses that involve serious financial fraud, including monetary statement fraud, insider trading, and theft (Huber, 2017). Corrupt practices, budgeting exploitation for financial or political gain, and the misappropriation of public funds are common examples of white-collar crimes. As a result of the confidence that people have in public officials and prominent workers in government departments, these kinds of crimes frequently go unreported for a lengthy period (Ramamoorti, 2008).

Under this theory, because it has the potential to directly deplete taxpayer funds and undermine public institutions' credibility, white-collar fraud in the public sector is especially worrisome (Oyedokun & Emmanuel, 2016). These frauds are frequently more complex because they take advantage of flaws in organizational structures, such as insufficient oversight, subpar internal controls, or opaque accounting practices. Therefore, when white-collar fraud fails to be addressed, organizations, such as other business entities, can experience significant financial losses and a breakdown in public trust (Jimmy, 2018).

Firms fight this by implementing a range of internal control measures, including access restrictions, frequent audits, and job division, which reduce the possibility of fraud. Because public resources are valuable and can be misused, internal controls need to be especially strict (Yallapragada et al., 2012). When properly put into place, these controls lessen the likelihood that workers in powerful government positions will take advantage of their positions of power for their own or their parties' benefit. As noted by (Wyk, 2015) These measures, when properly implemented, reduce the likelihood of committing fraud in the first place, despite ongoing challenges in ensuring their consistent implementation at all governmental levels.

The significance of FA in detecting white-collar fraud is growing, particularly among government agencies. Shodeinde et al. (2024) pointed out that forensic accountant's support monitoring the use of public funds and identifying questionable trends. They can reveal hidden frauds and offer solutions to address systemic weaknesses. Unlike routine audits, this assistance also helps strengthen internal controls to stop fraud in the future (Shonhadji (2020).

People who engage in white-collar fraud frequently use political or personal pressures or the conviction that they will not be held accountable to defend their actions. Vutumu et al. (2024) explain that this concept is at the heart of the white-collar fraud theory, which explains why some people decide to act unethically. Public institutions should strive to create a strong ethical culture and bolster internal controls, as stated by (Billings et al., 2021). Promoting principles such as accountability and transparency can help lessen the mentality that initially permits fraud, as (Oyedokun & Emmanuel, 2016) adds.

Vutumu et al. (2024) emphasized the importance of forensic accounting in situations where internal controls were circumvented or failed. In these situations, forensic

accountants intervene to identify the underlying causes and offer admissible proof. However, internal control is also crucial. Shodeinde et al. (2024) stress that their efficacy is greatly enhanced when backed by forensic accounting, which deepens the investigation and guarantees transparency.

2.1.2 The Fraud Triangle Theory

The fraud triangle has been extensively covered in professional instruction manuals and academic textbooks in the expanding fields of FA and fraud examinations, in addition to being incorporated into auditing standards (Özkul & Pamukçu, 2012). In addition to academic research, studies of each component of the fraud triangle include practitioner-oriented papers and training situations. In a complete review, the fraud triangle is the most commonly taught framework in forensic accounting courses and fraud examinations in the UK, the USA, Hong Kong, Lebanon, and Australia (Huber, 2012; Trompeter et al., 2013). It is also a fundamental component of educational curricula for an increasing number of certifications in FA in the USA and elsewhere.

According to Albrecht et al. (2008) there are three steps in the fraud process: opportunity, pressure, and rationalization. This concept was first presented by Cressey in 1953 to explain trust violations. According to Cressey, a trust violation occurs when any one of the three traits is absent but not when all three are present (Cheliatsidou et al., 2023; Kemunto, 2020).

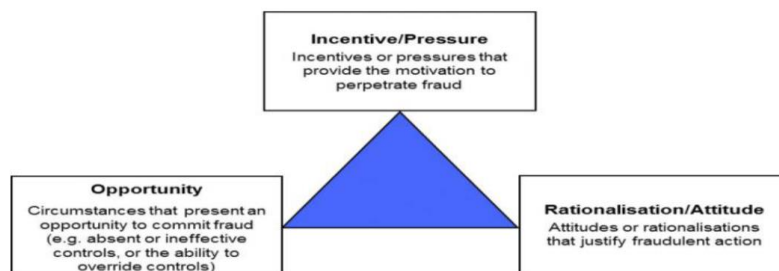


Figure (2.1): Fraud Triangle Theory

Source: (Association of Certified Fraud Examiners, 2013).

The development of frameworks to detect and prevent a sophisticated model of fraudulent conduct has been a primary area of interest in fraud research. The "fraud triangle" is the predominant paradigm about fraud and is ingrained in professional auditing

standards globally (IAASB, 2009; PCAOB, 2005), plus the United States (SAS No. 99), Australia (ASA 240), and international audit standards (ISA 240) (Narsa et al., 2023). The three criteria that make up the fraud triangle are said to exist at any time of fraud:

1. Pressure: One may be under debt for medical expenses, child support, school loans, and vehicle loans. Alternatively, they can have an expensive habit that requires help. Fraud is the last resort of those who are stranded. Perceived pressure may include factors such as earning less than peers. This may result in a desire for a larger house, sports automobile, or trip abroad. A person may turn dishonest when it is difficult for them to meet these requirements honestly (Narsa et al., 2023).

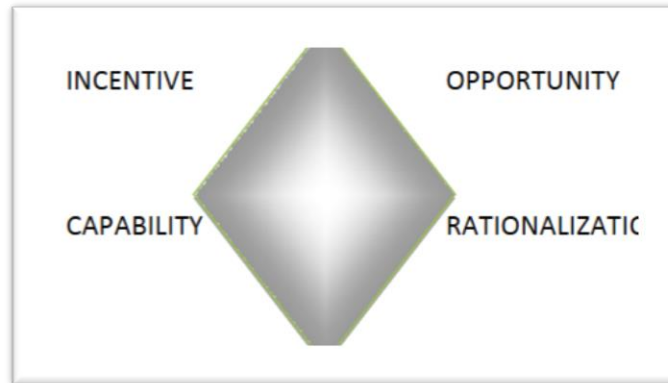
2. Opportunity: When the above forces are present, an individual necessarily sees an opportunity to engage in deceit. For instance, maintenance personnel may find that there are no limitations on the checkout and return of tools, which creates an opportunity for theft. Inadequate internal controls make fraud more likely to occur in an organization (Baucus, 1994; Davis & Pesch, 2013).

3. Rationalization: For fraud to persist for a prolonged period, perpetrators must be able to defend their actions. For instance, a thief from a company's petty cash box could convince themselves that they are only borrowing money and would reimburse it later. In addition, a management team may decide to alter the reported results for a few months in the middle of the year if they anticipate a spike in sales at the end of the year, which would allow them to remove adjustments before then (Free, 2015; Roffia & Poffo, 2025).

2.1.3 Fraud Diamond Theory

David Wolfe and Dana Hermanson created the Fraud Diamond Theory, which adds an extra component to the Fraud Triangle. This theory states that fraud occurs when pressure, opportunity, rationalization, and the capacity of someone to carry out undetected fraud come together (Wolfe & Hermanson, 2004). Public officials and employees with access to government funds, resources, and confidence in the government may be particularly affected by these factors (Mansor & Abdullahi, 2015). Following this theory, employees may be obligated to rationalize dishonest behavior due to particular economic challenges, political pressure, or the need to maintain certain lifestyle (Firmansyah et al.,

2024). Staff members are frequently in charge of money from the public and have many duties that can put strain on them to achieve goals, live up to ideological goals, or even profit personally from government resources.(Abdullahi, 2015; Dias-Oliveira et al., 2024)



Figure(2.2) : Fraud Diamond Theory

Source: (Wolfe & Hermanson, 2004)

Under this theory, employees may be obligated to rationalize dishonest behavior due to particular economic challenges, political pressure, or the need to maintain certain lifestyle standards. Staff members are frequently in charge of money from the public and have many duties that can put strain on them to achieve goals, live up to ideological goals, or even profit personally from government resources (Firmansyah et al., 2024). Inadequate supervision or lax internal controls frequently lead to opportunities. When employees have access to public funds, budgets, or decision-making processes without sufficient checks and balances, governments with limited resources or antiquated surveillance systems may encounter lapses in honesty and responsibility, which can lead to fraudulent activities (Oyedokun, 2022).

A further essential aspect of fraud is justification Where, employees may use the notions of "working for the greater good" or "being underpaid" to defend their actions, arguing that they are not detrimental to the general population or that they have been justified by low pay, financial restraints, or an alleged absence of responsibility (Dorminey et al., 2012) .

Prominent government officials and those in charge of overseeing public funds are frequently capable of committing fraud (Demetriades & Owusu-Agyei, 2022). They can act with minimal oversight, possess significant financial resources, and have the authority to

make decisions that impact public funds. Authorities can use these powers to embezzle public funds, particularly those in charge of agreements, contracts, or budgets (Soneji, 2022).

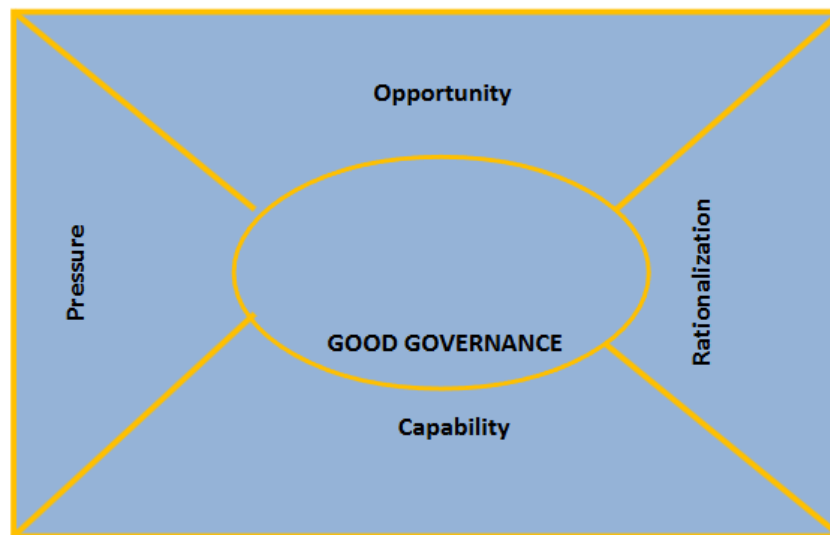
The widely accepted common control of procedures in the government sector is a great argument for discussion. For example, Popoola et al. (2017) mention the separation of duties, regular audits, and oversight committees. Besides making fraud harder, such measures dissuade public officials from abusing their offices. Mvunabandi (2022) Well-defined and tightly controlled internal controls reduce the chances of people circumventing them for their gain.

The FA plays an instrumental role in moderating the relationship between power and fraud deterrence. Under federal agencies, forensic accountants use their expertise to unveil criminal activity by hiding in shadows (Vutumu et al., 2024). They are especially interested in disparities in the levels of government spending, following the flow of tax dollars, and in identifying trends of corruption that come from individuals using their powers to sidestep internal controls (Ruankaew, 2016). Forensic accountants also analyze the efficiency of internal controls in the government and provide recommendations for improvements. Their job is important in detecting fraud stemming from human beings who know how to get around or cheat the loopholes of bureaucratic procedures. They may propose more regular audits, a firmer division of labor, or the introduction of new systems for tighter economic control (Olaniyan et al., 2021).

According to Mansor and Abdullahi (2015), fraud diamond theory argues that governments can strengthen their ability to prevent fraud at its source by focusing on four key components: pressure, opportunity, rationalization, and capability. Forensic accounting helps detect and investigate fraud once it has occurred, and internal controls are vital in reducing both opportunity and competency (Mvunabandi, 2022). According to Ruankaew (2016) understanding these elements as a whole provides a better picture of the elements that lead to fraud; therefore, public agencies need to invest in their control systems and forensic tools to monitor employee behavior and protect their assets.

2.1.4 Fraud Box Key Model Theory

The fraud-box key model released by Onodi et al. (2017) expands upon the fraud triangle and diamond theories by incorporating governance as the fifth perspective. According to Aigienohuwa et al. (2017) the fraud-box key model is frequently preoccupied with the causes and means of fraud, without providing trustworthy answers. They contend that strong and efficient corporate governance is essential to preventing fraud, independent of the pressure, opportunity, justification, or ability of the intended fraudster.



Figure(2. 3) : Fraud Box Key Model Theory

Source :(Onodi et al., 2017)

The Fraud Box Key Model Theory claims that fraud is a multifactorial issue arising from interactions among persons, groups, and external factors. It argues that fraud is a multi-tiered issue in which triggers such as organizational structure, political pressures, and levels of transparency work in concert (Mansor & Abdullahi, 2015). The model also suggests that various public institutions face varying degrees of fraud risk influenced by elements such as governing arrangements, cultural taboos, and outside pressures. Factors such as management style, employee behavior, and political or economic situations can greatly affect the probability of fraud occurrence (Onodi et al., 2017).

The theory behind the need for powerful internal controls for the effective management of fraud and its unique complexities (Aigienohuwa et al., 2017). Government

institutions often experience public scrutiny, underfunding, and political interference. By implementing effective internal controls, these organizations can develop safeguards against internal and external threats, ultimately decreasing the risk of fraud. Strong internal controls also mitigate the threats posed by external elements that may facilitate fraud, such as turbulent political situations or financial distress due to declining economic performance (Mvunabandi, 2022).

According to this theory, the interrelated factors of fraud can only be dealt with using forensic accounting. Forensic accountants in government organizations utilize writing, art, and even trust behavior analysis to explore not only direct data but also hidden fraud risks in financial records, contracting procedures, and government contracts. Imoniana and Silva (2013) their expertise allows them to discover weaknesses in the political and economic systems, which might leave public funds vulnerable to fraud. In addition, forensic accountants provide recommendations on how to strengthen internal control systems to help agencies respond to evolving fraud risk (Okoye, 2019). The manifestation of fraud is systemic and reflects the shortcomings of the system and the management of institutions, rather than just being an isolated event. Inefficient management procedures, a lack of transparency, and inadequate oversight create an environment conducive to fraudulent misconduct within public agencies. Now, forensic accounting comes into play, as it helps to reduce these risks. To prevent the misuse of public funds, it reviews financial records, identifies potentially harmful patterns, and recommends targeted internal control actions (Vousinas, 2019).

Akinbowale et al. (2023) point out that forensic accountants are particularly critical in identifying the areas that are most vulnerable to fraud, especially in contract handling, procurement, and financial operations. These professionals not only help identify the risks encountered but also offer valuable recommendations for improving internal control systems. Similarly, Chepngeno and Fred (2020) affirm that forensic specialists can investigate potential fraud and confirm corrective actions, leading to better resource use and higher accountability to government agencies.

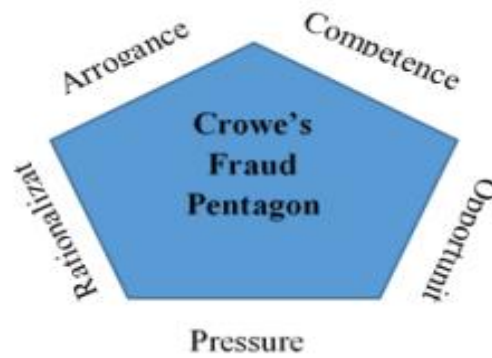
As per Onodi et al. (2023), the Fraud Box Key Model illustrates the interaction mechanism of the internal and external driving forces for fraud. Instead, the model takes a more holistic view, highlighting the importance of the ongoing interactions between

internal control systems and forensic accounting processes. This perennial form of reining in local public management helps public agencies adapt to the changing fraud risks. This means that companies must adapt their fraud prevention methods every time there are new threats, whether they are the result of shifting economic climates, power structures, or technological advances (Ismail et al., 2023).

2.1.5 Fraud Pentagon Theory

Crowe (2011) is the author of this theory is Crowe (2011). The fraud pentagon includes manipulation by the CEO or CFO, and has a larger fraud plan. This is because internal corporate executives frequently manipulate their financial statements. Financial statement information is readily available to authorities (Aprilia, 2017). According to the Fraud Pentagon Theory, a person's sense is the best predictor of whether they will commit fraud or not, who must be trusted to act in good faith. Fraud is more likely to go unreported when people do not think they are responsible for their actions or that they believe they can hide. Where obligation is an act to uphold the moral and ethical responsibility of the officials and staff to act honestly, especially in managing money and assets (Setiorini & Hartoko, 2021).

Failure in the sense of accountability in government institutions can lead to both fraud and corruption. Holding Public employees always responsible for their conduct may lead them to believe that there will be no consequences and rationalize dishonest behavior (Sahla & Ardianto, 2023). This requires public sector organizations to follow and implement strong internal controls to promote a culture of accountability. Implementing indicators such as transparent laws, transparent structures, and frequent audits would make employees aware of the importance of acting morally and the serious implications of defrauding. The elements of pentagon fraud include arrogance, pressure, opportunity, rationalization, and capability (Soneji, 2022).



Figure(2.4): Fraud Pentagon Theory

Source:(Crowe, 2011)

Internal control practices are important in establishing a culture of compliance. Companies often face specific challenges such as financial constraints, political resistance, and limited funding, which may compromise transparency (Sahla & Ardianto, 2023). Mohd-Sanusi et al. (2015) suggest that certain regulatory actions can significantly reduce fraud risk. When agencies impose transparency in their financial reporting, conduct regular assessments, and provide training on legal processes, these measures do not just deter unethical behavior; rather, they help strengthen employees' sense of accountability and ethics.

Antawiryia et al. (2019) assert that FA acts as a catalyst for change by detecting fraud and ensuring that perpetrators are punished. Forensic accountants are crucial for tracing suspicious transactions and uncovering malfeasance through extensive investigations. For example, this process produces an accountability and ethical/moral environment by showing within institutions that misconduct will be felt and punished (Situngkir & Triyanto, 2020). According to the Fraud Pentagon Theory, the greater the absence of personal responsibility in a given environment, the more likely it is that fraud can occur. As clarified by Biduri and Tjahjadi (2024) establishing a culture of accountability is critical to reducing these risks. According to Mvunabandi (2022), for humans to experience a strong sense of ethical duty to refrain from expressing fraudulent behavior, according to (Mvunabandi, 2022) this sense of accountability should exist at each level of the government, from civil servants to high officials.

Christian et al. (2019) argue that promoting a culture of accountability is key to reducing opportunities for fraud through strong internal controls, such as frequent audits,

financial transparency, and open reporting channels. Besides describing what is expected of staff members, these systems also help them understand the grave consequences of unethical conduct. According to (Sinebe, 2021) forensic accountants help in investigating malpractices and more serious system errors. Their insights often assist organizations in improving their organizational designs to deter future fraud.

Fraud Pentagon Theory: The more an environment is deprived of personal responsibility and accountability, the more susceptible it is to fraud. To address this issue, Tri Nanda et al. (2019) emphasize that forensic accounting will prove effective only with active participation, and that internal controls should be strong. As stated by Oktaroza et al. (2022) it is important to create a culture in which accountability is integrated into day-to-day operations. Fraud detection content through prescriptive oversight tools helps build that culture, so that the organization minimizes its exposure to fraud while engendering public trust.

2.1.6 Fraud Scale

Albrecht et al. (1984) presented the fraud scale in "Deterring Fraud: The Internal Auditor's Perspective' (Institute of Internal Auditors Research Foundation) as a method to determine the probability of fraudulent behavior by analyzing the comparative influences of pressure, opportunity, and personal integrity. Albrecht et al. contend that predicting fraud is challenging because of the absence of a consistent profile for those who commit professional fraud. Albrecht et al. contend that predicting fraud is challenging because of the absence of a consistent profile for those who commit professional fraud. They suggested that the likelihood of fraudulent conduct could be assessed by evaluating the relevant aspects of pressure, opportunity, and personal integrity. The fraud triangle encompasses factors such as pressure and opportunity, whereas fraud scale substitutes for personal integrity with rationalization. The fraud scale is particularly suitable for detecting financial statement fraud, especially when there are clear indicators of pressure, such as analysts' projections, management's profit expectations, and a history of sales and profit growth. Considering this, the fraud scale suggests that by considering pressure, opportunity,

and integrity simultaneously, one may evaluate whether a situation has a greater likelihood of fraud (Albrecht et al., 1984).

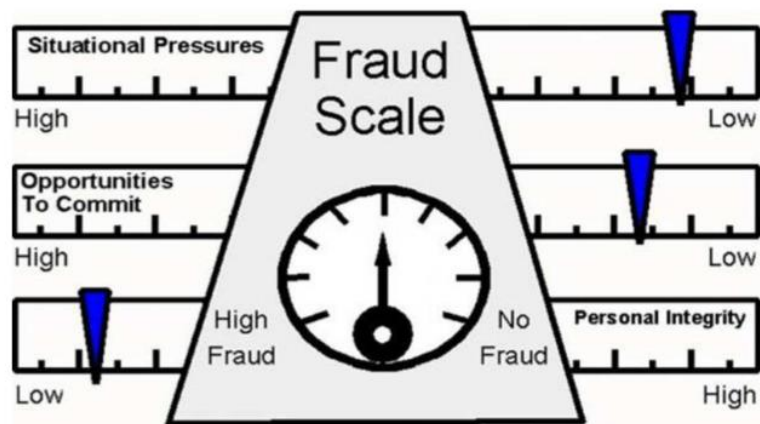


Figure (2. 5): Fraud Scale

Source : (Albrecht et al., 1984)

According to Fraud Scale Theory, the IC mechanisms should be designed in proportion to the size of the potential fraud (Oyedokun, 2022). For smaller fraud, basic controls, such as duty segregation, transaction verification, and regular audits, but for larger fraud involving significant amounts or systemic corruption, more advanced systems are necessary, including complex financial monitoring, whistleblower protection, and robust oversight committees (Ozili, 2020).

(Vutumu et al., 2024) highlight how forensic accounting helps solve fraud, large, medium, and small. He said that forensic accountants need to examine financial records and contracting processes for illegal actions. As noted by Puspasari (2015) forensic accountants can assist organizations in allocating resources fairly, depending on the amount of fraud, since small frauds typically only require straightforward corrective action, while larger frauds require extensive investigation and litigation to resolve issues such as money laundering. According to Oyedokun (2022) the scale of fraud determines which internal control measures are required because different responses are required for different types of fraud.

Forensic accountants are crucial in fighting fraud because there is so much that they can assess the damage and how fraudulent activities started and spread. Because they know about fraud, they can catch it early and take appropriate action based on the severity of

fraud. For more egregious fraud cases, they may call for comprehensive reforms, while for smaller fraud cases, they may simply recommend improved internal controls. This can minimize losses and prevent future fraud (Ozili, 2020).

2.1.7 The New Fraud Triangle Model

External auditors should thoroughly examine all the fraud models to enhance their understanding of fraud. To develop the "New Fraud Triangle Model," an enhanced version of Cressey's fraud triangle model, the authors propose integrating the Fraud Triangle, Fraud Diamond, Fraud Scale, and MICE Model. These models include factors such as motive, opportunity, integrity, and fraudster skills of the fraudster (Kassem & Higson, 2012).

An updated version of the Fraud Triangle Model incorporates ethics and culture. (Sujeewa et al., 2018) argue that encouraging ethical behavior involves incentives to commit fraud, particularly within organizations in the public sector. According to Mui and Mailley (2015) organizations whose ethical foundations promote high standards are less likely to experience fraud, as high ethical standards provide little opportunity for justifications for fraudulent behavior.

According to the New Fraud Triangle model, internal controls must focus on making fraud preventable and stimulating a moral environment where cheating is not desirable. According to Afriyie et al. (2023) companies can reduce the potential for people to justify fraud by fostering transparency, fairness, and integrity. This will maintain public confidence and ensure that staff members understand the consequences of unethical behavior.

Forensic accounting is important for closing the gap between fraud prevention and ethics (Abdullahi and Mansor (2018). In addition to searching for financial irregularities, forensic accountants identify corrupt behavior. They help highlight ethical breaches that may have enabled fraudulent activity in contexts where loyalty to public servants is critical (Kagias et al., 2022).

According to the New Fraud Triangle theory, the key is to introduce ethics and values into a proactive fraud prevention strategy. Rather than relying solely on internal controls, it stresses the importance of fostering a strong ethical corporate culture to reduce the

propensity to rationalize fraudulent acts (Eko (2022)). Besides harming the organization, unethical behavior can be detrimental to public confidence. Forensic accountants are helpful in investigating such breaches and recommending remedial actions to restore integrity and prevent future fraud (Kagias et al., 2022).

In a practical sense, ethical considerations should be part of a company's fraud prevention strategies (Adebisi, 2013). Ensuring adherence to moral high grounds and fostering a sense of accountability among staff reduces the likelihood of fraud. These values are further enshrined through internal controls including staff training, open financial disclosures, and regular auditing. Forensic accounting practices contribute to this by identifying structural defects and resolving ethical violations (Oyedokun, 2022).

To mitigate fraud, an organization must strengthen its ethical foundation as per the New Fraud Triangle Model, as well as opportunities and rationalization (Ewa, 2022). Embedding ethics into the fraud-prevention approach is paramount because accountability and transparency are indispensable in the environment. By focusing on creating an ethical culture, businesses can mitigate the risk of fraud and ensure that resources are utilized for intended purposes (Homer, 2020).

A combination of FA techniques and effective internal controls serves as a strong deterrent against fraud. By infusing organizational structure with ethics and values, institutions might foster a culture of integrity that stimulates truthfulness and responsibility (Ewa, 2022). Consequently, the New Fraud Triangle Model offers an overall method to deter fraud, safeguard public resources, and ensure the integrity of their trust (Harte & McHone, 2019).

2.1.8 Fraud Deterrence Theory

In fraud Deterrence theory, the environment in which the perceived risk of committing fraud leads [to] severe consequences that will ensure that no benefits can [be] outweigh [is] considered the right deterrent mechanism to commit fraud (Cole, 1989). The relevance of this theory is pronounced in contexts where accountability and transparency are necessary. If the probability of detection is high and punishment is harsh, government institutions discourage individuals from committing fraudulent acts (Alanezi & Brooks, 2014). If the probability of detection is high and punishment is harsh, government institutions discourage individuals from committing fraudulent acts (Alanezi & Brooks, 2014). (Dorminey et al., 2012) emphasize that the most effective fraud deterrent is the presence of a high probability of detection and serious consequences for fraudulent offenders. These failures would have serious consequences in addition to legal measures, such as prosecution, fines, or being dismissed from their government roles, as well as conflicts of interest or trust (Matsumura & Tucker, 1992).

Regular audits, segregation of work, and a transparent and accountable culture are all components of a properly implemented internal control framework that can increase the chances of detecting wrongdoing before it becomes an issue (DiMedio, 1994). Therefore, it is important due to the need to protect resources from fraud/ineffective leadership (Malimage, 2019). If strong internal controls exist, employees are more likely to fear being caught committing fraud and fear its consequences. When individuals believe that their actions are being monitored, they have a high probability of being caught (Zhang et al., 2024).

According to this theory, in organizations that employ forensic accountants skilled in detection methods designed to locate and uncover fraud, fraud is more likely to be detected (Fathimath et al., 2023). Strengthening public sector employees' perception of the risk of detection: the ability to track down financial irregularities, expose fraudulent transactions, and offer legal knowledge directly supporting deterrence.

According to the fraud Deterrence theory, reducing the opportunity for fraud is a simple antidote to prevent fraud (Koerniawan et al., 2024). In contrast to fraud triangle theory, proactive internal controls are critical for minimizing fraud opportunities and

deterring fraudulent actions. By addressing systemic weaknesses and closing easy-to-exploit avenues for fraud, governments can greatly mitigate the risk of opportunistic pressure cases. Such actions are essential to uphold public confidence and ensure that public resources are utilized for their intended purposes (Puspasari, 2015).

Detection of fraud is not just about forensic accounting or internal controls, but what fraud Deterrence theory states is that prevention of fraud is the biggest measure. It must also nurture a healthy corporate culture that eschews fraud. Creating an environment of honesty and integrity is particularly important in organizations where employees are responsible for handling funds (Zhang et al., 2024). Organizations with a commitment to ethical conduct, fraud prevention training, and clear standards of integrity will build more successful and effective fraud-deterrence programs. In addition, having a clear picture of what is considered appropriate and unethical beliefs can make it harder for employees to rationalize fraudulent actions, as their professional and moral sense would tell them that they have to act ethically and in the public's best (Alanezi & Brooks, 2014).

Forensic accountants also assist in preventing fraud, including providing training on fraud detection and prevention, performing fraud risk assessments, and recommending internal control improvements (Zhang et al., 2024). Their expertise ensures that the systems are designed to prevent fraud and detect it. Forensic accountants help government organizations identify weak points and ensure that money is spent appropriately, and that dubious activity is promptly identified and rectified, suggesting methods to enhance internal controls (Alanezi & Brooks, 2014).

Fraud Deterrence theory is a practice in which the best solution to prevent fraud is a strong ethical culture, sound internal controls, and proactive engagement of forensic accountants. Locus of experience: Due to the sensitive nature of society's concerns about resource allocation and confidence among individuals in the public sector, organizations can promote an environment that would decrease the likelihood of fraud. Institutions ensure that the potential benefits of fraud is outweighed by the costs of raising the anticipated costs and damages of engaging in fraud, which diminishes the likelihood of potential offenders committing fraud (Puspasari, 2015).

2.1.9 Forensic Accounting Theory

The theory of FA analyses the influence of accounting and non-accounting decisions made at various stages of the investigation process on the choice of forensic detection techniques and the interpretation of the findings from the forensic investigation. According to FA theory, technologically advanced techniques employed to identify fraud reflect the accounting and non-accounting choices made by forensic investigators. The core principle of forensic accounting theory posits that the efficacy of forensic detection methods is contingent upon both accounting and non-accounting variables that the forensic investigator considers at the beginning, middle, and end of the fraud detection process rather than just the forensic investigator's experience, abilities, or knowledge. Accordingly, the "forensic accounting theory states that the accounting and non-accounting decisions taken into consideration by the forensic accountant or investigator determine the choice of methods or techniques used to detect creative accounting or manipulations in financial and non-financial reporting, as well as the outcome of using such methods or techniques."(Ozili, 2020).

Some working assumptions:

The objective of the forensic investigative exercise is to discover and reveal unresolved problems and suggest remedial measures that deter future instances of the same behavior. The implementation of fines, incarceration, and other remedial measures is an example of such measures. The results and conclusions of a forensic investigation will not cause the condemned person to pass away or the guilty firm to fail. If forensic investigators do not make this premise, they can try to bring the company or the subject of their investigation to a ruin.

This assumption is essential, as it removes the subjective bias of the forensic investigator, thereby preventing personal prejudices from influencing forensic inquiry (Ozili, 2025). Armed with advanced techniques such as data analysis, auditing, and scrutiny of financial statements, forensic accountants catch all sorts of fraud that might otherwise go undetected. Forensic accountants are specifically trained to detect anomalies in financial records to provide evidence of misappropriation of public projects and grants (Huber, 2017). Forensic accounting refers to the application of accounting concepts and

investigative methods to detect financial fraud or discrepancies. Forensic accountants promote effective governance, particularly in the management of public resources(Akhidime, 2020).

Forensic accountants play an important role in protecting against such manipulation by ensuring that these systems are adequately designed to prevent fraud, whereby they evaluate existing internal controls, discover potential weaknesses, and recommend enhancements to strengthen fraud detection and prevention mechanisms. IC systems are critical for preventing fraud in business organizations because of the high levels of complexity and volume of transactions that they usually involve (Alshurafat et al., 2021).

Popoola et al. (2017) recommend that forensic accountants are key to crime detection in government agencies because they provide professional evidence as expert witnesses. When fraud is suspected or confirmed, forensic accountants examine financial records, conduct audits, and produce detailed reports that can be used as evidence for fraudsters in court. Maintaining the integrity of the accounting department in public-sector audits is an important component in preventing fraudulent actions that are closely tied to ensuring public trust (Renzhou, 2011). The findings of the fraud case analysis identify overlapping internal control deficiencies that render fraudulent activities possible, and make recommendations for correction. These recommendations may include conducting more in-depth audits, improving job segregation, or installing more advanced financial monitoring systems. Furthermore, their investigation, to an extent, aids enterprises in grasping the roots and processes of fraud, thus reducing the opportunity for false practices (Alsadah & Al-Sartawi, 2023).

Focusing on how to conduct forensic accounting and IC systems in place helps in the early detection and treatment of fraud. Instead, we refer to this partnership as a big win for fund protection and overall institutional integrity, all with preemptive fraud detection. Forensic accountants not only improve internal controls, but also make them more effective at preventing fraud (Vutumu et al., 2024).

2.1.10 Vutumu Forensic Accounting Theory (VFAT)

Vutumu et al. (2025) proposed a novel multivariate theory known as the Vutumu Forensic Accounting Theory was put out by(Vutumu et al., 2025), made to go above current models of fraud prevention by adding certain elements that are essential to efficient forensic accounting.

These variables include litigation support, such as offering professional financial analysis and testifying in court to help settle disputes resulting from fraudulent activity. Control system reliance assesses the extent to which a government relies on internal controls to lower the risk of fraud, and the effectiveness of these measures.

sustainable governance systems place a high value on moral behavior and openness, encouraging honesty and accountability in forensics, whistleblower hotlines Provide a private channel for reporting fraud suspicions and aiding in the early stages of discovery and inquiry, digital fraud review frequencies continually evaluate digital transactions in the changing financial environment to guarantee flexibility, ethical philosophies set high ethical standards as a guide for professional behavior to increase the legitimacy of initiatives to combat fraud, the frequency of system review, and accounting record-to reporting quality keeping thorough and trustworthy financial records to effectively avoid fraud. The constant evaluation of information systems, accounting procedures, and internal control systems shows a government's dedication to finding flaws and improving fraud-deterrence measures.(Vutumu et al., 2024)

2.2 Fraud

Different forms of fraud have been highlighted as a major factor in the formation of serious financial crises (Alob, 2025). Continuing financial crimes in both the commercial and governmental sectors serves as a reminder that fraud and its harmful repercussions hurt economic organizations worldwide (Kagias et al., 2022). Past instances of fraud include Parmalat, WorldCom, Enron, Tyco, Barings, Volkswagen, and Lehman Brothers (Cole et al., 2021). These incidents have resulted in significant financial losses and a negative image of the accounting profession (Leriza & Faradillah, 2022).

2.2.1 Fraud Deterrence

Fraud deterrence is a key detail of risk management, organizational security, and economic integrity. The techniques and strategies used to prevent and discourage fraudulent interests have been modified in conjunction with fraudulent practices. Fraud, in all its manifestations, including identity theft, economic fraud, and cyber fraud, is an extreme risk to governments, corporations, and everywhere. Fraud deterrence techniques are critical because fraud fees the financial system trillions of dollars annually, in line with the Association of Certified Fraud Examiners (Kesuma & Fachruzzaman, 2024). Fraud deterrence is a broad concept that encompasses a variety of tactics such as criminological theories, organizational culture, internal controls, legal frameworks, and the use of emerging technologies that increase the perceived risks of being caught and punished (Handoyo & Bayunitri, 2021).

Deterrence theory, which was developed from the work of early criminologists such as Cesare Beccaria and Jeremy Bentham, has an important effect on the foundations of fraud deterrence. According to this theory, the perceived possibility of being caught and the harshness of the penalty have a big influence on a person's propensity to commit a crime, such as fraud. When punishment is viewed as both certain and severe, the deterrent effect is the greatest. The perception of being caught is a greater deterrent than the severity of punishment; these findings of modern criminology support this view, arguing that people are more deterred by the possibility of punishment than by potential punishment itself (Forrester & Ruiz, 2024).

Agyemang (2020) supplements deterrence theory with more aspects such as moral disengagement and perceived opportunity. Individuals who believe they have little chance of being discovered exhibit a higher propensity to commit fraud than the researcher. Hamdani and Albar (2016) defined moral disengagement as the cognitive process in which individuals justify their unethical actions as a significant factor in fraud. To further develop these findings, Shanmugam et al. (2012) highlighted the development of increasingly sophisticated deterrence strategies that focus on preventing opportunities for wrongdoing from occurring and reducing cognitive rationalizations for cheating, rather than simply on punishment.

Ideal organizations have IC as the first line of protection from fraud. These rules and provisions are designed to protect an organization's resources, ensure the integrity of its fiscal records, and prevent fraud. emphasized the importance of incorporating internal controls into the larger framework for risk management and regularly assessing their efficacy. Some of these controls include regular audits, reconciliation of financial records, appropriate segregation of duties, and limited access to sensitive information. The risk of fraudulent actions from employees or outsiders remaining undetected is reduced by this set of procedures (Nugraha & Bayunitri, 2020). The separation of duties limits the dominant power of a person in financial transactions so that fraud is not easily committed. As such, Abiola and Oyewole (2013) argue that no employee should have either the ability to authorize payments or the responsibility to balance accounts, for it is this oversight that prevents the concealment of fraudulent activity and, in turn, helps increase internal controls. Routine internal and external audits, which examine an organization's financial statements and operational procedures, are critical for fraud prevention (Donelson et al., 2017).

FA is the most specific and proficient form of auditing and is uniquely capable of detecting complex fraudulent schemes, such as bribery, corruption, embezzlement, and financial statement manipulation (Hadian et al., 2021). Recent developments in forensic accounting have enabled auditors to easily identify fraud through data mining techniques, pattern recognition, and behavioral analysis (Yuniarti & Ariandi, 2017). Artificial intelligence and data analytics are two examples of technological tools that have grown in significance in the detection of fraud. Large datasets can be analyzed by AI-driven systems, which can then identify anomalies that can point to (Lynomen & Nkechi, 2016).

Organizational culture plays a pivotal role in mitigating fraud. Research has continuously demonstrated that organizations with strong ethical cultures have lower rates of fraud. It has been demonstrated that ethical leadership, in particular, significantly lowers the probability of fraud (Tazilah & Hussain, 2015). The tone for the entire company is set by leaders who set an example of moral conduct and foster an atmosphere in which honesty is respected. Wan Fauzi et al. (2019) note that when upper management continuously demonstrates ethical behavior, employees are more likely to adopt similar values and behaviors. Adeleke and Segun (2019) stress that companies need to continuously

communicate their anti-fraud policies and procedures to foster a culture that is aware of fraud. They also stress how crucial it is to have proactive training programs that teach employees how to spot fraudulent activity and convey to them the grave consequences of fraud. Likewise, Mohd-Sanusi et al. (2015) note that if companies encourage employees to come forward with suspicious activity and protect whistleblowers from retaliation, they greatly reduce the likelihood of undetected fraud.

Efficient whistleblower systems greatly enhance an organization's capacity to identify fraud in its early stages. "Whistleblower protection is important to ensure that workers are confident in reporting fraudulent activity without fear of retaliation," the researcher emphasizes. These systems are also effective as they provide employees with a method to report suspicious activity anonymously, enabling organizations to detect fraudulent behavior before it can have a deleterious impact (Abei, 2021).

For effective fraud deterrence, Regina Dori et al. (2021) emphasize the need for a strong criminal and regulatory system that sets the standards and the punitive measures for fraudulent conduct. To serve as a supervisor and offer guidance in fraud prevention, regulatory entities such as the Securities and Exchange Commission, the Financial Action Task Force, and other national anti-money laundering authorities are all paramount. As Koerniawan et al. (2022) state, these institutions are responsible for reducing fraud by maintaining financial reporting laws, promoting anti bribery practices, and ensuring transparency.

The Sarbanes-Oxley Act of 2002 mandates that business executives in the United States certify the accuracy of financial accounts, thus substantially enhancing corporate governance, especially publicly traded. (Gonzalez & Hoffman, 2018) the law's persistence as a deterrent to fraud is attributed to its provision to force executives to take personal responsibility for financial malfeasance. Legislation addressing international anti-corruption, exemplified by the Bribery Act in the United Kingdom and the Foreign Corrupt Practices Act in the United States, has established global benchmarks for corporate anti-fraud frameworks and fostered integrity and transparency in commercial dealings. (Sophus & Mitchell, 2025). Although regulatory agencies are important enforcers of compliance by investigating and punishing violations of anti-fraud laws, researchers say that the prosecution of fraudsters by the criminal justice system serves as a stronger deterrent. This

perspective is further validated by observing that strong legal frameworks provide strong deterrents because individuals are naturally reluctant to commit fraud when they anticipate severe consequences (Schneider, 2019).

The hiring and selection processes are critical tools for minimizing fraud risk in enterprises. The need for comprehensive background checks In the recruitment process, the background checks of candidates are vital, particularly when it comes to sensitive positions like financial auditing and asset management. They argue that organizations already have to take huge steps to ensure that the people they hire do not have a history of fraudulent activities, which significantly helps reduce the risk posed by potential fraudsters (Naz & Khan, 2025).

According to research by (Ojo-Agbotu & Ndubusi, 2022) frequent delivery of fraud awareness training to all staff is among the most significant elements of anti-fraud deterrence. The business provides particular direction courses for representatives, preparing them to search for potential signs of extortion. In addition, (Honigsberg, 2020a) highlights that if organizations constantly analyze financial transaction data internally, they will be able to receive alerts in real time about potentially suspicious activities. Close integration of monitoring with training improves internal controls and allows for early detection of fraud trends before significant damage can be achieved.

(Wijerathna & Perera, 2020) note the relevance of legal frameworks and principles that can help strengthen attempts to deter fraud. The General Data Protection Regulation (GDPR) of the European Union strengthens the protection of personal data and significantly mitigates the risk of fraud in the digital environment. According to (Al Shbeil et al., 2023) the harsh penalties imposed by the judicial system on fraudsters, along with efficient legal investigation, also raise the awareness of company members of the serious consequences of fraudulent behavior. However, obeying national and international laws not only builds an organization's trustworthiness in protecting the interests of its customers and enhancing its fight against fraud, but also encourages compliance with those laws more broadly.

2.3 Internal Control

Internal control originated when governments began taxing people and enterprises in civilized societies around 5000 B.C. Complex systems of checks and counterchecks were developed to guarantee accurate accounting and collection. The initial goal of these internal control systems was to reduce mistakes and safeguard state property from dishonest tax collectors. This idea can also be traced back to the prehistoric periods of Egyptian and Babylonian history (Wangombe, 2017).

Government and commercial-sector enterprises have long used internal control systems. Checks and balances are already in place as part of the regular operations of the government's ministries and departments. Accountability is paramount in both areas (Tan, 2013).

Three control activities were considered: detection, correction, and prevention. Preventive control is basically to prevent mistakes and fraud from occurring, and it comprises the following control elements: authorization and approval processes, separation of roles, authority over resources, and record access. (Alexander, 2020). An internal control system is a mechanism within public organizations. This internal control system ensures proper control mechanisms and protects public resources (Joseph et al., 2015). Internal control systems are essential for protecting companies from fraud, ensuring compliance with rules, and improving overall performance. In developing economies with generally weaker governance the role of such systems is even more critical (Rashid, 2022a).

Internal control refers to a complete system of policies, procedures, and practices implemented by public sector institutions put in place to protect their assets, ensure monetary integrity, improve operational performance, and follow felony regulations (Joseph et al., 2015). It performs a vital function in deterring and detecting fraud, coping with risks, ensuring accountability, and enhancing average organizational performance. Internal control machines enable public sector institutions to meet their goals and decrease the threat of fraud and monetary misstatements (Handoyo & Bayunitri, 2021). The growing complexity of present-day public sector institutions has highlighted the need for sturdy internal manipulation structures that combine operational performance with fraud deterrence (Rashid, 2022a).

Internal control structures depend on numerous key factors that contribute to their effectiveness. According to the COSO framework, these additives consist of CA, CE, RA, I & C, and MO. Control activities refer to organizational lifestyle, moral values, and governance that help powerful managers. A robust management style is crucial for fostering compliance and accountability (Agyemang, 2020).

Control activities are the guidelines and approaches that public sector institutions install to make certain that the directives of control are carried out, which can encompass segregation of duties, authorization approaches, bodily controls, and overall performance reviews (Hamdani & Albar, 2016). Control activities are the guidelines and approaches that public sector institutions install in locations to ensure that the directives of control are carried out; these can encompass segregation of duties, authorization approaches, physical controls, and overall performance reviews (Agyemang, 2020).

The key goal of IC is fraud deterrence. IC lessens the possibility of fraud by ensuring that no person has unchecked, free entry into property, or economic records (Nugraha & Bayunitri, 2020). Fraud is much more likely to arise when people can skip control without detection. Therefore, through instituting robust internal controls consisting of everyday audits, reconciliations, and surveillance, businesses can mitigate the likelihood of fraudulent activities (Rahman et al., 2019).

Regular and complete internal controls, fraud hazard assessments, and economic tracking are the key to identifying unusual styles or discrepancies in economic reporting. Internal controls were designed to ensure transparency and compliance with regulatory standards. This transparency discourages capacity fraudsters because the probability of detection is excessive in businesses with robust controls (Abiola & Oyewole, 2013).

Internal control systems tackle an exceptionally greater and more massive function, because of the need for transparency, accountability, and trust. Public establishments, along with authorities, corporations, and public enterprises, face heightened scrutiny from citizens, regulatory bodies, and global organizations (Donelson et al., 2017). As such, the integrity of monetary reporting and operational techniques is important for retaining public trust. Internal management structures in public establishments no longer have the sole goal of saving you from monetary fraud, but also of promoting moral conduct and ensuring that resources are used for their intended purposes (Hadian et al., 2021).

In nations where political instability and weak governance systems are prevalent, internal controls become even more vital in mitigating the chance of fraud and corruption. Public establishments in such contexts should undertake sturdy internal control frameworks to prevent the misappropriation of public finances and ensure that authorities' offerings are efficiently added (Yuniarti & Ariandi, 2017). In addition, effective internal controls within the public region function as a device to demonstrate compliance with felony and regulatory requirements and uphold the guideline of thumb of law (Lynomen & Nkechi, 2016).

While IC plays a pivotal role in stopping and detecting fraud, there are instances in which fraud occurs regardless of the presence of controls, which is where forensic accounting turns into a useful supplement to internal control systems (Rendon & Rendon, 2015). Forensic accounting includes the use of specialized techniques, such as monetary analysis, fraud investigation, and data mining, to uncover and look into times of fraud (Tazilah & Hussain, 2015). Forensic accountants offer an extra layer of scrutiny with the aid of investigating monetary irregularities that may not be immediately obvious through recurring audits or tracking procedures (Wan Fauzi et al., 2019).

Forensic accountants assist in identifying weaknesses in internal controls and identifying fraudulent activities that can have, in any other case, been undetected. For instance, in complicated fraud cases, forensic accountants can examine monetary transactions, conduct behavioral interviews, and review financial records to identify discrepancies (Assagaf, 2024). As such, forensic accounting strengthens internal controls with the aid of using presenting an extra exact and investigative method to fraud detection and prevention (Ariyo-Edu & Woli-Jimoh, 2024).

Recent technological advances have significantly improved the effectiveness of IC. Artificial intelligence and machine learning are increasingly being integrated into IC systems to detect fraud in real time (Putra & Yogiswara, 2021). AI systems offer speed and accuracy that are not possible with conventional manual review procedures, and they can swiftly process vast volumes of financial data and identify irregularities and trends that might indicate fraudulent activity (Omonyemen et al., 2017).

Block chain technology revolutionizes financial transactions and record-keeping by guaranteeing that every detail is transparent and unchangeable, which greatly lowers the

possibility that fraudulent activity will remain undetected (Azizan & Ali, 2024). Blockchain provides a secure, transparent, and tamper-proof record of transactions, thereby safeguarding the integrity of financial data. Integrating such technology into internal control systems enhances fraud prevention initiatives by significantly complicating the ability of individuals to alter undetected financial records. (Pitriani & Dewi, 2023).

Although internal control systems are crucial, their effective implementation often presents significant challenges. A key issue is the resistance to change within organizations (Sinaga & Bukit, 2021) Employees may push back against adopting new control measures because of concerns about added workload, reduced autonomy, or simply a lack of awareness regarding the benefits these controls provide (Gunawan & Wardana, 2023). Furthermore, organizations must navigate the delicate balance between the costs associated with establishing robust internal controls and the imperative for operational efficiency. While such controls are vital for mitigating fraud, their development, execution, and ongoing maintenance can demand substantial investment in time, effort, and resources (Maulani et al., 2024).

Another challenge is the complexity of the modern business processes. As companies expand and diversify, it becomes increasingly difficult to maintain effective control systems across all departments and regions (Lachney, 2018). Globalization, technological change, and organizational development have created additional complexities to ensure effective and consistent internal controls(Kashona, 2019).

To overcome these demanding situations and ensure the effectiveness of IC systems, businesses should frequently compare and enhance their control. This may be accomplished through ordinary internal and external audits, threat assessments, and overall performance reviews (Kashona, 2019). According to Wulandari et al. (2024): Organizations must frequently verify their internal controls to identify weaknesses and make essential adjustments. Likewise, the involvement of senior management is critical; their commitment to maintaining strong internal controls is essential for cultivating a culture of compliance and responsibility (Haryanto & Ardillah, 2021). Additionally, the function of the audit committee is principal to oversight of the IC. The audit committee guarantees that control is efficiently enforced and that manipulative measures are implemented, and it affords an impartial assessment of the internal manipulation system's effectiveness. Impartial

oversight is important to ensure that internal controls are not bypassed or weakened over time (Yahya & Venusita, 2022).

One of the number of roles of IC structures is the prevention of fraud, as highlighted in, fraud is a sizable problem in each public and private sector, and internal controls are one of the only approaches to decrease the possibility of fraudulent activities. Internal control structures can appreciably lessen the probability of asset misappropriation and economic declaration fraud by imposing separation of duties, approval processes, and everyday audits. Validated that agencies with sturdy internal controls enjoy fewer instances of economic fraud because of the preventative mechanisms built into those structures (Kurniasih & Sari, 2024; Vutumu et al., 2024).

Furthermore, mixing FA into the internal control framework can enhance fraud detection by identifying anomalies and inconsistencies in monetary transactions. FA practices, which include fraud detection and monetary analysis, play a critical role in uncovering fraudulent sports that can break conventional management mechanisms. In many instances, forensic accountants are instrumental in determining monetary misconduct in complicated environments in which ordinary audits can fail to detect fraud (Dagane, 2024; Iyinomen, 2020).

Internal controls also play an essential role in ensuring that agencies observe the legal guidelines and rules. According to Ghanem and Awad (2023) regulatory compliance is vital for avoiding felony liabilities and maintaining an organization's reputation. As governments and monetary establishments have grown to become increasingly strict in terms of regulatory oversight, the need for powerful internal controls to ensure compliance with guidelines such as the Sarbanes-Oxley Act and Anti-Money Laundering rules has by no means been greater. Failure to conform to such rules can result in excessive penalties, fines, and long-term harm to an organization's credibility (Kesuma & Fachruzzaman, 2024).

Take a look at via way of means of Maulani et al. (2024) confirmed that groups with strong internal manipulate structures tend to have better ranges of compliance with industry-specific guidelines and global standards, which can be essential for keeping an aggressive benefit in the modern worldwide market. Internal control frameworks protect groups from criminal dangers related to corruption, bribery, and economic misreporting.

IC systems are no longer simply recognized for compliance and fraud prevention, but also for enhancing organizational efficiency. (Haryanto & Ardillah, 2021) showed that one of the key advantages of obtaining a legitimate IC device is its capacity to streamline enterprise processes, lessen operational risks, and enhance operational productivity. Effective controls consisting of price range reviews, overall performance monitoring, and threat exams help businesses become aware of inefficiencies, optimize aid allocation, and enhance their decision-making processes (Iyinomen, 2020).

Internal controls also assist in setting up clean roles and obligations in the organization, ensuring that people recognize their obligations and obligations, which can save confusion and conflicts that can arise from overlapping obligations or loss of oversight. Internal controls contribute to improving worker acceptance as true with and morale by ensuring equity in overall performance reviews and praise systems (Dagane, 2024).

In today's unexpectedly evolving technological landscape, the position of internal control structures has become increasingly important. the upward push of automation and virtual gear with inside the control of internal controls, highlighting how technology like facts analytics, synthetic intelligence, and block chain can appreciably beautify the effectiveness of internal controls, these technology permit for real-time monitoring, predictive analytics, and extra correct danger assessments, making it less complicated for businesses to hit upon capability fraud or compliance problems earlier than they escalate can lessen human mistakes and biases in internal control processes, resulting in extra goals and dependable decision-making. Automated structures can streamline audit processes, implement compliance with regulations, and enhance the accuracy of monetary reporting, contributing to greater transparency and accountability (Kurniasih & Sari, 2024; Maulani et al., 2024).

2.3.1 Definition of Internal Control

IC is defined by the Committee of Sponsoring Organizations (COSO) as follows:

“Internal control is a process, effected by an entity’s board of directors, management, and other personnel, designed to provide reasonable assurance regarding

the achievement of objectives relating to operations, reporting, and compliance (p. 3, 2013).” IC is defined by the Statement of Accounting Standards (SAS, No. 55) as a comprehensive strategy, approach, and set of practices used to protect assets, encourage operational efficiency, and ensure compliance with the established rules and guidelines (AICPA, 2002).

This was consistent with the findings of Kagias et al. (2022). IC refers to the many objectives, principles, and accomplishments incorporated within an organization.

A revision and update of the 1992 framework, the COSO 2013 IC-Integrated Framework, identifies 17 principles within the original framework's five components: CE, RA, CA, I&C, and MO. All IC components are viewed by COSO as appropriate and pertinent for all entities (COSO., 2013). To be comprehensive and widely used, both the new principles and original five components have broad definitions.

According to (COSO, 2017), internal control eliminates fraud opportunities through a framework that includes well-planned control activities, a system, effective accounting, effective monitoring, a strong control environment, and clear communication and information.

2.3.2 Essential Concepts of COSO's Internal Control System

The organization's processes, reporting, and compliance goals, among other distinct but related areas, are guided toward fulfillment through internal control (Wangombe, 2017). An organization's IC system is a never-ending series of procedures and activities that are essential for accomplishing its goals. It must be a crucial component of the organization's structure, directing its activities and guaranteeing ongoing development (Wali & Masmoudi, 2020).

Managers must establish good internal controls inside an organization, as internal controls are executed by individuals. They created goals, planned suitable countermeasures, and monitored their efficacy. People at every level of an organization play a crucial role in ensuring that internal control systems function; internal control is not simply about rules, processes, forms, and systems (Annan-Bonny, 2022).

Although it does not ensure total success, internal control provides a reasonable level of certainty that an organization will fulfill its goals. Although human error and uncontrollable judgment errors can disrupt an organization's efforts to attain its goals, an efficient system should be advantageous and cost-effective. Therefore, attaining organizational goals depends on a strong internal control mechanism (Kashona, 2019).

The structure of the organization, management choices, and legal or regulatory requirements should all be considered when adjusting for internal control (Tan, 2013).

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Five Elements of COSO Internal Control

COSO's 2013 framework presents internal control principles for the IC Component (Ji et al., 2016).

Figure(2. 6) Five Elements of COSO Internal Control



Source: (COSO, 2017)

Control Environment

1. Demonstrates commitment to integrity and ethical values.
2. Exercise oversight responsibility.
3. Establishes structure, authority, and responsibility.
4. Demonstrates commitment to competence.
5. Enforces accountability(Rezaee, 1995).

Risk Assessment

6. Specifies suitable objectives.
7. Identifies and analyzes risk.

8. Assesses fraud risk.
9. Identifies and analyzes significant change.(Rezaee, 1995).

Control Activities

10. Selects and develops control activities.
11. Selects and develops general controls over technology.
12. Deploys through policies and procedures (Annan-Bonny, 2022; Eze, 2021)

Information &Communication

13. Uses relevant information
14. Communicates internally
15. Communicates externally

Monitoring

16. Conducts ongoing and/or separate evaluations
17. Evaluates and communicates deficiencies(Annan-Bonny, 2022; Eze, 2021).

2.3.3 Control Environment

COSO describes that it offers structure and control but also affects control consciousness within the organization. According to COSO, the control environment covers, for example, integrity, ethical values, ways of distributing responsibility or authority, and how people are organized and developed. The control environment part of the COSO framework establishes a base for IC (Collins, 2014).

An establishment's culture, managerial style, moral principles, organizational design, board and audit committee supervision, and human resource practices are all significantly influenced by the control environment. It influences its innovation approach by providing organizational structure, discipline, and guiding principles. Corporate strategy and structure are shaped by executives' personnel decisions, including hiring and salary, which are influenced by the control environment. This also affects innovation investment adoption, evaluation, and oversight(Alslaibi & Daraghma, 2022). The management and success of innovation initiatives are also affected by the efficacy of corporate governance. Strong

controls reduce the information gap between management and investors by enhancing the quality and transparency of financial reporting (Collins, 2014; COSO., 2013).

2.3.4 Risk Assessment

Risk refers to the likelihood of an event occurring that may have adverse effects on reporting, operations, or compliance objectives. To provide effective IC, the administration must have a risk management system in place to identify and evaluate risks, assess the risk of fraud, and identify and analyze major changes. The board, in addition to several lines of defense and shared accountability, is involved in mitigating fraud risks (Alazzabi et al., 2023).

2.3.5 Control Activities

The successful operation of an organization depends on internal control procedures that guarantee that staff members carry out management orders. Physical security of tools and resources is one of these tasks, along with task segmentation, reconciliation, and review. Internal control activities are defined by the Office of Financial Management (OFM) (2015) as guidelines, practices, methods, and systems that support an organization in mitigating risks found throughout their risk assessment process. Control activities in an organization consist of task segmentation, information processing, physical control, and performance review. Information processing ensures the accuracy, entirety, and authorization of transactions, whereas performance evaluations compare current performance to budgets, projections, and past performance. Physical controls are used to ensure the security of assets and records (Agyapong, 2017).

2.3.6 Information and Communication

Communication and information systems enable employees to gather and share the information required to carry out their responsibilities. I&C involves identifying, gathering, and sharing financial, operational, and compliance-related data promptly, which

enables people to fulfill their obligations to achieve governmental goals (Abiola & Oyewole, 2013). The quality of information must be stressed, because communication and information are essential for carrying out, overseeing, and managing operations. Accordingly, the information must be pertinent, timely, accurate, comprehensible, dependable, current, and readily available. An effective system guarantees that data flow both internally and externally, promoting transparency and assisting in well-informed decision-making (Wanjala & Riitho, 2020). Communication is therefore necessary for the organization to accomplish its goals and carry out internal control operations. This can occur both internally and internationally. Employees may understand their internal control responsibilities and the importance of communication for accomplishing their objectives. Organizations, therefore, create and gather high-quality pertinent data to help internal controls run duties smoothly (Le et al., 2021). To guarantee that internal controls operate effectively, COSO (2013) stipulates that organizations must clearly explain internal and external goals and duties (Le et al., 2021). Effective communication flows in all directions with ease and fosters positive relationships and a positive work environment within a company. An organization's culture of open and efficient communication makes it possible to identify potential fraud early and, consequently, to quickly implement fraud prevention measures (Wanjala & Riitho, 2020).

2.3.7 Monitoring

Monitoring operations include ongoing and individual assessments to ascertain the presence and effectiveness of each of the five IC components as well as each principle within each component. No text has been provided. Comparisons are made between the findings and established norms by regulators, standards-setting bodies, or the management team. The management is informed of the deficiencies (COSO., 2013). It is generally acknowledged that IC systems must be sufficiently monitored to evaluate the quality and efficiency of the system's performance over time. Monitoring ensures that the results of audits and other assessments are rapidly identified, thereby providing assurance (Kashona, 2019). In addition, the act of monitoring activities guarantees an efficient IC structure process. Monitoring is the process of evaluating the extent to which workers successfully

execute rules and procedures set by management. The components in question exhibit synergy and connection, resulting in a combined structure that dynamically responds to changing situations. The IC system is tightly linked to an entity's operations and fulfills crucial business objectives. The effectiveness of IC is maximized when controls are integrated into the entity's architecture and intrinsic to the core operations of the organization. The "built-in" controls facilitate quality and empowerment programs, save wasteful expenses, and allow for prompt adaptation to changing circumstances (Rai, 2017).

2.4 Forensic Accounting

Increasingly, forensic practices are gaining prominence as a means of enhancing fraud deterrence in the government sector, given its been abysmal of accountability, transparency, and resource management (Alabdullah et al., 2014; Oyedokun & Emmanuel, 2016) .

The forensic process is an important process that applies to the investigation of fraud, which can induce the loss of profit and time, abuse of public resources (money), and can include acts of financial mismanagement or corruption (Alshurafat et al., 2019; Sule et al., 2019). FA is the use of scientific methods and techniques to investigate criminal activity, which illustrates the use of various scientific methodologies and investigative techniques to examine financial records and determine whether fraud has been committed through the examination of financial records and transactions (Ehioghiren & Atu, 2016).

Forensic tools and techniques, such as forensic accounting, forensic audits, and digital forensics, allow public sector organizations to conduct thorough examinations of financial systems for fraudulent activity and potential mismanagement. Such audits not only help detect fraud but also prevent fraud; they serve as a deterrent to committing fraud in forensic accounting, which is one of the primary techniques utilized in forensic investigations. This involves a methodical examination of financial statements to discern discrepancies indicative of illicit conduct, such as embezzlement, corruption, or misdirection of public assets. Forensic accountants use various procedures, including financial statement analysis, financial transaction tracking, and asset discovery, to uncover fraud. In addition, forensic accountants investigate cases of financial irregularities and

resource misallocation in the public sector, ensuring that taxpayer funds are utilized efficiently and responsibly across various government departments (Ogunode & Dada, 2022; Ozili, 2025).

Forensic Accounting, which includes assessing financial records and working procedures for any deviations or misconduct, is an integral part of forensic investigation. Forensic auditors tend to focus on identifying trends and anomalies in financial transactions that may indicate fraud (Gonzalez & Hoffman, 2018). Forensic auditors are important in terms of complex fraud, in which many parties and complex financial arrangements exist, underscoring their pivotal role in safeguarding financial integrity (Gonzalez & Hoffman, 2018).

Forensic investigations are of immense use in detecting and preventing fraud. The use of FA or auditing, therefore, decreases the chances of employees in government institutions perpetrating fraud when they know that their financial transactions are closely monitored by forensic experts (Aigienohuwa et al., 2017). Forensic investigation techniques in the public sector can change employee behavior and reduce corruption, especially in areas where corruption has been a persistent issue. Forensic investigations within the broader structure of internal control and governance have improved their effectiveness. This cross-cutting approach helps promote a culture of accountability and transparency among the public (Ezejiofor et al., 2016).

Integrating forensic investigations into the general public zone's internal control structures complements the cap potential of governmental businesses to hit upon and save fraudulent activities; this technique guarantees that fraud is not always best detected but is treated unexpectedly and effectively, minimizing the monetary and reputational harm caused by fraud (Lubis et al., 2024). Moreover, forensic investigations can contribute to the established order of a tradition of duty in public institutions. Employees, contractors, and stakeholders are aware that there is an excessive probability of detection, which fosters an ethical work environment (Asmaranti & Nuswantara, 2022). When humans realize that fraud is being actively monitored and investigated, they are much less likely to engage in such activities. Forensic investigations have a transformative impact on public institutions, decreasing the overall occurrence of corruption and fraud (Khanaki et al., 2024).

In addition to their role in identifying and discouraging fraud, forensic investigations are crucial for assisting with prison operations. The prosecution of fraudsters often requires forensic evidence, which may also include financial records, transaction histories, and digital data, asserting that forensic investigations yield indispensable proof to prosecute individuals for fraudulent behavior and the recovery of misappropriated funds. This is especially important in an environment in which institutional frameworks and prisons are sometimes subject to political influence (Spikmans, 2015).

Although forensic investigations are very effective in curbing illegality (fraud), some challenges still need to be addressed. Political instability, the absence of forensic specialists, and poor funding are three significant barriers to expanding forensic techniques in the public sector. However, these problems can be mitigated through initiatives such as international partnerships, targeted training courses, and investments in forensic technology. A strong institutional base for anti-corruption and anti-fraud measures can also facilitate the incorporation of forensic investigations into broader public-sector reforms (Evans, 2017).

Forensic investigative techniques are important in fraud prevention because they deter possible fraudsters, in addition to aiding in identifying fraudulent conduct. Including digital forensics, forensic accounting, and forensic auditing in a wider internal control structure could considerably reduce fraud and corruption among Palestinian public institutions. Moreover, the public sector's overall performance improves when forensic investigations foster a culture of responsibility, transparency, and integrity within a legal framework (Abdulrahman, 2019).

Significant advancements have been made in forensic inquiries, particularly regarding the use of artificial intelligence. Technological advancements have enabled forensic experts to quickly review and analyze massive sets of data in search of patterns and discrepancies that might be overlooked by a human auditor. Researchers have pointed out that traditional fraud detection methods have become ineffective in the Palestinian government sector as a result of increased digitization of financial information and correspondence. Advanced forensic technologies drastically improve the efficiency and accuracy of fraud detection, making it a crucial tool in the battle against fraudulent activities (Awad & Slim, 2024).

According to (Evans, 2017) One of the important aspects of globalizing economic crime is the nature of forensic investigation, which relies heavily on cooperation among countries due to the increase in globalization of economic crimes around the world, such as financial fraud. With cross-border collection, information, resources, and expertise from forensic teams can be shared, allowing investigators to track fraud that crosses jurisdictional boundaries better. Local forensic processes can be significantly facilitated by the adoption of internationally accepted practices and methods. Collaborations with international agencies such as the World Bank, UN Office on Drugs and Crime, and Interpol can enhance and widen forensic investigations, enabling them to deal more thoroughly and effectively with complex cross-border fraud (Ezejiolora et al., 2016).

It is important to have experts who are not only skilled in forensic tools and techniques but also understand the distinct financial dynamics of the public sector. One of the biggest obstacles to implementing effective fraud-deterrence strategies is the lack of specialized forensic training. Developing comprehensive training programs attuned to the local context will help forensic accountants, auditors, and law enforcement agencies become more proficient in the detection of fraud and mismanagement. To ensure that professionals are prepared to address the public sector's unique challenges, such programs should focus on the general risks and challenges faced by the sector, such as inefficient allocation of financial resources and corruption (Lubis et al., 2024).

The significance of IC and preventive measures in decreasing the likelihood of a fraudulent event occurring in the first place. While forensic investigations are critical for detection, strong internal controls such as frequent financial audits, segregation of duties, and proper authorization processes can significantly mitigate fraud risks. Enhancing these internal controls in public institutions leads to a comprehensive framework for identifying and preventing fraudulent behavior, which ultimately improves accountability and transparency (Honigsberg, 2020a).

Fighting fraudulent acts against public funds is important, as the loss could potentially seriously impact public services and infrastructure in an environment where the funds are already limited. Effective forensic investigations are critical for preventing fraud, leading to a more efficient use of public funds. These investigations can improve public services and infrastructure development by identifying, preventing, and addressing corrupt

behaviors. Reducing the financial cost of fraud allows the government to spend on sectors such as health, education, and social security, ultimately leading to increased well-being in society (Adekoya et al., 2020; Manning, 2010).

Forensic investigations are vital for ensuring that these crimes are punished. In cases where political unrest destabilizes institutional and legal frameworks, forensic investigations provide indisputable evidence necessary for conviction. Most cases of fraud ended up in court, underlining the importance of forensic evidence such as financial records and transaction histories in building strong cases that support the restoration of public confidence in the legal system (Imoniana & Silva, 2013).

Several obstacles to the widespread use of forensic investigations include limited specialized forensic knowledge, unstable political environments, and limited resources. Because there are few training programs for investigators and forensic equipment is in short supply, fraud detection is even more difficult. To resolve these challenges, greater investment in forensic technology, enhanced training programs, and improved international cooperation are required (Kaur et al., 2023).

Forensic investigations, such as digital forensics and forensic accounting, can be improved through collaboration between public-sector organizations and private-sector professionals. Private sector professionals can augment public sector investigators with specialized knowledge and innovative tools. Public institutions can improve both the quality and scale of forensic investigations by recruiting external expertise to boost their capacity for detection and prevention (Almudallal et al., 2016; Joseph & Okike, 2016).

Forensic investigations are critical for building an accountable culture in the public sector. Compliance with ethical standards is significantly more probable in the presence of an understanding of workers, suppliers, business associates, and/or any other external stakeholders that their behaviors are under scrutiny. In turn, increased accountability improves the general performance of the organization and reduces the level of fraudulent activity. Public institutions can improve their ability to serve the public by promoting an ethical and transparent work environment, which leads to increased public confidence in their operations (Honigsberg, 2020a).

2.4.1 The History

More than 200 years have passed since forensic accounting services were first required. A unique class of accountants was required for court proceedings in Glasgow, Scotland in 1824. The legal and accounting professions were used to collaborate extensively at around 1800. The Internal Revenue Service was an organization in the USA that initially hired these kinds of investigative accountants at the beginning of the 1900s. It is commonly known that the renowned gangster Al Capone is engaged in a well-known tax evasion operation. The inquiry into the aforementioned tax evasion was given to Mr. Frank Wilson, the first IRS agent and forensic accountant in the United States. It was not until the advent of GAAP and tax legislation in the second half of the 20th century that FA as a career began to flourish. Special accountants were involved in preventing fraud in Egypt between 3300 and 3500 BC (Odiba, 2019).

2.4.2 Defining Forensic Accounting

Forensic accounting is a compound phrase derived from the mixture of the terms "forensic" and "accounting." Dividing pairs of words can enhance comprehension (Singleton & Singleton, 2010). According to the Merriam-Webster online dictionary, "forensic" refers to something related to, utilized in, or appropriate for courts of law or public deliberation and discussion. The dictionary provided an expanded explanation of the term "forensic," defining it as the application of scientific information or methodologies in the resolution of criminal cases, as well as being relevant, utilized, or suitable for an official court. Accounting, as defined by businessdictionary.com, is a systematic process that encompasses the identification, measurement, recording, categorization, verification, summary, interpretation, and transmission of financial information. The amalgamation of these two terms constitutes a subdiscipline within the accounting field, yielding a significantly enhanced outcome that surpasses the mere addition of its constituent elements (Crain et al., 2019).

Forensic accounting, according to the American Institute of Certified Public Accountants (AICPA), is the: "services that generally involve the application of specialized

knowledge and investigative skills possessed by CPAs to collect, analyze, and evaluate evidential matter and to interpret and communicate findings in the courtroom, boardroom, or other legal or administrative venue. In the context of litigation, the term forensic is suitable for use in a court of law. These resources are intended to assist practitioners in competently performing these duties while staying current on issues that impact their day-to-day practice.” (AICPA, 2002; Botes & Saadeh, 2018)

Forensic accounting is further divided into two major areas by the International Association of Certified Public Accountants (2005): litigation and investigation services. As previously noted by (Rezaee et al., 2004) this study assumes that FA services are the application of specialized knowledge and investigative skills, as well as the collection, analysis, and evaluation of the suggestion, interpretation of the findings, and their delivery within the confines of the courtroom, conference room, or other legal or organizational premises (Rezaee et al., 2004).

As stated by (Navarrete & Gallego, 2022), forensic accounting methods and tools may help stop fraud in financial reporting. Therefore, using forensic specialists with a solid background in both accounting and law, FA may be succinctly defined as the knowledge of identifying and considering fraud and corruption within financial accounts and financial concerns. Thus, the cornerstone of the FA profession is the integration of legal and accounting knowledge. According to (Okoye & Mbanugo, 2020), FA relies on the examination of financial statements and reports by professionals with extensive expertise in accounting, judicial law, and other related procedures. Their goal is to identify instances of malfunctions and manipulations, and render decisions for all parties involved (Salaheddin, 2022).

2.4.3 Services for Forensic Accounting

1. Fraud Awareness Workshop: These workshops provide forensic accountants with opportunities to engage with a significant number of individuals. In addition, client-specific seminars are organized (Al Shbeil et al., 2023).
2. Investigation: The type of fraud that forensic accountants are likely to encounter may vary depending on the features of the firm and its operation. Expenses and purchases are the primary domains in which fraud occurs, sometimes including the falsification of

financial information and the misappropriation of cash. Employees most often engage in fraud by stealing cash or merchandise, submitting fake claims, or committing check forgeries. Organizations have recognized that the growing complexity of fraud and the need for expertise in fraud investigations require the involvement of an independent and impartial expert to carry out the investigation (Botes & Saadeh, 2018).

3. Asset tracing is the process of locating and identifying client assets that are held unlawfully or controlled by other parties. This includes acquiring information about third parties and using legal means to reclaim assets.

4. Litigation support: Forensic accounting services provide expert opinions on complex matters related to audits, accounting, taxes, or other relevant fields. Litigation assistance entails the process of determining and quantifying financial damage in cases involving fraud, contested company value, loss of profits, intellectual property conflicts, and several other circumstances.

5. Fraud investigations involving businesses or employees may entail forensic information collection, asset recovery and identification, money tracking, and due-diligence assessments. Member fraud investigations can involve determining the nature and extent of fraud as well as the possibility of identifying the perpetrator. Individuals who have authorization to use the money are regularly interrogated as part of these investigations and the written material is thoroughly scrutinized.

6. Mediation and Arbitration: Forensic accountants have pursued specialized exercises and are involved in alternative dispute resolution (ADR) due to their comfort and familiarity with legal matters and procedures. ADR facilities include mediation and arbitration (Alshurafat et al., 2020).

The significance of forensic accountants (Alshurafat et al., 2020; Issa, 2017; Wijerathna & Perera, 2020).

- Forensic accounting has become more essential for the reasons listed below.
- Due to increasingly complicated business operations, the number of lawsuits filed by individuals and organizations has grown steadily.
- Issues began to arise in the interaction between people and institutions.
- It is now more difficult to prevent and detect fraud.
- The degree of management failure climbs with time.

- Expert evaluations are more important than ever for judges and attorneys.

2.4.4 Forensic Accounting Types

There are three main components to forensic accounting:

1. Litigation Support Consulting: Referred to as expert or accountancy assistance for a legal case
 - To gather the evidence required to prove or disprove the case.
 - To update the relevant records to review the statements and the case.
 - To list the advantages and disadvantages.
2. Fraud Examination (Investigative Accounting): An employee theft inquiry is a typical investigative accounting job. Since technology and intricate commercial transactions are the causes of many forms of sophisticated fraud, it is difficult for a non-expert to identify and stop them. Experts with vocational expertise in the relevant fields can solve these problems.
3. Expert Witness: An expert witness is a qualified person who may testify to financial problems above the common public's knowledge base because they possess specialized knowledge, skills, training, or experience (Akyel, 2012).

Forensic accountants must use specific strategies to ease their duties. They consist of:

1. Prediction: the circumstances that cause a professional to know and think that fraud has occurred.
2. Fraud investigation strategy. This is a consequence of the forensic accountant's understanding and the interpretation of fraudulent outlines.
3. Examining documents and collecting evidence: The records of accounts are tested to obtain sufficient information that will be meaningful and trustworthy in their actions as evidence that will be used by the forensic accountant.
4. Interview Procedure. To obtain data or information that might be helpful in supporting litigation, forensic accountants must speak one-on-one with witnesses.
5. Report writing: Assembling information or data acquired in an organized report. The findings will be submitted to the individuals who employed them. If the case

was prosecuted in court, the report might be used as evidence and support for the prosecution of the fraudulent offender (Basseyy & Ahonkhai, 2017; Salleh & Aziz, 2014).

2.4.5 Fraud Investigation

A fraud investigation involves scrutinizing information to determine whether a claim corresponds to a dependable forecast within a legal framework. It aims to detect fraud, gather evidence to demonstrate or disprove fraud, and protect victims and organizations. This process requires specialized investigative skills to identify criminal conduct or fraud (Singleton & Singleton, 2010). Fraud investigation entails establishing whether fraud is present, what kind of fraud it is, how big a fraud it is, how likely it is to identify the perpetrators, and whether the findings may be used in court. Fraud investigators should start looking into cases only when they key are essential, based on professionalism, rationality, and caution, and only when the evidence suggests that the fraud was done in a way that was professional, reasonable, and sensible (AlShaikh & Al-Adeem, 2023; Kamuangu, 2024).

According to Sudarmadi (2023), investigative accounting assists government agencies in detecting fraud and in improving internal control systems. Combined investigations with preventive measures promote a culture of accountability where less fraud occurs. The efficiency of forensic accounting in preventing fraud is raised when investigative work is combined with effective regulatory policies and control actions that ensure the application of investigative results through decisive actions on behalf of the authorities.

2.4.6 Forensic Accounting Investigating

Forensic investigative methods and methodologies are used in a wide range of professions such as accountancy and engineering. Forensic accounting practitioners require a diverse set of abilities to perform their roles. Because practitioners must gather data and provide supporting documentation for their activities, audit capabilities are necessary. The

responsibilities of forensic accountants include gathering and evaluating data, which are frequently utilized as support and evidence in court. Because applied analytical skills frequently depend on comprehending the motivations of the criminal, criminology is essential for practitioners, and forensic accountants need to be knowledgeable in criminal justice (Ragini, 2022). Cyril et al. (2023) further emphasize the significance of investigative accounting as both a critical preventative measure and a deterrent to fraud schemes within the government sector. They claimed that the more trained and experienced fraudulent investigators are, the better they are at identifying and preventing fraud. Added resources also decrease the chances of future fraud activities.

2.4.7 Litigation Support Services

According to (Singleton & Singleton, 2010) expert witnesses, consultants, and other services are typically included in litigation services. Even though forensic services, such as conducting analysis and investigations, are included in investigative services, they may also call for the same expertise as litigation services.

Litigation support services offer help with matters involving ongoing legal disputes or serve as a factual presentation of the economic difficulties connected to such matters. He continued by saying that it can help settle disputes outside court by addressing matters on the qualification or economic damages incurred by parties in legal disputes (Temitope, 2014).

According to Felix (2022) litigation support is of great importance in uncovering fraudulent acts and fraud prevention, which the government sector has been helping extensively. According to Okoye (2009) forensic accountants and legal professionals are crucial in the investigation of fraud, analysis of evidence, and presentation of findings in court, ensuring an adequate reaction to fraud.

The important point of (Erickson, 2011) is that securities litigation provides positive feedback for corporate investor relations, as institutional investors play a significant role in deterring future corporate fraud and compensating wronged investors. According to (Erickson, 2011) however, it must be considered in the context of a calculated approach that cannot replicate the same process for each instance of corporate fraud.

As pointed out in (Fisch & Gelbach, 2021), litigation support is critical for fighting fraud and corruption, as it provides legal tools to hold offenders accountable for their actions and discourage future fraud. Litigation support mechanisms such as investigators, forensic accountants, and legal advisors can lead to a significant reduction in the impact of fraud by helping ensure that evidence is handled properly where legal cases are pursued and filed through the judicial system. According to (Okoye, 2019), robust litigation support systems demonstrate to employees and the public that fraud is taken seriously and investigated thoroughly; as a consequence, the perceived probability of discovery increases, and with it, fraud decreases.

Litigation support helps address ongoing legal issues and provides accounting assistance in cases involving ongoing or pending litigation. The main focus is on problems pertaining to the measurement of economic damage. primarily support the assessment of financial costs (AlShaikh & Al-Adeem, 2023).

- Support in identifying the records necessary to validate or refute a claim
- Pertinent records were examined to establish a preliminary evaluation of the case and pinpoint areas of loss.
- Assistance with the Discovery Examination, encompassing the formulation of inquiries regarding financial evidence.
- Participation in the Examination for Discovery to evaluate testimony, enhance understanding of financial issues, and formulate additional inquiries.
- Reviewing the damage assessment by the opposing expert and summarizing the advantages and disadvantages of the positions adopted.
- support throughout negotiations and talks for a deal.

attendance at the trial to aid with cross-examination and hear the opposing expert's testimony(Oyedokun & Emmanuel, 2013).

2.5 Hypotheses Development

This section presents the previous work that supports the hypotheses of this thesis.

2.5.1 COSO's Internal Control and Fraud Deterrence (Hypothesis One)

Kurniawan et al. (2024) noted that the COSO framework is widely regarded as the most important device for assessing IC systems, underlining its value as an anti-fraud tool in public-sector organizations. Ziorklui et al. (2024) argue that this "all-encompassing" strategy lays the groundwork needed to tailor systems that can identify and combat fraud, especially in high-risk contexts, such as the public sector. The COSO framework delineates five components that constitute effective IC: CE, RA, CA, I&C, and MO.

As stated by Rashid (2022b) IC is important for averting fraud, especially in the COSO model, and it protects assets, maximizes operational productivity, and increases the reliability of financial reporting (Ziorklui et al., 2024). A good environment significantly reduces the potential of fraud by internal and external parties and determines the criteria for judgment. Key components, such as RA, CA, and MO systems, should be integrated into an effective medium.

According to Rashid (2022), in the public sector, a lack of adequate oversight as well as a lack of job segregation provide a breeding ground for fraud. Kurniawan et al. (2024) asserted that implementation of the COSO Integrated Framework enhances IC, decreases weaknesses.

(Shapiro, 2014) discussed that proper internal controls, such as those provided by the COSO framework, reduce fraud by creating responsibility, motivating ethical behavior, performing risk assessments, and setting up reporting and investigation procedures.

According to Rashid (2022), the success of the COSO framework in preventing fraud and accountability has been acknowledged in both developing and developed nations. COSO principles also serve as a basis for creating a strong IC system that provides an environment in which fraudulent activities can be easily identified and prevented. According to Leriza and Faradillah (2022), public organizations with good internal controls can achieve the goal of public resource management and lower fraud. Shapiro

(2014) emphasized the need for constant monitoring and system assessment to ensure system efficiency over time.

Hypothesis One

H₀₁: There is no statistically significant impact of internal control (COSO) on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$1. FD = \alpha_0 + \beta_1 CA + \beta_2 CE + \beta_3 RA + \beta_4 I\&C + \beta_5 MO + \varepsilon$$

Hypothesis one falls into five sub-hypotheses

2.5.1.1 Control Environment and Fraud Deterrence (Hypothesis One – Sub. 1)

The internal environment is critical to the prevention of fraud; it creates an infrastructure for the efficient functioning of internal controls and develops a virtuous moral corporate culture. These include management methods, integrity, and ethical standards, which collectively influence the probability of fraudulent acts (Aisha et al., 2023). According to the period data given by Ludwina and Jaka (2023) if a company has a high level of honesty and ethics, it will create an atmosphere that will deter fraud. They contend that a clear line of authority fosters accountability and better defines the roles, thus reducing the potential for fraud.

(Nuswantara et al., 2017; Ziorklue et al., 2024) Institutions can assess and identify potential fraud risks on a proactive basis through regular risk assessments. Leaders must be ethical facilitators of fraud prevention. Ludwina and Jaka (2023) confirmed that leaders' commitment to behave ethically is manifested in building an ethical organizational culture and in the control environment. A robust control environment is key to preventing fraud. Ziorklue et al. (2024) highlighted the difficulty of keeping controls effective, especially in rapidly changing fraudulent environments.

Despite its importance in aiding fraud deterrence, the efficiency of CI in the government sector may be affected by numerous internal and external factors. A control environment is made up of the values of government institutions' strong leadership, ethical behavior, competent employees, and effective enforcement that can maintain a strong control environment that is strong enough (Malik & Al-Sartawi, 2023).

H0₁₋₁: There is no statistically significant impact of the control environment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 CE + \varepsilon$$

2.5.1.2 Control Activities and Fraud Deterrence (Hypothesis One – Sub2.)

Control activities within the overall IC system of an institute are important for preventing fraud. According to Ziorklui et al. (2024), controlling activities protects assets, ensures accurate financial reporting, and improves operational efficiency. The implementation of these processes helps to minimize the chances of fraud. According to Kurniawan et al. (2024) assigned tasks to different individuals, and requiring approval for transactions helped ensure that only authorized operations were performed and the risk of fraudulent activities was minimized.

Control activities are at the forefront of fraud prevention, providing procedures that can help protect assets and promote the accuracy of economic reporting. According to (Tan, 2013), these measures decrease opportunities for fraud in banks, while enhancing operational efficiency. Furthermore, Kurniawan et al. (2024) reported that control activities minimize vulnerabilities, ensure compliance, and enhance financial reporting accuracy. All of these, coupled with risk assessment, give a strong hold to the company against fraud (Rashid, 2022b). Policies, such as regular audits, reconciliations, and oversight procedures, play an important role in preventing fraud. Moreover, the use of internal controls, such as segregation of duties and a proper authorization process, acts as a barrier for employees not to commit a crime (Yahya & Venusita, 2022).

Fraud in the public sector often suggests poor enforcement or ineffective control measures (Musyoki, 2023). While control activities help prevent fraud, their effectiveness can be improved in the government context through additional staff training, supervision, and monitoring (Aisha et al., 2023).

H0₁₋₂: There is no statistically significant impact of control activities on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 CA + \varepsilon$$

2.5.1.3 Risk Assessment and Fraud Deterrence (Hypothesis One – Sub. 3)

One framework, COSO, is specifically designed to detect and limit the risk of fraud through risk assessment (Fortvingler & Szívós, 2016). It recognizes areas and incidents that pose a risk for fraudulent activities and allows catching fraud in the early stage and taking preventive measures before it occurs. Fraud prevention is enabled through risk assessment to enable an organization to identify vulnerabilities and determine effective safeguards that can evaluate potential fraud risks to strengthen their overall controls and allocate resources more effectively. This process helps to determine the risk of fraud and provides directions for the development of targeted controls (Betts et al., 2024).

Aksoy Hazır (2017) states that organizations will be able to allocate their resources more optimally when they can emphasize areas that require stronger controls as a result of risk assessment. If risk assessment data are consistently monitored, organizations can remain responsive to the ever-changing world of fraud, allowing actions to be taken when appropriate. A comprehensive risk assessment process first allows the identification of areas that have a higher risk of fraud, and subsequently permits the implementation of prudent internal controls to offset those risks. Risk assessments provide insights into the reasons for the possibility of fraud, which can lead organizations to undertake preventative measures before fraud occurs (Curry et al., 2007).

Many challenges make it difficult for risk assessments to prevent fraud at the public sector level. The first major challenge is the limited number of skilled specialists in risk management and fraud detection (Sever Mališ & Novak, 2016). Moreover, an uncertain political and economic environment may potentially challenge the timely and effective implementation of risk assessments (Huanming et al., 2021). Public sector institutions frequently cannot implement proper risk-mitigation measures, which contributes to the effective disconnection between risk assessment findings and the actual prevention of fraud (Betts et al., 2024).

$H_{0_{1-3}}$: There is no statistically significant impact of risk assessment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 RA + \varepsilon$$

2.5.1.4 Information and Communication and Fraud Deterrence (Hypothesis One – Sub. 4)

Management gathers information to fulfill internal control duties and support the company's objectives. To assist in the processing of other IC components, management gathers qualitative and pertinent information from both external and internal sources. Internal communication is the process by which information is disseminated both up and down the organization. It aids workers in appreciating the significance of internal controls (COSO., 2013).

Information plays an important role in IC systems, producing reports and financial and compliance-related information for management and staff so that they can run and control the organization (Diing, 2019).

Eze (2021) emphasized that communication can be formal, through the utilization of meeting minutes, accounting, memoranda, financial reporting manuals, written policy manuals, etc., and informal, through speech, email, and actions of management and other company personnel.

Alexander (2020) stated that information and communication are essential to the orderly operation of financial management because they are essential to the decision-making process. Information may be a representation of collateral in the transfer of value.

I&C can decrease fraud using these two methods. First, the possibility of fraudulent concealment is reduced using the accuracy of information and integrity; thus, fraudsters cannot continue to conceal their actions for a very long time. Second, an organization's adoption of an active and transparent communication style aids in anticipating and preventing fraud (Hayali et al., 2013).

H₀₁₋₄: There is no statistically significant impact of information and communication on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$\mathbf{FD} = \mathbf{a_0} + \mathbf{\beta_1 I\&C} + \mathbf{\varepsilon}$$

2.5.1.5 Monitoring and Fraud Deterrence (Hypothesis One – Sub. 5)

According to Bănărescu (2015) the key to reducing fraud is monitoring, and by analyzing behavior and personal data, it is possible to identify early warning signs. Monitoring, including generating real-time alerts, is critical for detecting fraudulent network activity successful cases in both the private and public sectors, where proactive approaches have been proven effective in fraud risk reduction through the integration of data analytics, whistleblower systems, and employee awareness.

According to Curry et al. (2007) data-driven risk assessments assist in identifying individuals who are likely to commit fraud. Argued that real-time monitoring systems create a culture of oversight, enabling organizations to act quickly if they discover willful anomalies; moreover, they deter potential fraudsters by sending instant alerts, performance-based monitoring, setting up dedicated offices to focus on auditing, and incorporating fraud detection technologies in leading government institutions. Continuous monitoring, such as real-time surveillance and internal assessments, is fundamental for detecting unethical actions early before they cause meaningful financial loss, which serves as a preventative measure(Gonzalez, 2016).

Gonzalez and Hoffman (2018) maintain that weak systems might even foster opportunities for fraud by providing pointers to exploitable gaps. Conversely, strong monitoring systems may serve as strong deterrence. In support of that view, without effective follow-up, much of the deterrent potential of monitoring vanishes. (Abiola, 2013) provided evidence that the quality of monitoring frameworks was highly correlated with a better likelihood of fraud detection, and underlined the importance of control activities as a means of reducing the occurrences of fraud.

De Viron et al. (2022) highlighted that monitoring creates organizational transparency, and thus, the more complex it becomes to keep malpractices hidden, good monitoring mechanisms are a part of a culture of accountability, and that holds a strong deterrent to fraud.

H0₁₋₅: There is no statistically significant impact of monitoring on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 MO + \varepsilon$$

2.5.2 Forensic Accounting as a Moderator of the Effect of COSO's Internal Control on Fraud Deterrence (Hypothesis Two)

Forensic accounting is important in an attempt to strengthen the association between IC systems, especially the COSO framework, and fraud prevention. A case that combines investigative methods with conventional accounting practices improves fraud detection and enhances IC efficiency. An entire internal control system can be more effective with the help of forensic accountants, where big data analytics can be employed to discover hidden patterns in the dataset, which is indicative of fraud (Vutumu et al., 2025).

Forensic accounting can contribute insights into specific areas of fraud risk, which can bolster the COSO framework's assertion of the importance of having a strong system of internal control. Strategies, such as document examination, data analysis, and forensic audits, can uncover financial discrepancies and abnormal transactions. A successful internal control system should be embedded within a climate of ethical conduct and accountability culture, which contributes to the forensic accounting training of auditors and financial managers (Tuharea, 2024).

According to Singh (2022) organizations that emphasize forensic accounting training are better positioned to support their IC systems and combat fraud risks. The (COSO) framework of internal controls is among the most well-known and extensive guidance focused on the effectiveness of RA and CA in improving fraud prevention.

According to (Saddam & Hashim, 2024) although the COSO framework describes the necessary structure for internal controls, the actual success of the framework depends on how effectively it is implemented and monitored to prevent fraud. Forensic accounting, in this case, serves as a moderator by identifying weaknesses in internal controls and providing recommendations, enabling these internal controls to run optimally, or when internal controls are not functioning well (Setyo et al., 2024).

(Afriyie et al., 2023) emphasize that various persistent difficulties, including constraints on resources, political instability, and enforcement weaknesses, often undermine IC efficiency. FA serves a crucial moderating function in increasing the link between IC and fraud deterrence in the government sector. Particularly within the public

sector, increasing concerns regarding financial mismanagement, corruption, and the weak enforcement of financial regulations have seen an increase in forensic accounting (Simbolon et al., 2024).

Thus, forensic auditors can provide practical implementation of a theoretical concept to ensure that internal controls prevent fraud in their measures to mitigate it. In the framework of the unique challenges faced by the government sector, including, but not limited to, corruption risks and resource constraints, the role of FA in moderating the association between IC and fraud deterrence may be.

Hypothesis Two

H₀₂: Forensic accounting does not moderate the impact of internal controls (COSO) on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = \beta_0 + \beta_1(CE) + \beta_2(CA) + \beta_3(RA) + \beta_4(I\&C) + \beta_5(MO) + \beta_6(FA) + \beta_7(CE \times FA) + \beta_8(CA \times FA) + \beta_9(RA \times FA) + \beta_{10}(I\&C \times FA) + \beta_{11}(MO \times FA) + \epsilon$$

2.5.2.1 Forensic Accounting as a Moderator of the Effect of Control Environment on Fraud Deterrence (Hypothesis Two – Sub. 1) .

According to Saddam and Hashim (2024) FA is critical for managing the connection between CE and fraud deterrence by reinforcing internal controls and enhancing transparency. According to Tuharea (2024) FA is the combination of auditing, accounting, and investigative skills that are used to enhance the control environment of an organization and identify and possibly prevent fraud. The application of FA skills strengthens the internal control system to enhance its capability to deter fraud. According to (Nursansiw, 2024) Financial integrity can be managed using data analysis and document inspections to detect potential fraudulent transactions.

Forensic accounting practices such as control systems and whistleblower hotlines have a strong positive correlation with fraud detection in all industries, including banking (Subedi & Neupane, 2024). (Tuharea, 2024) illustrates how organizations can improve their fraud prevention measures by emphasizing ethical culture and administering business ethics education. Additionally, (Mardjono et al., 2024) also emphasize that by using forensic accounting together with Big Data Analysis, the time-consuming task of finding hidden patterns in large datasets becomes easy, which enhances fraud detection efficiency.

According to (Nursansiw, 2024), FE no longer needs to be rigid, but the control environment is often influenced by weak law enforcement, limited resources, and a politically unstable structure. (Mardjono et al., 2024) emphasized that these challenges threaten to limit the ability of forensic accounting to moderate the association between CE and FD meaningfully. However, forensic accountants, through detailed investigations, provide recommendations for corrective action and the implementation of anti-fraud policies. (Subedi & Neupane, 2024) could further enhance the control environment.

Tuharea (2024) mentions that despite its potential contribution to the enhancement of the control environment, forensic accounting may have fewer observable effects in Palestine due to the country's political conditions and resource scarcity, and it produces limited positive outcomes.

H₀₂₋₁: Forensic accounting does not moderate the impact of the control environment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 CE + \beta_3 (FA * CE) + \varepsilon$$

2.5.2.2 Forensic Accounting as a Moderator of the Effect of Control Activities on Fraud Deterrence (Hypothesis Two – Sub. 2)

Mardjono et al. (2024) emphasize that the COSO IC framework is used to confirm that the requirements of financial information are met and to ensure that procedures and policies are being followed to mitigate risks, including fraud. Forensic accounting enhances how fraud risks respond and aids in detecting deficiencies in internal control systems, including those grounded in the COSO framework.

Al Natour et al. (2025) argue that FA is useful as an instrument to fight fraud in government sector institutions, given the rising trends of financial misconduct. Forensic accounting techniques significantly improve auditors' self-efficacy, and thus, improve their fraud detection outcomes. Computer-assisted audit techniques further strengthen the role of forensic accounting in identifying fraudulent actions.

According to Subedi and Neupane (2024) forensic accounting is an essential tool that improves both the efficiency of IC and the detection of fraud, moderating the association

between CA and FD, which establishes that the index of a well-implemented forensic accounting framework can explain a large percentage of the variation in fraud detection.

Moreover, (Widnyana & Widyawati, 2022) state that forensic accounting and big data can lead to emerging audit processes in which auditors can detect implicit patterns hidden in big data, especially in fraud prevention.

Although forensic accounting can enhance the application of control measures and strengthen control measures against fraud cases, its moderating role, particularly in the government sector, remains unclear. Forensic accountants can play an essential role in spotting and fixing weaknesses in control frameworks, which can ultimately lead to better fraud prevention efforts (Subedi & Neupane, 2024).

H₀₂₋₂: Forensic accounting does not moderate the impact of control activities on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 CA + \beta_3 (FA * CA) + \varepsilon$$

2.2.2.3 Forensic Accounting as a Moderator of the Effect of Risk Assessment on Fraud Deterrence (Hypothesis Two – Sub. 3)

Forensic accounting is an essential part of mitigating the association between RA and FD through actionable steps and improving detection, fraud which can be greatly reduced if businesses embed forensic accounting methodologies within their organization. Forensic accounting contributes to improved risk assessment ability via detailed analysis and constant monitoring, which are essential for effective internal controls and anti-fraud policies. Ongoing education and regulatory support are necessary to enhance the efficiency of FA in deterring crime (Dalwadi, 2023).

According to Subedi and Neupane (2024), FA play an essential role in FD. Forensic accountants can identify potential fraud risks as they develop to remain on the cutting edge and help organizations reduce their dangers.

Additionally, (Setyo et al., 2024) highlight that forensic accounting applies advanced techniques, including data analytics and digital forensics, to detect fraud, mainly in the digital age. The efficacy of threat evaluation techniques in decreasing fraud can be

hampered within the authorities' zone with the aid of specific contextual issues, such as scarce resources, volatile political environments, and lax enforcement.

The accuracy and dependability of the hazard evaluation system may be advanced through forensic accounting, which might also limit its affiliation with fraud deterrence by assisting in becoming aware of high-hazard regions and suggesting remedial measures (Nursansiwati, 2024).

Although forensic accounting can enhance the threat evaluation process, given the precise problems confronted in the authorities' sector, it is unclear if its moderating impact is statistically significant. The capacity of forensic accounting to noticeably milder the connection between threat evaluation and fraud deterrence can be constrained by institutional and political factors (Dewayanto, 2023).

H₀₂₋₃: Forensic accounting does not moderate the impact of risk assessment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 RA + \beta_3 (FA * RA) + \varepsilon$$

2.5.2.4 Forensic Accounting as a Moderator of the Effect of information and communication on Fraud Deterrence (Hypothesis Two – Sub. 4)

By strengthening detection and prevention systems inside businesses, forensic accounting helps moderate the association between I&C and discourages fraud. To detect and resolve fraudulent activity, it integrates investigative and accounting expertise, enhances internal controls, and fosters transparency (Widnyana & Widyawati, 2022).

As it offers the instruments and methods required to identify early indications of fraudulent activity and guarantee the accuracy of statements of affairs, forensic accounting serves as a moderating factor that affects how well information and communication systems prevent fraud (Dewayanto, 2023).

The FA plays a vital role in promoting transparency and accountability in financial reporting across both the private and public sectors. Supporting this view, forensic accounting employs specialized techniques, such as document examination, data analysis, and forensic audits, to aid in the prevention and detection of fraud. FA enhances transparency and strengthens internal controls, both of which are essential for detecting

suspicious transactions and maintaining the integrity of financial statements (Tuharea, 2024).

FA serves as a moderating factor between fraud deterrence and information and communication systems by providing a structured approach to identifying and addressing fraudulent activities. In line with this, regarding the reliability and accuracy of financial information, FA improves the effectiveness of communication systems and supports sound economic decision-making (Widnyana & Widyawati, 2022).

Afriyie et al. (2023) pointed out that the complexity of fraud and the growing need for skilled forensic accountants make the application of FA more challenging. Auditors and financial managers must receive proper training in FA techniques to prevent and detect fraud effectively. Although this greatly helps with fraud prevention and detection, it is not without difficulties.

For forensic accounting techniques to fully realize their potential in preventing fraud, stakeholders must be more knowledgeable about them. In the public sector, political instability, constrained resources, and insufficient schooling may also restrict the effect of forensic accounting on enhancing communication structures, making it doubtful whether forensic accounting performs a statistically significant moderating role in enhancing the connection between statistics and communication structures and fraud deterrence (Ogunode & Dada, 2022).

H₀₂₋₄: Forensic accounting does not moderate the impact of information and communication on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 I\&C + \beta_3 (FA * I\&C) + \varepsilon$$

2.5.2.5 Forensic Accounting as a Moderator of the Effect of Monitoring on Fraud Deterrence (Hypothesis Two – Sub. 5)

The association between MO and FD is moderated by the FA, which improves detection capabilities and offers legal assistance. It acts as a link between conventional auditing procedures and the requirement for specific fraudulent investigation methods (Kaur et al., 2023). Forensic accounting serves as a moderating variable to determine how well monitoring systems detect fraud. In addition, it improves the capacity to recognize the

pressures and justifications that result in fraudulent activity. Integrating forensic accounting with investigative auditing has been successful in detecting fraud because it blends the collection of evidence with the analytical abilities required for court cases (Afriyie et al., 2023).

Because of their specialized knowledge, forensic accountants can better prevent fraud by analyzing intricate fraud schemes that traditional auditors may miss. Although FA significantly improves FD through the application of trustworthy standards and methods to detect fraud, FA plays a critical role in moderating the connection between MO and FD. This improves governance and internal controls, which in turn leads to more effective fraud prevention and monitoring (Tuharea, 2024).

Investigative accounting plays a vital role in preventing fraud by combining investigative audits and forensic accounting methods to identify fraudulent activities. In addition to detecting fraud, this method offers proof that it can be used in court. Cooperation between Investigative Auditing and Forensic Accounting. Investigative auditing and forensic accounting collaborate to efficiently identify fraud. While investigative audits concentrate on detecting fraud using investigative techniques, forensic accountants offer legal opinions and assist in litigation (Loso & Siska, 2024).

Therefore, it is important to empirically check the moderating role of FA in strengthening the connection between tracking and fraud deterrence within the authority sector. Despite its capability contributions, it is still unclear whether forensic accounting has a statistically significant moderating position in improving the effectiveness of monitoring structures in deterring fraud within the authority sector.

H₀₂₋₅: Forensic accounting does not moderate the impact of monitoring fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 MO + \beta_3 (FA * MO) + \varepsilon$$

2.6 Thesis Contribution

Using the COSO framework, some important research gaps can be found by analyzing the above-listed studies that examine how IC affects fraud (detection, mitigation, and prevention). Studies have not sufficiently addressed fraud deterrents, especially in Palestine, despite the great emphasis on a variety of techniques and examination of other factors that influence fraud. The lack of studies examining how internal control affects fraud deterrence in Palestine, both in the government and public sectors, is a research gap. Examining how forensic accounting influences the link between internal control and fraud deterrence is the study's most significant contribution. After reviewing numerous search engines on the web, especially Google Scholar, the researcher found no studies, to the best of his knowledge, that examined the moderating role of IC on the association between IC and FD.

However, few studies in Palestine lack a direct connection between the impact of IC on FD as a whole. Therefore, there is a need for studies that demonstrate the importance of IC in FD, and the significant and moderating role of FA in FD within an integrated framework. These studies should focus on the importance of IC and FA, and the complementary association between them in FD in the Palestinian government sector.

Chapter 3: Methodology

This section outlines the techniques used for data acquisition. The text outlines the study components, including the study plan, target population, sample and sampling strategy, instrument, pilot study, data-collection process, data analysis, presentation, and ethical considerations.

3.1 Research Method

This study employed a descriptive-analytical methodology to answer research objectives and gather data for evaluation. This approach merges descriptive and analytical elements to fully understand the attributes of a phenomenon in a detailed and cohesive manner. It comprises outlining the event methodically, highlighting its salient characteristics, and then examining the data to identify trends and contributing factors. To achieve the goals of the study, the researcher obtained data from multiple sources and compared them to determine which material was the most accurate and reliable, guaranteeing thorough and knowledgeable comprehension of the phenomenon under investigation.

3.2 Data Source

The data for this study were acquired utilizing two types of sources:

1. Secondary (Data): This category includes publications such as books, research papers, articles, conference proceedings, published journals, reports, earlier studies pertinent to the study, and websites. Chapter Two of the study discusses the results from various sources.
2. Primary (data): Collected using a meticulously crafted questionnaire that consists of an extensive collection of structured questions. The purpose of this questionnaire was to collect the necessary data to meet the goals of the study and investigate different facets of the research concepts.

3.3 Research Design

The research design is a systematic blueprint that outlines the precise techniques and processes used for gathering and scrutinizing data. This study focuses on the impact of IC (CE, CA, RA, I&C, and MO) on FD and the role of FA on the association between IC according to the COSO 2013 framework in the Palestinian government sector from the perspective of external auditors, the Anti-Corruption Commission, the State Audit and Administrative Control Bureau, the Economic Crimes Prosecution, the Supreme Judicial Council, and the Financial Follow-up Unit at the Palestine Monetary Authority.

This study used a quantitative approach to obtain its findings. A structured questionnaire was used as a data-collection tool to gather information from the study sample. Secondary data were obtained from published and unpublished studies.

3.4 The population

A population comprises all units in which the investigator is interested and may draw conclusions from (Sekaran, 2016). The study population included all employees working in these sectors: external auditors, financial follow-up units, the Supreme Judicial Council, the Anti-Corruption Commission, the Financial and Administrative Control Bureau, and the Economic Crime Prosecution in the West Bank, totaling 763. Table 3-1 shows the distribution of these departments and the number of employees.

Table (3-1) Distribution of employees according to study population

Category	# employees	%
External Auditors	272	35.65%
Financial Follow-up Unit	20	2.62%
Supreme Judicial Council	227	29.75%
Anti-Corruption Commission	75	9.83%
Financial and Administrative Control Bureau and the Economic Crimes Prosecution	150	19.66%
	19	2.49%
Total	763	100%

3.5 The study sample

The study sample was selected from employees of external auditors, financial investigation and financial follow-up departments, employees of the prosecution and judiciary, and external oversight bodies in Palestine, who are relevant to the research topic. These employees have practical experience in internal control, financial investigation, financial follow-up, fraud, corruption investigation, forensic auditing, and criminal investigation, making them the most reliable source of accurate data. A simple random sample was used to ensure a fair representation of all employees. Questionnaires were distributed electronically to the study sample. This strategy ensured an accurate and reliable sample size as the research population included approximately 763 employees. According to the data from Calculator. net, the sample size was 510 employees from these departments. A simple random sampling method was used to select participants. Table 3-2 shows the distribution of the study sample according to sector.

Table(3-2) Distribution of employees according to study sample

Category	# employees	%
External Auditors	91	35.65%
Financial Follow-up Unit	7	2.62%
Supreme Judicial Council	76	29.75%
Anti-Corruption Commission	25	9.83%
Financial and Administrative Control Bureau and the Economic Crimes Prosecution	50	19.66%
	6	2.49%
Total	256	100%

3. 6 Instruments

The study used a questionnaire because of its ability to comprehensively cover a wide range of topics while reducing the burden on respondents. The survey was conducted in two parts. The questionnaire contained 56 statements divided into nine sections,

using a five-point Likert scale, as shown in Table 3-3. The introductory section includes demographic and other organizational information. The second part of the research focuses on internal controls, forensic accounting systems, and fraud-deterrence factors. The focus was on the analysis of study variables. A pilot study was conducted to evaluate the

questionnaire and to verify its validity. The pilot group consisted of 10 to 30 people, depending on the specific procedure being examined. The second part consisted of three main variables. The first three dimensions of the questionnaire measure forensic accounting services based on the study (Kemunto, 2020; Kirui, 2019). The next five dimensions measured internal control, and a questionnaire was built from the study (Kisseih, 2020; Musila, 2018; Ziorkluei et al., 2024). The ninth and final dimension measures the dependent variable, fraud deterrence from the study (Kemunto, 2020).

3.7 Correction Style

The following distribution was used to correct the questionnaire items and some of the results produced by the Likert scale method were used:

Table (3.3): Likert scale

Very low	Low	Moderate	High	Very high
1	2	3	4	5

Table (3.4): Key for Correction

Mean	Degree
4.21-5	Very High
3.41-4.20	High
2.61-3.40	Moderate
1.81-2.60	Low
1-1.80	Very low

3.8 Validity of Questionnaire

The final version of the questionnaire, which will be administered to the intended responders, will be created, authorized, and revised. To confirm that every paragraph is consistent, the questionnaire will be given to evaluators, who will assess each dimension and its consistency (Mugenda & Mugenda, 2003). to create an accurate modified questionnaire based on the findings of previous studies.

The questionnaire was presented to six academic supervisors and subject matter specialists to assess its validity. These experts made the required adjustments while

confirming the validity of the questionnaire and its appropriateness for accomplishing the study goals. This validation procedure improved the dependability of the data collection tool, which increased the accuracy of the findings.

3.9 Conceptual model:

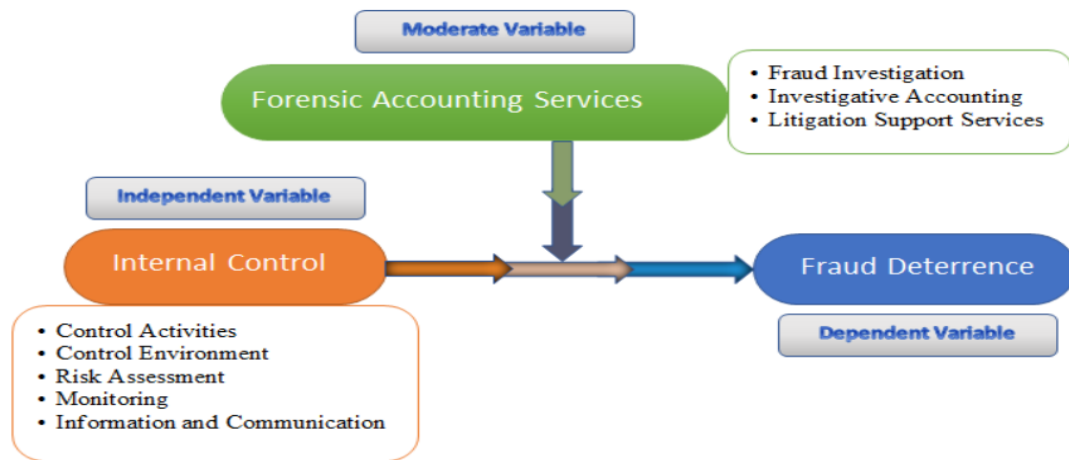


Figure 3.1 Conceptual model

3.10 Explanation of the Conceptual Model

Independent Variable: Internal control (Control Activities, Control environment, Risk Assessment, Monitoring, Information and Communication)

Dependent Variable: Fraud deterrence

Moderator Variable: Forensic accounting. It includes fraud investigations, investigative accounting, and litigation support services.

3.11 Model Specification

The following models were improved to examine how internal control, as defined by the COSO framework, affects fraud deterrence in the Palestinian government sector, with forensic accounting serving as a moderating variable.

$$1. \text{ FD} = a_0 + \beta_1 \text{CE} + \beta_2 \text{CA} + \beta_3 \text{CE} + \beta_4 \text{RA} + \beta_1 \text{MO} + \varepsilon$$

$$1.1 . FD = a_0 + \beta_1 CA + \varepsilon$$

$$1.2 . FD = a_0 + \beta_1 CE + \varepsilon$$

$$1.3 . FD = a_0 + \beta_1 RA + \varepsilon$$

$$1.4 . FD = a_0 + \beta_1 I\&C + \varepsilon$$

$$1.5 . FD = a_0 + \beta_1 MO + \varepsilon$$

$$2. \quad FD = \beta_0 + \beta_1(CE) + \beta_2(CA) + \beta_3(RA) + \beta_4(I\&C) + \beta_5(MO) + \beta_6(FA) + \beta_7 \\ (CE \times FA) + \beta_8(CA \times FA) + \beta_9(RA \times FA) + \beta_{10}(I\&C \times FA) + \beta_{11}(MO \times FA) \\ + \varepsilon$$

$$2.1 . FD = a_0 + \beta_1 FA + \beta_2 CA + \beta_3(FA * CA) + \varepsilon$$

$$2.2 . FD = a_0 + \beta_1 FA + \beta_2 CE + \beta_3(FA * CE) + \varepsilon$$

$$2.3 . FD = a_0 + \beta_1 FA + \beta_2 RA + \beta_3(FA * RA) + \varepsilon$$

$$2.4 . FD = a_0 + \beta_1 FA + \beta_2 I\&C + \beta_3(FA * I\&C) + \varepsilon$$

$$2.5 . FD = a_0 + \beta_1 FA + \beta_2 MO + \beta_3(FA * MO) + \varepsilon$$

Where:

FD: dependent variable fraud deterrence

β = Regression coefficient

IC= independent variable, IC = internal control, COSO (Control Activities, Control environment, Risk Assessment, Monitoring, Information and Communication, Monitoring)

CA: Control Activities

CE: Control environment

RA: Risk Assessment

I&C: Information and Communication

MO: Monitoring

FA = Moderating variable of forensic accounting (fraud investigation (FI), investigative accounting (IAC), and litigation support services (LS))

ε = Error term

3.12 Statistical Approaches

Data analysis was performed using Statistical Package for the Social Sciences (SPSS version 26).

The following statistical tests were employed:

1. percentages, averages, and standard deviations.
2. Pearson's correlation test.
3. Cronbach's Alpha test.
4. Independent samples t-test
5. Analysis of variance (ANOVA)
6. The study variables' statistical influence was evaluated using both simple and multiple linear regression models.
7. Modified regression analysis: a statistical technique to examine how a moderating variable affects the relationship between an independent and dependent variable.

Chapter 4 : Results

4.1 Introduction

This chapter delineates the analysis of the data and evaluation of the hypotheses. The process begins with summary statistics for all study variables, shadowed by an investigation of variable interrelationships, and continues with the evaluation of hypotheses through both basic and sophisticated regression analyses, including moderated regression.

4.1.1 Demographics

A thorough description of the study participants' demographic data was the first step in the data analysis process. The distribution and proportions of these data are displayed in table 4-1

A total of 256 valid responses were collected, providing diverse representation of professionals working in various fields relevant to forensic accounting, economic crime prosecution, the judiciary, and external auditors. This study focuses on financial oversight and anticorruption activities in the context of Palestine.

Table (4.1): Demographic data for respondents

Variable	Items	Freq	%
Specialization	Financial/Admin	178	70%
	Law	34	13%
	Other	44	17%
	Total	256	100%
Educational	Diploma or below	29	11%
	Bachelor	153	60%
	Master	44	17%
	PhD	30	12%
	Total	256	100%
experience	Less than 9 years	59	23%
	10to less than14 years	71	28%
	15to less than20 years	70	27%
	20 years and over	56	22%
	Total	256	100%
Professional Certification	ACPA	101	39%
	AICPA	37	14%
	Forensic Accountant	51	20%
	Legal	67	26%

Work Field	Total	256	100%
	Judiciary/Prosecution	45	18%
	Audit/Control	88	34%
	Anti-Corruption	36	14%
	External Audit	87	34%
Job Level	Total	256	100%
	Operational	113	44%
	Middle Management	100	39%
	Top Management	43	17%
	Total	256	100%

As shown in Table 4.1, the majority of respondents (69.53%) specialized in financial or administrative disciplines, followed by participants from the legal field (13.28%), while 17.19% were categorized as other specializations. As shown in Table 4.1, the largest group held a bachelor's degree (59.77%), 17.19% had a master's degree, and 11.72% held a PhD. Only 11.33% of patients had diplomas or lower qualifications. This indicates that the sample is predominantly well-educated, with over 88% holding at least a bachelor's degree.

Table 4.1 shows that the sample's professional experience was pretty well distributed, with 27.73% having 10–14 years, 27.34% having 15–20 years, and 21.88% having more than 20 years. Only 23.05% have worked for fewer than nine years. This suggests that professionals in their mid- to late-career stages make up the bulk of replies. When considering professional certifications Table 4.1, 30.47% of respondents held the ACPA credential, followed by 29.69% with other certifications, 16.80% as forensic accountants, 11.72% with legal certifications, and 11.33% holding the AICPA. This diversity highlights the technical and specialized background of the participants.

Participants' work fields also varied, with the largest group working in audit and control functions (34%), followed by those in external audits (34%), the judiciary or prosecution (18%), and anti-corruption units (14%).

Finally, the distribution of job levels Table 4.1 showed that 44.14% occupied operational roles, 39.06% held middle management positions, and 16.80% held top management positions. This mix provides insights from different organizational hierarchies, supporting a comprehensive view of governance practices and anti-corruption policies.

Descriptive data for each research variable, independent variable and all of its dimensions, dependent variable and all of its dimensions, and moderator and all of its dimensions, are presented in this section. The following presents an explanation of each of these dimensions and their contents:

4.2 Descriptive statistics of research variables

In this section, descriptive statistics are presented for all study variables, including the dependent variable (FD), the independent variable (IC-COSO and its dimensions), and the moderator (forensic accounting and its dimensions). A description of each of these dimensions and their contents are provided below.

The moderating variable was forensic accounting, which had three parts and 18 questions using a five-point Likert scale. Participants were asked to rate their agreement or disagreement with each topic and STATA software was used to evaluate their answers. As indicated in Table 4.3, the responses were compiled using means and standard deviations.

4.2.1 The moderating variable: forensic accounting

4.2.1.1 Fraud investigation

Table (4.2): Descriptive statistics of fraud investigation

variable	obs	mean	std.dev.	%	r	im
a1 the fraud investigator examines the credibility of the sources of financial documents.	256	1.215	0.421	23.6%	2	v.low
a2 the fraud investigator reviews financial report.	256	1.203	0.403	23.9%	4	v.low
a3 the fraud investigator assesses the risk of fraud.	256	1.215	0.439	24.1%	1	v.low
a4 fraud investigator performs electronic examination to detect forensic evidence	256	1.195	0.407	24.1%	5	v.low
a5 a fraud investigator searches for evidence of illegal practices.	256	1.207	0.425	24.3%	3	v.low
a6 a fraud investigator analyzes suspicious financial transactions.	256	1.18	0.395	24.3%	6	v.low

From the previous table, we noted the averages and standard deviations for all fraudulent investigation items. The averages ranged from (1.18-1.215), indicating the low importance of this area. The overall average was (1.202) and the standard deviation (0.395), which also highlights the low level of importance.

The fraudulent investigator assessing the risk of fraud" had the highest mean (1.202) with a standard deviation of 0.439. This is evidence of the significance of fraudulent RA for fraudulent investigators. Despite respondents' low overall assessment of the field, it is imperative to implement a fraudulent RA process in general. On the other hand, the dimension "A fraud investigator analyzes suspicious financial transactions" had the lowest mean (1.18), with a standard deviation of 0.395. The low importance of this field from the researcher's point of view can be explained by the fact that forensic accounting services are not organized in Palestine, and there are no specialized professional bodies that supervise and implement standards for fraud investigations. In addition, fraud investigators, in one way or another, do not hold specialized professional certificates such as fraud examiners.

This is consistent with previous studies by Bassey and Ahonkhai (2017) that fraud investigations are relatively ineffective in deterring fraud. FI also has little impact on fraud responses, making it an ambiguous and therefore insignificant practice. The study also agreed with (Clements & Knudstrup, 2016) who argued that FI is insignificant because of the lack of procedures that lead fraudulent investigators to plan. They claimed that, as FI is not limited to accounting professionals, unskilled fraudulent investigators are mostly affected by this lack of guidance, leading them to use incorrect investigative methodologies. Asare et al. (2015) concur with these conclusions and contend that FI play no important role in decreasing the likelihood of fraud. By contrast, Dada et al. (2013); (Naz & Khan, 2024, 2025) discovered that fraud investigation plays a crucial role in preventing fraud incidents.

From the researcher's perspective, this result is attributed to the inadequacy of forensic accounting services provided in a structured manner due to the lack of a professional body specializing in forensic accounting and fraud examination. Fraud examinations require specific skills and specialized professional certifications. This is consistent with the previously mentioned studies, especially in developing countries, where

fraud investigations may not be as effective in deterring fraud incidents as expected. The lack of standardized procedures and professional certifications for fraudulent investigators may contribute to the ineffectiveness of fraudulent investigation practices in Palestine.

4.2.1.2 The second component: Accounting Investigations

Table (4.3): descriptive statistics of forensic accounting

B	Variable	Obs	Mean	Std.Dev	%	R	IM
B1	The forensic accountant works to identify misappropriated assets.	256	3.012	0.395	60.2%	3	Moderate
B2	The forensic accountant identifies reversible internal transactions.	256	2.992	0.407	59.8%	6	Moderate
B3	The forensic accountant works to identify financial accounting errors.	256	3.035	0.403	60.7%	1	Moderate
B4	The investigative accountant coordinates with additional experts such as private. investigators, forensic document examiners, and consulting engineers.	256	3.004	0.425	60.1%	4	Moderate
B5	An investigative accountant works to identify and uncover potential illegal activities.	256	3	0.421	60.0%	5	Moderate
B6	An investigative accountant investigates fraudulent investment schemes.	256	3.02	0.439	60.4%	2	Moderate
			3.0105	0.415	60.2%		

Table 4.3 displays the standard deviations and means for each item linked to forensic accounting investigations. The means ranged between (2.992-3.035), all indicating a moderate degree of importance, with an overall mean of (3.0105) and a standard deviation of (0.415). The mean dimension was the highest. "The forensic accountant works to identify financial accounting errors." This had a standard deviation of 0.403 and score of 3.035, reflecting the important influence of FA on FD. On the other hand, the element "The forensic accountant identifies reversible internal transactions" was given the lowest mean. (2.992), with a standard deviation of (0.407). This is the lowest score but still emphasizes the importance of forensic accountants in identifying financial transactions that can be manipulated; they utilize accounting tools to detect fraud and deter it appropriately.

From the results obtained in the second dimension of FA services, we note that there was agreement on the importance of FA investigations in deterring fraud, as some of the study sample members are external auditors and a good percentage of the study sample has a background in accounting, as the practice of this type of FA helps employees of regulatory, legal, and judicial authorities in their work, which positively reflects deterring fraud.

From the researcher's perspective, the results indicate that forensic accounting investigations in the Palestinian government sector play a crucial role in deterring fraud. These findings are justified by the existence of financial systems followed by government agencies within a unified system applied to all financial transactions, and financial controllers often conduct accounting investigations. Forensic accountants play a vital role in ensuring transparency, accuracy, and integrity in financial reporting, as the Palestinian Anti-Corruption Commission, State Audit and Administrative Control Bureau, and internal oversight bodies in Palestinian government ministries conduct accounting investigations, but without forensic accountants specializing in criminal investigations. The results of this dimension were consistent with those of the study by Onodi et al. (2015), who indicated a significant relationship between AI methods and FD. Bhasin (2013) concurs with these conclusions and asserts that fraud can be resolved by AI. The results of the study (Evans, 2017) by showed that AI has a significant positive association with the application of AI techniques to combat economic crimes.

4.2.1.3 litigation support

Table (4.4): Descriptive statistics of litigation support

C	Variable	Obs	Mean	%	Std.Dev.	R	IM
C1	Providing various stakeholders with expert witness reports.	256	2.996	59.92%	0.395	3	Moderate
C2	Assistance in accounting matters related to existing or pending litigation.	256	2.992	59.84%	0.407	5	Moderate
C3	Inquire about other expert reports presented to the courts.	256	3.004	60.08%	0.403	1	Moderate
C4	Providing expert testimony as an expert witness in the litigation	256	2.984	59.68%	0.425	6	Moderate

	support service.							
C5	Determination of the value of financial damages in cases submitted to the court.	256	3.004	60.08%	0.421	2	Moderate	
C6	Attend trials to hear opposing expert testimony and assist in the examination of witnesses.	256	2.996	59.92%	0.439	4	Moderate	
		2.996	59.92%	0.415				

Table 4.4 displays the standard deviations and means for each item linked to litigation support. The means ranged between (2.984-3.004), all indicating a moderate degree of importance, with an overall mean of (2.996) and a standard deviation of (0.415). The dimension's mean was the highest. " Inquire about other expert reports presented to the courts. " This had a standard deviation of (0.403) and score of (3.004), reflecting the important influence of litigation support on fraud deterrence. On the other hand, the element "Providing expert testimony as an expert witness in the litigation support service' was given the lowest mean. (2.984), with a standard deviation of (0.425). This score was the lowest. It is very difficult to abandon forensic accounting services, especially those that play a prominent role in the prosecution and judiciary, which interprets cases that have a financial rather than legal nature. One of the most important cases that has a wide-ranging impact is expert witness services in courts.

According to one researcher, litigation support services in Palestine provide a variety of legal aids to people and organizations, such as case analysis, document review, witness preparation, legal research, courtroom representation, help to obtain evidence, draft legal documents, and case strategy development. Litigation support services are provided by lawyers, legal aid organizations, and legal consultants. Specialists work with clients to provide tailored support that helps them navigate the complexities of the legal system. The samples members relied on the fact that there was someone who performed this role and replaced the forensic accountant in providing judicial support services. In addition, the outcomes of this study were consistent with those of (Mukoro, 2013; Naz & Khan, 2024, 2025) The results found that FA is relevant in combating corruption through FA and LS. This study supports the findings of Okpako and Atube (2013)who found that litigation support services improve fraud reduction by bringing fraudsters to justice and imposing

penalties. In contrast to the findings of other investigations, this contradicts the findings of the study conducted (Bassey & Ahonkhai, 2017).

4.2.2 independent variable: internal control

Table (4.5): Descriptive statistics of internal control

H	Variable	Mean	%	Std. Dev.	R
D	CE	2.978	0.5956	0.415	2
E	CA	3.06	0.612	0.415	1
F	RA	2.0598	0.4119	0.606	3
G	I&C	2.010	0.40206	0.571	4
H	MO	1.1593	0.2318	0.3666	5
		2.2535	0.4507	0.474733	

The study addressed the main question: How do IC components (CE, CA, RA, I and C, MO) affect FD in the Palestinian government sector from the perspective of the respondents? The results in table (4.5) indicate the variation in the levels of application of the various dimensions of internal controls for discovery. Control activities had the highest average ranking (3.06) and a percentage of (61.2%), which reflects the use of effective procedures to deter fraud. The control environment comes next, with an average of (2.978) and a percentage of (59.6%), which shows that the public sector is doing a good job of creating an atmosphere that supports internal control policies and procedures, with an emphasis on creating a culture of strong control. The Third highest was the risk assessment with an average of (2.06) and a percentage of (41.2%), which suggests that this procedure needs to be improved to guarantee that all possible dangers are effectively handled. Then came information activation with an average of (2.01) and a percentage of (40.2%), illustrating how information is used to assist control initiatives and make defensible decisions. Finally, the risk assessment came with an average of (2.06) and a percentage of (41.2%), which indicates the need to enhance this process to ensure that all potential risks are addressed efficiently. Finally, the monitoring came with an average of (1.159) and a percentage of (23.2%), which indicates the need to enhance this process to ensure that all potential risks are addressed efficiently.

4.2.2.1 Control Environment

Table (4.6): Descriptive statistics of Control Environment

D	Variable	Obs	Mean	%	Std.Dev.	R	IM
D1	Employees maintain positive working relationships with each other.	256	2.957	59.14%	0.395	6	Moderate
D2	Integrity, impartiality, and ethical values are adhered to.	256	2.996	59.92%	0.407	1	Moderate
D3	There is a clear separation of roles and responsibilities.	256	2.973	59.46%	0.403	4	Moderate
D4	All duties are performed in accordance with established standards.	256	2.992	59.84%	0.425	2	Moderate
D5	Policies, procedures, and guidelines are documented and communicated to all employees.	256	2.977	59.54%	0.421	3	Moderate
D6	Activities are conducted in an atmosphere of creativity and innovation.	256	2.973	59.46%	0.439	4	Moderate
			2.978	59.56%	0.415	5	

Table 4.6 displays the standard deviations and means for each item related to the Control Environment. The means ranged between (2.957-2.996), all indicating a moderate degree of importance, with an overall mean of (2.978) and a standard deviation of (0.415). The dimension's mean was the highest. " Integrity, impartiality, and ethical values were adhered to in this study." This had a mean of 2.996) and a standard deviation of (0.407), reflecting the important influence of the Control Environment on fraud deterrence. On the other hand, the element 'Employees maintain positive working relationships with each other' was given the lowest mean. (2.957), with a standard deviation of (0.439).

From the researcher's perspective, respondents indicated a medium level of importance for regulatory environmental factors in the Palestinian government sector. This is due to several factors, most notably culture, leadership style, employee morale, effective communication, and the general work environment. These factors may create an environment unfavorable for the effective performance of duties, particularly in fraud-deterrence operations. It is well known that widespread administrative corruption and favoritism, the appointment of unqualified employees, and a lack of confidence in subordinates all lead to an ineffective regulatory environment. In addition, political and

tribal appointments, geographical quotas between governorates, and the failure to hold wrongdoers accountable and refer them to the judiciary or other specialized authorities all lead to a lack of motivation to work within an ideal regulatory environment, thus limiting fraud deterrence in the Palestinian government sector. These results are consistent with the results of a previous study (Nyakarimi et al., 2020; Oduwole & Akintoye, 2023; Vutumu et al., 2024) This is in contrast to the results by (Ibanga & Etim, 2022)

4.2.2.2 Control Activities

Table (4.7): Descriptive statistics of Control Activities

E	Variable	Obs	Mean	%	Std.Dev.	R	IM
E1	Control activities are reviewed at several levels.	256	3.035	60.70%	0.395	6	Moderate
E2	Accounts are reconciled monthly to detect errors and fraud.	256	3.059	61.18%	0.407	3	Moderate
E3	Policies and procedures are in place to facilitate the recording of control activity transactions in accordance with regulations.	256	3.051	61.02%	0.403	4	Moderate
E4	The internal auditor operates independently.	256	3.051	61.02%	0.425	5	Moderate
E5	All control activity departments have clear levels of authority.	256	3.098	61.96%	0.421	3	Moderate
E6	Policies and procedures are reviewed regularly.	256	3.066	61.32%	0.439	1	Moderate
			3.06	61.20%	0.415	2	

Table 4.7 displays the standard deviations and means for each item related to Control Activities. The means ranged between (3.035 and 3.066), all indicating a moderate degree of importance, with an overall mean of (3.06) and a standard deviation of (0.415). The dimension's mean was the highest. "Policies and procedures are reviewed regularly." This had a mean (3.066) and standard deviation of (0.439), reflecting the important influence of Control Activities on fraud deterrence. Conversely, the element "Control activities are reviewed at several levels" was given the lowest mean. (3.035), with a standard deviation of (0.395).

From the researcher's perspective, the results of oversight activities were moderate, contributing to fraud deterrence. The more organized the oversight activities are and the more they are within a clearly defined regulatory and legal framework, the more effective the oversight activities become. A lack of focus on oversight activities leads to average results. Lack of resources allocated to oversight activities, including time, financial resources, and staff training, can affect the effectiveness of oversight activities. Without sufficient resources, it may be difficult to conduct comprehensive reviews at multiple levels.

4.2.2.3 Risk Assessment

Table (4.8): Descriptive statistics Risk Assessment

F	Variable	Obs	Mean	%	Std.Dev.	R	IM
F1	Objectives are set to identify and assess risks that could hinder the achievement of those objectives.	256	2.109	42.2%	0.617	1	low
F2	Controls are in place to allow choices regarding financing options within the accounting procedures.	256	2.031	40.6%	0.606	5	low
F3	Assessments are made regarding potential risks associated with changes in the operating environment.	256	2.055	41.1%	0.618	4	low
F4	Potential risks associated with changes in the onboarding of new employees are carefully evaluated.	256	2.082	41.6%	0.624	3	low
F5	Exposure to fraudulent behavior is assessed.	256	1.996	39.9%	0.577	3	low
F6	A robust and effective plan is in place to address all risks.	256	2.086	41.7%	0.594	6	low
			2.06	41.2%	0.606	2	

Table 4.8 displays the standard deviations and means for each item related to RA. The means ranged between (2.086-2.109), all indicating a low degree of importance, with an overall mean of (2.06) and a standard deviation of (0.606). The dimension's mean was the highest. " Objectives were set to identify and assess risks that could hinder the achievement of those objectives, which had a mean (2.109) and standard deviation of (0.617), reflecting the important influence of Risk Assessment on fraud deterrence. On the other hand, the element 'A robust and effective plan is in place to address all-risks' was given the lowest mean. (2.086), with a standard deviation of (0.594).

From the researcher's perspective, the risk assessment results have an average score. According to the respondents, this was due to the Palestinian government's lack of significant interest in this component. Possible reasons for this average score include the lack of transparency in risk assessment processes; insufficient resources allocated to risk assessment, especially the financial and political situation of the government; lack of training or experience in risk assessment among government officials; corruption, appointment based on nepotism, and favoritism; and lack of accountability, inconsistencies, or biases. This component, along with other internal control elements, is important and deters fraud in the Palestinian public sector.

4.2.2.4 communication and Information

Table (4.9): Descriptive statistics of communication and Information

G	Variable	Obs	Mean	%	Std.Dev.	R	IM
G1	Information flows freely without interference.	256	2	40.0%	0.587	5	low
G2	Effective communication channels exist for the transfer of information and data in all directions.	256	2.012	40.2%	0.57	3	low
G3	All communication channels are used by employees according to the nature of their work.	256	1.984	39.7%	0.587	6	low
G4	All operational information is provided to employees in a timely manner.	256	2.004	40.1%	0.557	4	low
G5	The necessary information is provided in a timely manner for decision-making.	256	2.035	40.7%	0.569	1	low
G6	A clear, written system exists for the communication and information flow between various departments and branches.	256	2.027	40.5%	0.556	2	low
			2.01	40.2%	0.571		

Table 4.9 displays the standard deviations and means for each item related to communication and information. The means ranged between (1.984-2.035), all indicating a low degree of importance, with an overall mean of (2.01) and a standard deviation of (0.571). The dimension's mean was the highest. " The necessary information is provided in a timely manner for decision-making, " which had a mean (2.035) and standard deviation of (0.569), reflecting the important influence of communication and information on fraud

deterrence. On the other hand, the element ‘All communication channels are used by employees according to the nature of their work’ was given the lowest mean. (1.984), with a standard deviation of (0.587).

From the researcher's perspective, the information and communications component, which received a low score, was rated as having structural and administrative challenges, including extreme centralization and bureaucracy. The Palestinian government sector's highly bureaucratic and centralized system of work slows down the flow of information and data, making it less relevant. Furthermore, a weak technological infrastructure, described as underdeveloped or un integrated, constitutes a real obstacle to the flow of information, rendering it less relevant. Furthermore, the lack of clarity in policies and procedures, as internal communication policies are unclear or unknown to employees, exacerbates this problem. Nepotism, where information is based on personal relationships rather than formal communication, leads employees to place less importance on formal and comprehensive communication channels. Fear of repercussions may make employees hesitant to use communication channels, especially when reporting or suspecting fraud by superiors or colleagues. This leads to a lack of trust in these channels, and reduces their perceived importance.

4.2.2.5 Monitoring

Table (4.10): Descriptive statistics of Monitoring

H	Variable	Obs	Mean	%	Std.Dev.	R	IM
H1	Monitoring strategies are used at all stages of the monitoring process.	256	1.164	23.3%	0.371	3	V.low
H2	Project implementation is monitored according to their monitoring and evaluation standards.	256	1.148	23.0%	0.356	5	V.low
H3	Comprehensive reports are prepared for all operations.	256	1.172	23.4%	0.378	1	V.low
H4	All assets are subject to monitoring to ensure transparency.	256	1.148	23.0%	0.356	6	V.low
H5	Recommendations of the State Audit Bureau regarding internal control are implemented.	256	1.168	23.4%	0.375	2	V.low
H6	Segregation of duties exists between	256	1.156	23.1%	0.364	4	V.low

procurement, accounts payable, and payments.	1.159	23.2%	0.366
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Table 4.10 displays the standard deviations and means for each item related to monitoring. The means ranged between (1.148-1.172), all indicating a very low degree of importance, with an overall mean of (1.159) and standard deviation of (0.366). The dimension's mean was the highest. " Comprehensive reports are prepared for all operations, which had a mean (1.172) and standard deviation of (0.378), reflecting the important influence of monitoring on fraud deterrence. However, all assets subject to monitoring to ensure transparency " had the lowest mean. (1.148), with a standard deviation of (0.356).

From the researchers' perspective, this seems logical in the context of the Palestinian government. This result can be explained by several important factors, especially in Palestine where major political and economic challenges abound. Political instability affects government performance because of changes in government, political positions, and donor-country interference in the budget. Conditional grants lead to shifting priorities and long-term policy instability including financial and administrative oversight. Furthermore, the general budget relies on clearing and external grants, which are both irregular and conditional. Furthermore, restrictions on the movement of individuals and goods render it virtually impossible to monitor all assets. In situations of instability, the top priority is to provide basic services to citizens rather than to implement precise oversight standards. The government sector is characterized by bureaucracy and centralization, which slows decision making and makes it difficult to implement effective oversight within a complex hierarchical structure. Furthermore, the monitoring process is reduced to only formal requirements owing to regularity and emphasis on formalities, which compromises its credibility and integrity. Staff members with expertise in internal oversight and fraud detection are frequently in short supply in the Palestinian government agencies. Favoritism undermines the idea of internal supervision since it frequently evades oversight processes for social or political reasons.

4.2.3 The dependent variable : fraud deterrence

Table (4.11): Means and Standard Deviations of all Items fraud deterrence

I	Variable	Obs	Mean	%	Std.Dev.	R	IM
I1	Financial transactions that are not fully recorded according to established accounting standards.	256	4.898	0.98	0.303	3	Very High
I2	Unsupported or unauthorized balances or transactions.	256	4.906	0.981	0.318	2	Very High
I3	Last-minute adjustments that significantly impact financial results.	256	4.891	0.978	0.313	5	Very High
I4	Significant missing assets and documents.	256	4.895	0.979	0.308	4	Very High
I5	Original documents are not available and are being replaced by electronic copies.	256	4.863	0.973	0.355	8	Very High
I6	Recurring changes in accounting estimates that do not appear to be due to changing circumstances.	256	4.871	0.974	0.347	6	Very High
I7	Unwillingness to revise disclosures in financial statements to make them more understandable.	256	4.867		0.393	7	Very High
I8	Unwillingness to address identified internal control deficiencies in a timely manner.	256	4.953		0.246	1	Very High
			4.887	0.977	0.324		

Table 4.11 displays the standard deviations and means for each item related to monitoring. The means ranged between (4.871-4.953), all indicating a very high degree of importance, with an overall mean of (4.887) and standard deviation of (0.324). The dimension's mean was the highest. " Unwillingness to address identified internal control deficiencies in a timely manner: " This had a mean (4.953) and standard deviation of (0.246), reflecting the important influence of monitoring on fraud deterrence. On the other hand, the element' Recurring changes in accounting estimates that do not appear to be due to changing circumstances " was given the lowest mean. (4.871), with a standard deviation of (0.347).

4.3 Reliability and Validity Checks

The Cronbach's alpha coefficient was computed for each scale to evaluate the internal consistency of the questionnaire constructs. The results demonstrate that all constructs exceeded the widely accepted threshold of 0.70, as recommended by Nunnally (1978), indicating strong-to-excellent reliability across the instrument.

The construct measuring Fraud Investigation Procedures, represented in Section A produced a Cronbach's alpha of 0.9197, reflecting a high degree of internal consistency among its items. The second section, Forensic Accounting Investigations, had a Cronbach's alpha of 0.9108, which supports the reliability of the scale. The highest reliability was reported for Litigation Support Activities (Section C), where an exceptional alpha of 0.9700 was observed.

This indicates a strong relationship between the items in this dimension, demonstrating that they accurately represented the intended concept of the PCT scale. As additional evidence of the strength of the instrument, the Control Environment scale (Section D) obtained an alpha of 0.9617. Sections E (control activities) and F (risk assessment) have similar alphas of 0.9126 and 0.8872, respectively, within the reliability threshold. Similarly, the factors related to Information and Communication (Section G) and monitoring (Section H) showed great internal consistency with alpha coefficients of 0.9660 and 0.9571, respectively, and provided consistent answers regarding related items. Last, but not least, the eight items of the Fraud Indicators scale in Section I obtained 0.9102, further buttressing the reliability of this dimension. Taken together, the high reliability levels in all segments confirm the suitability of the measurement instrument, as the relevant variables for future statistical treatment (i.e., regression or structural equation modelling) are stable and internally consistent.

4.4: Cronbach Alpha Results

Table (4.12): Reliability Coefficients for Questionnaire

#	Construct Description	No.of Items	Average Inter-Item Covariance	Cronbachs Alpha
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A	Fraud Investigation		0.1131	0.9197
B	Accounting Investigations	6	0.2938	0.9108
C	Litigation Support	6	0.2954	0.97
D	Control Environment	6	0.2717	0.9617
E	Control Activities	6	0.2956	0.9126
F	Risk Assessment	6	0.2084	0.8872
G	Information and Communication	6	0.2695	0.966
H	Monitoring	6	0.106	0.9571
I	Fraud Deterrence	8	0.0592	0.9102

4.5 Diagnostic Testing

4.5.1 multicollinearity

The Variance Inflation Factor (VIF) (Table 4.3.1) was calculated to assess the presence of multicollinearity among the independent variables. The VIF values for all predictors were close to one, ranging from 1.001 to 1.015, with a mean VIF of 1.008. These results fall well below the commonly accepted threshold of five, indicating that multicollinearity is not a concern in the regression model. Low VIF values suggest that each independent variable provides unique explanatory information about the dependent variable, thereby enhancing the validity and interpretability of the model.

Table 4.13 : Variance inflation factor

statement	VIF	1/VIF
I&C	1.015	0.985
MO	1.014	0.986
CA	1.005	0.995
CE	1.004	0.996
RA	1.001	0.999
Mean VIF	1.008	0.992

4.5.2 correlation matrix

The correlation matrix in Table 4.14 shows the bivariate Pearson correlation coefficients between the model variables. The results show that fraud deterrence has a modest positive correlation with several COSO components, particularly communication

and information ($r = 0.353$), risk assessment ($r = 0.292$), and control activities ($r = 0.280$), indicating a statistically significant association between these internal control components and the effectiveness of fraud deterrence mechanisms. Correlations between the independent variables were weak and mostly negative, with the highest value reaching 0.034, indicating weak correlation. This finding supports the absence of multicollinearity, and confirms the distinctiveness of each construct. The relationships between the variables and fraud deterrence are analyzed in the simple regression section.

Table (4.14) : Matrix of correlations

Variables	FD	CE	CA	RA	I&C	MO
FD	1.000					
CE	-0.035	1.000				
CA	0.280**	-0.049	1.000			
RA	0.292**	-0.009	-0.025	1.000		
I&C	0.353*	-0.040	0.034	0.003	1.000	
MO	0.055	-0.010	-0.035	-0.013	-0.111	1.000

*Significant at 1% level ($p < 0.01$)
 ** Significant at 5% level ($p < 0.05$)

The Breusch–Pagan/Cook–Weisberg test was used to assess the assumption of homoscedasticity in the regression model. The test yielded a chi-square statistic of 61.32 with a p-value of 0.0000, leading to the rejection of the null hypothesis of constant variance. This result indicates the presence of heteroskedasticity, implying that the variance of the error terms is not constant across observations. Consequently, robust standard errors are required to ensure the reliability of inferences drawn from the model. (Breusch & Pagan, 1979; Cook & Weisberg, 1983)

Table (4.15) : Breusch - Pagan/ Cook Weisberg test for heteroskedasticity

Assumption:	i.i.d.	error	terms
Variable:	Fitted	values	of fraud
H0:	Constant		deterrence
chi2(1)	=		variance
Prob > chi2 = 0.0000			61.32

White’s general test for heteroskedasticity corroborates the findings of the Breusch–Pagan test. The overall test statistic was $\chi^2(2) = 97.44$, with a p-value of 0.0000, strongly rejecting the null hypothesis of homoscedasticity. Cameron and Trivedi (2005) further confirmed this result with each component of the test showing statistical significance ($p <$

0.001). These findings reinforce the conclusion that heteroskedasticity is present, and that adjustments such as heteroskedasticity-robust standard errors are necessary to obtain consistent estimates.

Table (4.16): White's test

		Df	P
H0:			
Ha:	Unrestricted		
chi2(2)	=		97.44
Prob	>	chi2	= 0.0000
Cameron & Trivedi's	decomposition	of	IM-test
chi2			
	97.440	2	0.000
	87.000	1	0.000
	25.970	1	0.000
	210.400	4	0.000

Given the importance of ensuring the reliability of regression estimates, formal diagnostic tests result in heteroscedasticity. The Breusch–Pagan/Cook–Weisberg test yielded a chi-square statistic of 61.32 ($p < .001$), and White’s test reported a chi-square value of 97.44 ($p < .001$), both indicating a statistically significant departure from the assumption of homoscedasticity.

The significance of all components in Cameron and Trivedi (2005)decomposition further confirms this violation. Heteroskedasticity can lead to inefficient estimators and biased inference in ordinary least squares (OLS) regression(Wooldridge, 2016), Robust standard errors were employed using the `vce(robust)` option to correct for the non-constant variance of the residuals, thereby enhancing the consistency of the standard error estimates (White, 1980). Additionally, a Generalized Linear Model (GLM) with a Gaussian family and an identity link function was specified to accommodate the heteroscedastic structure of the data while preserving the linearity of the model. The GLM framework offers greater flexibility in handling distributional assumptions and heteroscedastic error terms (Cameron & Trivedi, 2005). This methodological adjustment ensures robust and efficient estimations, thereby strengthening the validity of the empirical findings.

4.6 Results and Hypothesis Testing

A significant value approach was employed to examine the hypotheses presented in the introduction. This method verifies hypothetical claims by comparing the test and sample statistics. The test statistic in the social sciences is often set at 95% ($\alpha = .05$). The alternative hypothesis was accepted if the sample statistic was less than 0.05, thus rejecting the null hypothesis. Conversely, if the sample statistic exceeds 0.05, the alternative hypothesis is rejected and the null hypothesis is accepted. (Bernard Kabweine, 2022)

4.6.1 Analysis of Results and Hypothesis Testing: Model 1

All the hypotheses are thoroughly examined in the table below. These hypotheses were assessed using a multiple regression analysis, and each hypothesis was tested for acceptance or rejection based on statistical significance.

4.6.1.1 Testing of main-hypothesis H_{01}

H_{01} There is no statistically significant impact of internal control (COSO) components on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 CE + \beta_2 CA + \beta_3 CE + \beta_4 RA + \beta_1 MO + \varepsilon$$

Table (4.17): Test of Multiple Regression to the First Sub-Hypothesis H_{01}

FD	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
COSO	.556	.067	8.25	0	.423	.688	***
Constant	3.678	.152	24.12	0	3.378	3.978	***
Mean dependent var	4.930				SD dependent var	0.256	
R-squared	0.211				Number of obs	256	
F-test	68.024				Prob > F	0.000	
Akaike crit. (AIC)	-28.544				Bayesian crit. (BIC)	-21.454	

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 4.16 shows the results of the Pearson correlation coefficients between the independent variables (internal control) and the dependent variable (fraud deterrence). The results of the linear regression analysis in Table 4.16 indicate a statistically significant and positive effect of the overall internal control system (COSO) on fraud deterrence ($\beta =$

0.556, $p < 0.01$). The F-statistic of 68.024 ($p = 0.000$) and the R-squared value of 0.211 suggest a moderately strong model, explaining approximately 21.1% of the variance in fraud deterrence. These findings support the conclusion that internal controls collectively contribute to reducing fraudulent behavior in the Palestinian government sector. Therefore, the null hypothesis (H01) is rejected. The alternative hypothesis, which states that there is a relationship between the implementation of IC systems and FD in the Palestinian government sector from the respondents' perspective, was accepted. The study outcomes are consistent with those of a study conducted by Ibrahim (2017), who found that all COSO elements significantly influence the quality of an organization's IC systems. Nonetheless, it was necessary to specify which elements of the framework were more influential than the others. It also agreed with the study of (Vutumu et al., 2024) which investigated the impact of IC and FD in the Nigerian public sector. This study is consistent with previous studies (Joseph et al., 2015; Yuniarti & Ariandi, 2017)

Table 4.17 displays the results of the regression model examining the direct effects of the five IC-COSO on FD, excluding interaction effects, and provides a clear view of the standalone contribution of each control domain. The model yielded a statistically significant overall fit ($F = 21.108$, $p < 0.001$) with an R-squared value of 0.297. This shows that approximately 29.7% of the variance in fraud deterrence is explained by the five COSO elements, reflecting a strong explanatory capacity for behavioral and organizational studies in the public sector context.

Among the predictors, four of the five COSO components had statistically significant positive effects on fraudulent deterrence. Control activities ($\beta = 0.126$, $p < 0.001$), risk assessment ($\beta = 0.158$, $p < 0.001$), and I&C ($\beta = 0.172$, $p < 0.001$) emerge as the strongest and most consistent predictors. These results reaffirm the critical role of operational controls, timely risk identification, and transparent information systems in deterring fraudulent behavior in government institutions. Their strong significance suggests that these dimensions function well and are effectively perceived by the Palestinian government sector.

Monitoring also displays a significant positive relationship with fraud deterrence ($\beta = 0.083$, $p = 0.044$), although the effect size is smaller. This indicates that while monitoring contributes meaningfully to fraud prevention, it may be more effective when supported by

other complementary-control mechanisms. Conversely, the control environment does not exhibit a significant effect ($\beta = -0.002$, $p = 0.943$), demonstrating that—within this model—organizational culture, ethics, and integrity-related structures are not perceived as direct deterrents to fraud. This non-significance may reflect implementation gaps or a lack of enforcement of ethical standards, limiting their effectiveness in shaping antifraud outcomes. Overall, this model highlights the relative importance of operational and procedural control dimensions—particularly communication, risk management, and control activities—over cultural or ethical controls in influencing fraud deterrence. The results suggest that strengthening these functional control systems may offer the most direct route for enhancing integrity and accountability in the Palestinian government sector.

The outcomes of this study are consistent with those of a previous study (Solomon et al., 2023) in the Nigerian public sector. The results of the study are consistent with those of a study conducted by (Maaroufi & El Haji, 2022) in the Moroccan public sector. This study confirms the results of (Kesuma & Fachruzzaman, 2024) in the Indonesian public sector. This was also consistent with a study by (Osolo & Njeru, 2022) from Kenya.

Table (4.18): Test of multiple Regression to the First Sub-Hypothesis $H0_1$

fraud deterrence	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Control Environment	-.002	.026	-0.07	.943	-.052	.049	
Control Activities	.126	.024	5.25	0	.078	.173	***
Risk Assessment	.158	.028	5.64	0	.103	.213	***
Communication Info	.172	.026	6.64	0	.121	.223	***
Monitoring	.083	.041	2.02	.044	.002	.164	**
Constant	3.783	.147	25.75	0	3.494	4.072	***
Mean dependent var	4.930		SD dependent var		0.256		
R-squared	0.297		Number of obs		256		
F-test	21.108		Prob > F		0.000		
Akaike crit. (AIC)	-49.954		Bayesian crit. (BIC)		-28.683		
*** $p < .01$, ** $p < .05$, * $p < .1$							

4.6.1.2 Testing of sub-hypothesis $H0_{1-1}$

$H0_{1-1}$: There is no statistically significant impact of the control environment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 CE + \varepsilon$$

The findings in Table (4.18) reveal a weak negative relationship between CE and FD

in the Palestinian government sector. Statistical indications ($\beta = -0.002$, $t = -0.07$, $p = 0.943$). The results suggest that CE does not significantly influence FD as the p-value substantially exceeds 0.05, indicating that any apparent effect may be attributable to random variation rather than a genuine effect. Consequently, the null hypothesis was accepted, “that there is no significant relationship between CE and FD in the Palestinian government sector and rejected the alternative hypothesis that there is a significant relation between the variables.

From the researcher’s perspective, the control environment has a negative and insignificant relationship. This can be justified by the political and economic instability in Palestine; the lack of clarity in internal control and auditing procedures and policies; factors of tribalism, nepotism, and favoritism in appointment, hiring, and promotion; and the lack of employee confidence in the skills of external and internal auditors who carry out fraud investigations. This is in addition to the volatility of Palestinian governments, obstacles to barriers, lack of access to workplaces, weak training of employees who carry out internal control operations, and lack of clarity in procedures through laws regulating the control process. This leads to a negative and statistically insignificant relationship that deters fraud in Palestine. The results of this study are consistent with those of Alsawafta (2024), who found no relationship between the control environment and fraud detection in listed companies in the financial behavior of Palestine. The results of the study were inconsistent with the results of a study (Ibanga & Etim, 2022; Solomon et al., 2023) in the Nigerian public sector, The results of the study were consistent with the results of a study by (Oduro & Cromwell, 2018) in the Ghanaian public sector, The results did not align with those of the study by Oduwole and Akintoye (2023) they found that the control environment had an insignificant but negative effect.

4.6.1.3 Testing of sub-hypothesis H0₁₋₂

H0₁₋₂: There is no statistically significant impact of control activities on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 CA + \varepsilon$$

The findings in Table (4.18) demonstrate a positive association between CA and FD in the Palestinian government sector. ($\beta = 0.126$, $t = 5.25$, $p = 0.00$), Consequently, the null hypothesis was rejected, “that there is no significant relationship between control activities and fraud deterrence in the Palestinian government sector,” and the alternative hypothesis was accepted, that there is a significant relationship between the variables.

The CA coefficient is (0.126), indicating that every unit increase in CA is connected to an increase in FD by (0.126). The standard error value (.027) improves the precision of the estimate, while the T-value of (4.65) confirms the importance of this influence because it surpasses the necessary threshold. In conclusion, the more internal control components that are implemented, including control activities, the more they contribute to deterring fraud in public and governmental institutions in Palestine. The results of this study are consistent with those of a previous study (Ibanga & Etim, 2022; Solomon et al., 2023) in the Nigerian public sector.

From the researcher's perspective, the results of oversight activities indicate a positive and statistically significant relationship, demonstrating a strong impact on fraud deterrence. These results emphasize the need for effective IC systems to achieve organizational objectives. Continuous training and technological upgrades are recommended in order to improve these systems. The study's findings also make sense in the context of the government as institutions are capable of implementing oversight activities and achieving positive outcomes. This is consistent with corruption literature, which distinguishes between the existence of laws and their degree of effectiveness in practice under certain political, social, and economic pressures. The results of this study are consistent with the findings of (Shakeel et al., 2023; Widiantari & Bella, 2023), who confirm their positive impact on fraud deterrence. The results of the study were consistent with the results of a study (Ibanga & Etim, 2022; Solomon et al., 2023) in the Nigerian public sector, The results of the study were inconsistent with the results of a study by (Oduro & Cromwell, 2018) in

the Ghanaian public sector, in line with existing literature, including (Agang, 2020; Ibanga & Etim, 2022; Wanjala & Riitho, 2020).

4.6.1.4 Testing of sub-hypothesis H0_{1,3}

There is no statistically significant impact of risk assessment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 RA + \varepsilon$$

The findings in Table (4.18) demonstrate a positive relationship between RA and FD in the Palestinian government sector. ($\beta = 1.58$, $t = 5.64$, $p = 0.00$), Consequently, the null hypothesis was rejected, “that there is no significant relationship between RA and FD in the Palestinian government sector,” and the alternative hypothesis was accepted, that there is a significant relationship between the variables.

The RA coefficient is (0.154), indicating that every unit increase in RA was associated with an increase in FD of (0.154). The standard error value (0.032) improves the precision of the estimate, while the T-value of (4.87) confirms the importance of this influence because it surpasses the necessary threshold. In conclusion, the more internal control components that are implemented, including Risk Assessment, the more they contribute to deterring fraud in public and governmental institutions in Palestine.

From the researcher's point of view, and with reference to the positive and statistically significant result that showed that risk assessment leads to increased fraud deterrence in the Palestinian government sector, this result confirms the importance of advanced risk management strategies, as supported by (Alsawafta, 2024; Nwite et al., 2024) who recognized its role in improving the reliability of information and deterring fraud. The results of the study were consistent with the results of a study (Ibanga & Etim, 2022; Oduwole & Akintoye, 2023; Solomon et al., 2023) in the Nigerian public sector, The results of the study were consistent with the results of a study by (Oduro & Cromwell, 2018) in the Ghanaian public sector.

4.6.1.5 Testing of sub-hypothesis H0₁₋₄

H0₁₋₄: There is no statistically significant impact of information and communication on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 I\&C + \varepsilon$$

The findings in Table (4.18) demonstrate a positive relationship between I&C and FD in the Palestinian government sector. ($\beta = 0.172$, $t = 6.64$, $p = 0.00$), Consequently, the null hypothesis was rejected, “that there is no significant relationship between I&C and FD in the Palestinian government sector,” and the alternative hypothesis was accepted, that there is a significant relationship between the variables.

The I&C coefficient is (0.172), indicating that every unit increase in I&C was associated with an increase in FD of (0.172). The standard error value (0.026) improves the precision of the estimate, while the T-value of (6.64) confirms the importance of this influence because it surpasses the necessary threshold. In conclusion, the more internal control components that are implemented, including I&C, the more they contribute to deterring fraud in public and governmental institutions in Palestine.

From the researcher's point of view, and with reference to the result that there is a statistically significant positive impact of information and communication on fraud deterrence in the Palestinian government sector, which proves that when used, the more the information and communication component is applied, the more fraud deterrence increases. This result contradicts the result of Alsawafra (2024) study in the Palestinian private sector, where the result of her study was a negative, statistically insignificant relationship between information and communication and fraud deterrence. The outcomes of the study were consistent with the outcomes of a study (Ibanga & Etim, 2022; Solomon et al., 2023) in the Nigerian public sector, , The results of the study were inconsistent with the results of a study by (Agang, 2020; Oduro & Cromwell, 2018) in the Ghanaian public sector, while others, such as (Ogwiji & Lasisi, 2022) found statistically negative and significant effects.

4.6.1.6 Testing of sub-hypothesis H_{01.5}

H_{01.5}: There is no statistically significant impact of monitoring on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 MO + \varepsilon$$

The results in Table (4.18) indicate a weak but statistically significant relationship between monitoring and fraud deterrence in the Palestinian government sector. ($\beta = 0.083$, $t = 2.02$, $p = 0.044$), Therefore, the null hypothesis that "there is no statistically significant relationship between monitoring and fraud deterrence in the Palestinian government sector" was rejected, and the alternative hypothesis that "there is a statistically significant relationship between the variables" was accepted.

In the researcher's view, based on the findings, the monitoring component has a weak, statistically significant positive effect, indicating that current levels of monitoring do not significantly impact fraud deterrence. This finding points to the need to reevaluate monitoring practices. While a very weak positive effect was observed, it was due to practices in the Palestinian government sector such as unclear guidelines or limited effectiveness. Other issues include unclear lines of authority and responsibility between oversight bodies and employees in government departments, lack of integrated control elements, administrative corruption and favoritism, weak technology, bureaucracy, and unclear organizational structures.

The result of the control component is consistent with (Alsawafta, 2024) study, who examined the role of control in the Palestinian private sector. These results suggest that monitoring practices alone may not be sufficiently effective in curbing fraud without integration with other control elements. The results of this study were inconsistent with those of a previous study (Solomon et al., 2023) in the Nigerian public sector. The results of this study were consistent with (Ibanga & Etim, 2022).

4.6.2 Analysis of Results and Hypothesis Testing: Model 2

This section analyzes each of the study's moderator variable hypotheses, and the steps to do so are explained below. Analysis of Regression. The study hypotheses were evaluated

by a moderator and the acceptance or rejection of each hypothesis was statistically significant. The moderator equation is as follows:

The majority of research has concentrated on analyzing the effects of forensic accounting or internal controls on preventing fraud; very few such studies (Riza et al., 2024; Vutumu et al., 2025), have looked at both simultaneously. To bridge this gap, this study integrates forensic accounting and internal controls. This study uses an integrated approach to analyze the combined impact of IC and FA on FD in the Palestinian government sector, offering a novel contribution towards a long-lasting solution to fraud, in contrast to previous studies that primarily examined individual variables or separate frameworks.

4.6.2.1 Testing of main-hypothesis H02

1. H02: Forensic accounting does not moderate the impact of internal controls (COSO) on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 IC + FA * IC +$$

Table (4.19): Moderator of Multiplier Regression Analysis to the main -Hypothesis

H0 ₂							
FA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
IC	3.395	.483	7.03	0	2.444	4.346	***
FA x IC	-1.189	.2	-5.96	0	-1.582	-.796	***
FA	2.841	.453	6.28	0	1.95	3.732	***
Constant	-3.103	1.094	-2.84	.005	-5.257	-.949	***
Mean dependent var	4.930				SD dependent var	0.256	
R-squared	0.339				Number of obs	256	
F-test	43.109				Prob > F	0.000	
Akaike crit. (AIC)	-69.841				Bayesian crit. (BIC)	-55.660	
*** $p < .01$, ** $p < .05$, * $p < .1$							

The interaction term between IC-COSO and FA (FA*IC) in Table 4.23 is negative and statistically significant ($\beta = -1.189$, $p < 0.01$), while COSO and forensic accounting both have strong positive direct effects. The R-squared value increases to 0.339, indicating an improved model fit. These findings suggest a moderation effect in which forensic accounting influences the strength of the COSO fraud–deterrence relationship. The interaction between internal control, COSO, and forensic accounting (FA × IC)

significantly contributes to fraud deterrence. Additionally, an R² value of (0.339) indicates that (33.9%) of the variance in fraud deterrence can be explained by interaction, reflecting the strength of the model in explaining this relationship.

Analysis of Variance (ANOVA) revealed that the F value is (43.109). At a significance level (Sig) of (0.000), The statistical significance of the results was confirmed at a significance level of 0.000. Consequently, the null hypothesis was rejected, “that there is no significant relationship between the interaction between internal control COSO and forensic accounting on fraud deterrence in the Palestinian government sector,” and the alternative hypothesis was accepted, that there is a significant relationship between the variables.

Table (4.20): Moderator of Comprehensive Multiplier Regression Analysis of the sub-Hypotheses

FD	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
CE	-.653	.181	-3.60	0	-1.009	-.296	***
CA	.016	.182	0.09	.929	-.342	.374	
RA	.524	.18	2.91	.004	.169	.88	***
I&C	.553	.197	2.81	.005	.165	.94	***
MO	.468	.298	1.57	.117	-.119	1.054	
MO*FA	-.156	.123	-1.27	.204	-.398	.085	
I&C*FA	-.161	.082	-1.97	.05	-.323	0	**
RA*FA	-.153	.075	-2.04	.042	-.3	-.005	**
CA*FA	.277	.076	3.66	0	.128	.425	***
CE*FA	.042	.074	0.57	.57	-.104	.188	
Constant	3.775	.142	26.59	0	3.496	4.055	***
Mean dependent var	4.930				SD dependent var	0.256	
R-squared	0.362				Number of obs	256	
F-test	13.877				Prob > F	0.000	
Akaike crit. (AIC)	-64.689				Bayesian crit. (BIC)	-25.692	

*** $p < .01$, ** $p < .05$, * $p < .1$

The comprehensive regression model incorporating all five IC components along with their interaction terms with forensic accounting reveals important insights into their combined influence on fraud deterrence, as shown in Table 4.24. The model demonstrates a good fit with an R-squared value of 0.362, indicating that the predictors can explain approximately 36.2% of the variance in fraud deterrence.

The overall model was statistically significant ($F = 13.877$, $p < 0.001$), thus supporting its robustness. Among the direct effects, the three components exhibit statistically significant associations with fraud deterrence. Notably, the control environment shows a negative and significant relationship ($\beta = -0.653$, $p < 0.01$), suggesting that when all other variables are controlled for, a stronger CE may not independently enhance FD and may even be counterproductive. This unexpected result may reflect the potential for formalization or ineffective implementation of ethical standards that do not translate into practical fraud prevention outcomes. Conversely, both risk assessment ($\beta = 0.524$, $p = 0.004$) and information and communication ($\beta = 0.553$, $p = 0.005$) have positive and statistically significant effects on fraud deterrence.

These findings reinforce earlier univariate results and underscore the critical role of proactive risk identification and transparent information flow in deterring fraudulent behavior. Control activities ($\beta = 0.016$, $p = 0.929$) and monitoring ($\beta = 0.468$, $p = 0.117$) did not show statistically significant effects in the full model, suggesting overlapping variance or diminished explanatory power when considered along with stronger predictors and their interactions.

The inclusion of these interactions provides a deeper understanding of how forensic accounting moderates these relationships. Specifically, the interaction between forensic accounting and the control environment ($\beta = 0.277$, $p < 0.01$) is both positive and significant, indicating that forensic practices strengthen the influence of ethical and cultural controls on fraud deterrence. In contrast, significant negative moderation effects are observed for both risk assessment ($\beta = -0.153$, $p = 0.042$) and information and communication ($\beta = -0.161$, $p = 0.050$), suggesting that when forensic accounting mechanisms are highly active, the marginal impact of these COSO components on fraud deterrence is reduced. This may reflect a potential saturation effect in which the combined implementation of both strong risk controls and forensic strategies yields diminishing returns.

The moderating effects of control activities and monitoring were not statistically significant, indicating no meaningful interaction with forensic accounting in these areas. In summary, the multivariate model confirms the importance of specific internal control components, particularly risk assessment and communication, while revealing the complex

moderation dynamics introduced by forensic accounting. These findings highlight the nuanced interplay between control systems and forensic interventions, emphasizing the need for a balanced and well-integrated FD strategy in the government sector context.

4.6.2.2 Testing of sub-hypothesis H₀₂₋₁

H₀₂₋₁: Forensic accounting does not moderate the impact of the control environment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = \alpha_0 + \beta_1 FA + \beta_2 CE + \beta_3 (FA * CE) + \varepsilon$$

The results presented in Table (4.20) indicate a weak positive relationship between the interaction of CE and FA on the relationship between CE and FD in the Palestinian government sector. ($\beta = .042$, $t = 0.57$, $p = .57$). Therefore, the null hypothesis that "Forensic accounting does not moderate the impact of control environment on fraud deterrence in the Palestinian government sector" was accepted, and the alternative hypothesis that "there is a moderate statistically significant relationship between the variables" was rejected.

The coefficient of the interaction term is (.042), indicating an unimportant association. This suggests that each unit increase in the interaction between FA and CE corresponds to an increase of (.042) in FD. The standard error (.107) reflects the precision of this estimate, whereas a T-value of (0.57) does not surpass the significance threshold.

In the researchers' opinion, the results reflect the specificity of the control environment's application in the public and government sectors in Palestine. Possible reasons for the weak role of forensic accounting in modifying the relationship between the control environment and fraud deterrence include the failure of the Palestinian government to implement forensic accounting procedures, lack of expertise among those in charge, or lack of independence. Additionally, within the Palestinian government, there is a weak commitment to governance and a weakness of those in charge of forensic accounting. The application of traditional administrative oversight systems without keeping pace with scientific and technological developments, such as forensic accounting, in turn reduces the role of forensic accounting in modifying the relationship between internal control and fraud deterrence. According to these results, enhancing the effectiveness of forensic accounting

within the Palestinian government sector requires the development of laws, increasing awareness, and training.

4.6.2.3 Testing of sub-hypothesis H₀₂₋₂

H₀₂₋₂: Forensic accounting does not moderate the impact of control activities on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 CA + \beta_3 (FA * CA) + \varepsilon$$

The results shown in Table (4.20) indicate the presence of a statistically significant positive relationship between the interaction of CA and FA and the relationship between CA and FD in the Palestinian government sector. ($\beta = .277$, $t = 3.66$, $p .000$). Therefore, the null hypothesis that " Forensic accounting does not moderate the impact of CA on FD in the Palestinian government sector " was rejected, and the alternative hypothesis that "there is a moderate statistically significant relationship between the variables" was accepted.

The interaction coefficient is (0.277), indicating a reasonable positive association, and that each increase in the interaction between FA and CA corresponds to an increase of (0.277) in the impact on the relationship between CA and FD in the Palestinian government sector. The standard error (0.076) reflects the accuracy of this estimate, whereas the T-value of (3.66) exceeds the significance threshold.

From the researcher's perspective, the results demonstrate the important role of forensic accounting in strengthening internal control over fraud deterrence in the Palestinian government. The positive relationship between the interaction variable and the effect of increased fraud deterrence effectiveness provides evidence that forensic accounting contributes significantly and pivotally to strengthening oversight measures to deter early fraud, strengthen governance and integrity, and enhance the efficiency of financial investigations.

4.6.2.4 Testing of sub-hypothesis H₀₂₋₃

H₀₂₋₃: Forensic accounting does not moderate the impact of risk assessment on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 RA + \beta_3 (FA * RA) + \varepsilon$$

The results in Table (4.20) indicate the presence of a statistically significant negative relationship between the interaction of RA and FA on the relationship between RA and FD in the Palestinian government sector. ($\beta = -.153$, $t = -2.04$, $p = .042$). Therefore, the null hypothesis that "Forensic accounting does not moderate the impact of RA on FD in the Palestinian government sector" was rejected, and the alternative hypothesis that "there is a moderate statistically significant relationship between the variables" was accepted.

The interaction coefficient is (-0.153), indicating a reasonable negative association, and that each increase in the interaction between FA and RA corresponds to a decrease of (-0.153) in the impact on the relationship between RA and FD in the Palestinian government sector. The standard error (0.074) reflects the accuracy of this estimate, whereas the T-value of (-2.04) exceeds the significance threshold.

From the researcher's perspective, the negative relationship resulting from the interaction variable reduces the role of risk assessment in fraud deterrence. Possible reasons include the widespread use of traditional internal control procedures in the Palestinian government sector while not fully and effectively utilizing the benefits of forensic accounting. Another potential reason is the lack of coordination between risk assessments and forensic accounting personnel, which creates an overlap in roles and reduces their effectiveness when working together. Moreover, inadequate training and lack of experience in collaboration across forensic accounting and internal auditing entities compromise the efficacy of the oversight system. These results highlight the importance of creating a cooperative framework and good integration between risk assessments and forensic accounting units to enhance the efficacy of fraud prevention in the government sector.

4.6.2.5 Testing of sub-hypothesis H₀₂₋₄

H₀₂₋₄: Forensic accounting does not moderate the impact of information and communication on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 I\&C + \beta_3 (FA * I\&C) + \varepsilon$$

The results shown in Table (4.20) indicate the presence of a statistically significant negative relationship between the interaction of I&C and FA on the relationship between I&C and FD in the Palestinian government sector. ($\beta = -.161$, $t = -1.97$, $p = .05$). Therefore, the null hypothesis that "Forensic accounting does not moderate the impact of I&C on FD in the Palestinian government sector" was rejected, and the alternative hypothesis that "there is a moderate statistically significant relationship between the variables" was accepted.

The interaction coefficient is (-0.161), indicating a significant negative association. Each increase in the interaction between FA and I&C corresponds to a decrease of (-0.153) in the relationship between RA and FD in the Palestinian government sector. The standard error (0.082) reflects the accuracy of this estimate, whereas a T-value of (-1.97) exceeds the significance threshold.

From the researcher's perspective, the negative impact of the interaction variable on the relationship between information and communication is due to the lack of coordination and planning between the application of forensic accounting and communication and information in fraud deterrence. This leads to duplication of procedures and wasted time owing to overlapping roles. Furthermore, there is a lack of cooperation between oversight and forensic accounting staff, which negatively affects fraudulent deterrence. This is also due to the use of outdated technology that does not utilize digital protection and control elements, as the integration of technology with forensic accounting works to better deter fraud.

4.6.2.6 Testing of sub-hypothesis H₀₂₋₅

H₀₂₋₅: Forensic accounting does not moderate the impact of monitoring on fraud deterrence in the Palestinian government sector ($P \leq 0.05$).

$$FD = a_0 + \beta_1 FA + \beta_2 MO + \beta_3 (FA * MO) + \varepsilon$$

The results shown in Table (4.20) indicate the presence of a statistically insignificant negative relationship between the interaction of MO and FA on the relationship between MO and FD in the Palestinian government sector. ($\beta = -.156$, $t = 1.57$, $p = 0.204$). Therefore, the null hypothesis that "Forensic accounting does not moderate the impact of MO on FD in the Palestinian government sector" was accepted, and the alternative hypothesis that "there is a moderate statistically significant relationship between the variables" was rejected.

The interaction coefficient is (-0.156), indicating an insignificant negative association, and that each increase in the interaction between FA and MO corresponds to a decrease of (-0.153) in the impact on the relationship between MO and FD in the Palestinian government sector. The standard error (0.123) reflects the accuracy of this estimate, whereas a T-value of (-1.27) does not surpass the significance threshold.

From the researcher's perspective, the negative and statistically insignificant result of the interaction variable of monitoring and forensic accounting in deterring occupation is due to the weak implementation of internal oversight to serve financial investigations effectively. The Palestinian government sector focuses on implementing oversight or forensic accounting mechanisms from formal and procedural perspectives without taking advantage of recent developments in the field of forensic accounting. The weakness of the government's organizational and administrative structure, along with the financial crisis, has led to the government's inability to conduct effective and efficient training for internal control personnel and forensic accountants to achieve the desired results in deterring fraud. Governments must seek innovative mechanisms for joint work between internal oversight and forensic accounting to update the procedures, legislation, and regulations necessary to coordinate the roles of accountants and internal auditors.

4.7 Comparative Analysis of Study Model Results

Table (4.21): Comparative results of study variables

Variable	Direct Model	Interaction Model	Difference	significant
(β_0)	3.783***	3.775***	-0.008	
IC	0.556***	3.395***	2.839	a significant increase while keeping relevance
(CE)	-0.002	-0.653***	-0.651	non-sig to sig negative
(CA)	0.126***	0.016	-0.11	Decrease in statistical sig
(RA)	0.158***	0.524***	0.366	a significant increase while keeping relevance
(I&C)	0.172***	0.553***	0.381	a significant rise while keeping relevance
(MO)	0.083**	0.468	0.385	Decrease of significance despite coefficient increase
CE × FA	-	0.042	-	Not sig
CA × FA	-	0.277***	-	Strong positive interaction
RA × FA	-	-0.153**	-	sig negative interaction
I&C × FA	-	-0.161*	-	significant negative interaction
MO × FA	-	-0.156	-	Not sig
Model Fit				
R-squared	0.297	0.362	0.065	improvement
F-value	21.108***	13.877***	-	Decrease but sig
# obs	256	256	7.231	0%
				Constant

This analysis represents an important study that examines how a comprehensive internal control system (represented by the five COSO components) affects fraud deterrence in the Palestinian government sector and the role of modified forensic accounting. The findings from this study confirm that internal controls, operationalized through the COSO 2013 framework, exert a statistically significant and positive influence on fraud deterrence within the Palestinian public sector ($\beta = 0.556$, $p = 0.000$). This reinforces the argument that internal control frameworks, when effectively designed and implemented, serve as a fundamental line of defence against fraudulent activity (Alazzabi et al., 2023; Kisseih, 2020). This result is consistent with fraud detection Theory (Alanezi &

Brooks, 2014; Dorminey et al., 2012)

The analysis of the second model, which includes the modified variable of forensic accounting, presents a forensic accounting coefficient ($\beta = 2.841$, $p = 0.000$). They contribute significantly to deterring fraud in the Palestinian public sector. This is in line with forensic accounting theory (Ozili, 2020; Vutumu et al., 2025) and the fraud-box key model (Onodi et al., 2017), which argues that integrating investigative accounting, litigation support, and specialized fraud-detection techniques into control systems contributes to bridging control gaps and increasing detection certainty.

Internal controls (COSO) ($\beta = 3.395$, $p = 0.000$) also collectively contribute to deterring fraud in the Palestinian public sector. From the results, we note that forensic accounting and internal controls contribute significantly to deterring fraud, which is proven by the model's robustness, as R-squared reached 0.362. The overall model was statistically significant ($F = 13.877$, $p < 0.001$), thus supporting its robustness. The interaction variable between forensic accounting and internal control ($\beta = -1.189$, $p = 0.000$) showed a statistically significant negative relationship, indicating a complex reciprocal relationship. Each independent variable positively affects fraudulent deterrence. Interestingly, the interaction variable moderates the strength of the relationship between internal control and fraud deterrence in the Palestinian government sector.

From the comparison results, the R2 of the model improved from 0.297 to 0.362, indicating that the interaction model explains a greater proportion of the variance in the dependent variable. The coefficient of the IC variable also increased significantly, from 0.556 to 3.395, which strengthened internal control when the FA variable was added. This indicates the importance of FA in supporting IC in deterring fraud, and that the forensic accounting interaction variable has a strong moderating effect on the relationship between the components of IC and FD.

The control environment (CE) variable showed a substantial and significant increase from -0.002 to -0.653, but the effect was not statistically significant and became a strong and significant negative effect ($p < 0.01$). The control activities variable (CA) showed a significant decrease from 0.126 to 0.016, and the variable was statistically significant and became statistically insignificant. Meanwhile, the risk assessment component showed a significant increase from 0.158 to 0.524 but remained statistically significant. This

significant increase was driven by the moderating variable forensic accounting, indicating the importance of increasing the impact of the other components. Similarly, the information and communication component shows a significant change from 0.172 to 0.553, indicating the importance of this component in deterring fraud in the Palestinian public sector.

The monitoring coefficient (MO) component showed a significant increase from 0.083 to 0.468, and the effect became statistically insignificant ($p = 0.117$). This may be due to overlap with other components of internal control (risk assessment and communication).

The interaction variable ($CA \times FA$) showed a strong positive relationship ($p < 0.01$). This indicates that forensic accounting makes control activities (CA) effective through the presence of specialized investigators who transform routine procedures into effective tools for detecting and preventing fraud. The remaining interaction variables showed mixed results; the control activities and monitoring components showed a negative and statistically insignificant relationship. Additionally, the risk assessment, communication, and information variables showed negative, but statistically significant relationships.

From the researcher's perspective, after comparing the results of the two models, the effect of forensic accounting on the relationship between internal control and fraud deterrence in the Palestinian government sector is very strong, as the strength of some components increases and that of others decreases. These variables became statistically significant, indicating the important role of forensic accounting in the Palestinian government sector. In other words, the Palestinian government has an advanced risk-assessment system and excellent communication channels. The addition of strong forensic accounting reduces the marginal effect of these two components. In other words, the system has become so strong that the contribution of each component has become unclear.

From a researcher's perspective, this result can be explained by the lack of an effective professional body for forensic accounting. The work of forensic accountants and fraudulent investigators is unregulated, and there is overlapping authority between forensic accountants and those working in the field of oversight because of unclear organizational structures, bureaucracy, nepotism, favoritism in appointment and promotion, and the lack of a deterrent to fraudsters. In addition to political and economic instability, there are international donor funding requirements, adherence to international anti-corruption

agreements, the occupation's control over tax revenues, political divisions, numerous administrative and bureaucratic restrictions, and the weakness of the forensic accounting profession in Palestine.

4.8 summary

The empirical results substantiate the crucial argument that IC systems, as framed by the IC model, improve FD in the Palestinian government considerably. The overall effect of IC on FD was statistically significant and positive, leading to the rejection of the main null hypothesis (H01). Each of the different IC elements, CA, RA, and I&C, displayed significant positive effects, whereas CE and MO were not statistically significant. Further analysis revealed that FA played a moderating role in the relationship between the IC components and FD. Specifically, FA significantly moderated the effects of CA, RA, I&C, and MO; however, the direction of moderation was negative, suggesting diminishing marginal effects when both IC and FA tools were simultaneously powerful at the same time. CE was the only element for which no moderating effect was observed. These results jointly underscore the complementary, yet complex interaction between IC COSO and FA practices in curbing fraudulent activities within the government sector.

4.9 Robustness check using GLM to account for heteroskedasticity

To validate the robustness of the main results and address the presence of heteroscedasticity identified through diagnostic testing, Generalized Linear Models (GLMs) with a Gaussian distribution and identity link function were estimated. These models account for non-constant error variance while preserving the linear structure of the regression.

The GLM model in table 4.30 measured the direct effect of the overall IC on the FD. The results show a statistically significant and positive relationship ($\beta = 0.556$, $p < 0.001$), which is consistent with OLS assessments. The model demonstrated a good fit ($\chi^2 = 27.48$, $p < 0.001$), confirming the robustness of the central hypothesis (H01) that IC improves FD.

Table (4.22) : Generalized linear models

FD	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
IC	.556	.106	5.24	0	.348	.763	***
Constant	3.678	.251	14.66	0	3.186	4.169	***
Mean dependent var			4.930	SD dependent var		0.256	
Number of obs			256	Chi-square		27.477	
Prob > chi2			0.000	Akaike crit. (AIC)		-28.544	

*** $p < .01$, ** $p < .05$, * $p < .1$

The GLM model in table 4.30 incorporated the interaction between IC COSO and FA. Both IC COSO ($\beta = 3.395$, $p < 0.001$) and FA ($\beta = 2.841$, $p < 0.001$) had robust positive effects on FD. Conversely, the interaction term ($\beta = -1.189$, $p < 0.001$) is negative and significant, showing that, while each independently enhances FD, there can be declining marginal rewards from their combined effect. According to these findings, the moderating hypothesis (H02) is robust and the moderation effect seen in the linear regression models is replicated.

Table (4.23): Generalized linear models

FD	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
IC	3.395	.633	5.37	0	2.155	4.635	***
FA*IC	-1.189	.25	-4.75	0	-1.68	-.699	***
FA	2.841	.596	4.77	0	1.673	4.01	***
Constant	-3.103	1.506	-2.06	.039	-6.055	-.151	**
Mean dependent var			4.930	SD dependent var		0.256	
Number of obs			256	Chi-square		45.064	
Prob > chi2			0.000	Akaike crit. (AIC)		-69.841	

*** $p < .01$, ** $p < .05$, * $p < .1$

In general, the GLM results support the validity and stability of the primary results under more flexible model specifications. Consistency in the direction, magnitude, and significance of the key parameters underscores the reliability of the conclusions drawn regarding the effectiveness of internal control systems and the conditional role of forensic accounting in deterring fraud within the public sector.

4.10 Robustness Check Using SEM with Robust Estimation

To validate the robustness of the main regression findings, a Structural Equation Model (SEM) was estimated using the maximum likelihood with missing values (MLMV)

method and robust standard errors. The model included five IC COSO components as exogenous variables for predicting FD.

SEM Model: COSO effect on Fraud Deterrence

Endogenous variables

Observed: FD

Exogenous variables

Observed: CE, CA, RA, I&C, MO

Fitting target model:

Iteration 0: log pseudo likelihood = -843.6837

Iteration 1: log pseudo likelihood = -843.6837

Structural equation model Number of obs = 256

Estimation method: mlmv

Log pseudo likelihood = -843.6837

Table (4.24) SEM Model: COSO effect on Fraud Deterrence

	Coefficient	std.	err.	z	P>z	95%
FD						
CE	-0.002	0.029	-0.060	0.949	-0.058	0.055
CA	0.126	0.029	4.310	0.000	0.068	0.183
RA	0.158	0.034	4.600	0.000	0.091	0.225
I&C	0.172	0.037	4.710	0.000	0.100	0.244
MO	0.083	0.037	2.230	0.026	0.010	0.156
cons	3.783	0.221	17.120	0.000	3.350	4.216
var(FD)	0.046		0.007		0.034	0.062

The SEM results confirmed the consistency of the original regression findings. CA ($\beta = 0.126$, $p < 0.001$), RA ($\beta = 0.158$, $p < 0.001$), I&C ($\beta = 0.172$, $p < 0.001$), and MO ($\beta = 0.083$, $p = 0.026$) had statistically significant positive effects on FD. These estimates are closely aligned in magnitude and significance to those derived from OLS and GLM, thereby reinforcing the credibility of the main hypothesis (H01). As in the previous models, CE remained statistically insignificant ($\beta = -0.002$, $p = 0.949$), indicating a limited direct contribution to FD in the sampled context. Overall, the SEM analysis provides additional evidence for the robustness of the findings, affirming the theoretical model that IC COSO components, particularly those emphasizing control procedures, risk management, and information flow, are instrumental in strengthening FD mechanisms in public institutions.

Chapter 5: discussion, conclusion and implication

5.1 Discussion the results

This study sought to ascertain the effect of FA services as a moderating variable in the relationship between IC and its five components represented by IT on FD in the Palestinian government sector. This study examined three services, FI, IC, and LS, which were translated into particular goals to determine any tangible impact on FD in Palestine. An exploratory research design was used to study 256 external auditors, judges, prosecutors, and employees of the Anti-Corruption Commission and State Audit and Administrative Control Bureau. It also includes a comprehensive review of the findings, providing the means and standard deviations for each of the studied domains and ensuring a clear understanding of the participants' objectives, perspectives, and relevance within the context of the study.

Based on these results, recommendations were made to enhance the IC elements within the COSO framework. This highlights the need to improve the performance of government agencies, particularly those working in the FA field, such as the Palestinian Anti-Corruption Commission, whose most important tasks include criminal and financial investigations to combat corruption in the Palestinian government sector. The Palestine Monetary Authority, through its Financial Follow-Up Unit, also provides in-depth forensic financial analysis to assist the government sector in combating fraud. It is imperative that the Palestinian Public Prosecution and Judiciary, specializing in financial crimes, support the Palestinian public sector and take the necessary measures to support the implementation of internal control tools within the COSO framework. This constitutes a fundamental pillar for the government to bring fraudsters to justice, provided that the FA and IC are applied together to eliminate FD and combat corruption in the Palestinian government sector.

According to the analysis, the following findings were found:

- 1 .The study sample showed that fraudulent investigations were weak in preventing fraud incidents. This indicates that in line with earlier research in the same area, they were not a significant practice in preventing fraud incidents. The lack of confidence and faith in legal frameworks, the decision to handle fraud cases through out-of-court settlements or

solutions, and the fear of reporting fraud cases to appropriate authorities are the causes for this. Other problems include a lack of cooperation between competent agencies, lack of awareness and comprehension of fraud schemes and warning signals, and lack of established processes to assist investigations. In addition, due to the lack of organization of the fraud examination profession in Palestine and the absence of a specialized professional body responsible for following up on matters related to forensic accounting and fraud, it is necessary to obtain outputs that support the work of the entities operating in Palestine and coordinate among them to raise performance levels with regard to fraud investigations.

2. The results of the second dimension of the questionnaire, which identifies the elements of FA in FD, indicate that FA is indeed relevant in deterring fraud. Since external auditors and a sizable portion of the study sample have accounting backgrounds, there is a consensus regarding the value of forensic accounting investigations in preventing fraud. This is because the practice of this kind of FA aids the representatives of the regulatory, legal, and judicial authorities in their work.

3. The third dimension of the survey expressed positive views on deterring fraud from respondents' perspectives on the impact of litigation support. One of the most important decisions an organization can make to prevent fraud is to hire litigation support services. Therefore, it is important to encourage litigation support when dealing with fraudsters. Potential fraudsters in organizations can be deterred by prosecuting and punishing offenders as well as by compensating them for sustained losses and damage. Litigation support is a way of fighting corruption. Litigation support services, which offer a way to hold fraudsters accountable, are essential for reducing the number of fraud cases when paired with successful fraud investigations. The specific talent and investigative roles of forensic accountants make them more equipped to fight crimes.

4. The first hypothesis indicates that IC elements have a significant impact on FD in the Palestinian government sector, meaning that IC explains a large portion of the variation in FD. The researcher clarifies that this reflects the importance of IC in deterring fraud and reducing corruption in Palestinian government organizations.

This supports the claim that, when properly planned and executed, internal control frameworks are a basic line of defense against fraudulent activity, presuming that heightened detection probability and harsh penalties for misconduct can dramatically lower

the probability of fraudulent acts. Palestine's government and public institutions deal with issues of financial and administrative reform, anti-corruption, and governance. Improving accountability and transparency can be achieved in large part through the practical implementation of COSO principles of internal control.

Internal controls also provide effective mechanisms for promptly detecting violations or irregularities, thereby reducing 'Saud the effect on the stability of government establishments. This study demonstrates that improving and developing internal control systems will significantly contribute to strengthening the fight against corruption, deterring fraud, and increasing their ability to address administrative and financial challenges. It will also advance the performance of ministries and independent bodies in Palestine, whether in the government or the public sector, including the judiciary, prosecution, the Financial and Administrative Control Bureau, and the Anti-Corruption Commission.

5. The findings reveal a weak negative relationship between CE and FD in the Palestinian government sector. The results suggest that CE does not significantly influence FD, indicating that any apparent effect may be attributable to random variation rather than a genuine effect. This can be justified by the political and economic instability in Palestine; the lack of clarity in internal control and auditing procedures and policies; factors of tribalism, nepotism, and favoritism in appointment, hiring, and promotion; and the lack of employee confidence in the skills of external and internal auditors who carry out fraud investigations. According to the results of the study, participants' scores on the CE items were average, indicating that although there is some control environment, there could be certain areas that require development to strengthen the control culture as a whole. An organization's approach to internal control is determined by its control environment, which also affects its attitude and behavior. It encompasses elements such as management's dedication to internal controls, moral principles, honesty, and responsibility. A robust and efficient internal control system limits the chances that individuals may benefit from committing fraud. An analysis of the risk assessment also demonstrated that it is important to detect possible hazards.

6. These findings demonstrate the positive association between CA and FD in the Palestinian government sector. The more internal control components that are implemented, including control activities, the more they contribute to deterring fraud in

public and governmental institutions in Palestine. From the researcher's perspective, the results of oversight activities indicate a positive and statistically significant relationship, demonstrating a strong impact on fraud deterrence. These results emphasize the need for effective IC systems to achieve organizational objectives. Continuous training and technological upgrades are recommended in order to improve these systems. The study's findings also make sense in the context of the government as institutions are capable of implementing oversight activities and achieving positive outcomes.

7. The third sub-hypothesis reveals a moderately positive effect of RA on FD in the Palestinian government sector. The results show a positive relationship between RA and FD in the Palestinian government sector. However, it showed a positive correlation with fraud deterrence, indicating that it is a moderately important factor contributing to fraud deterrence, along with other internal control components. This suggests that, while some risk identification procedures are in place, they are not comprehensive or proactive. Without a thorough risk analysis, control systems remain reactive rather than preventative. This indicates that the Palestinian government recognizes the importance of risk assessment and management but may not have fully developed or implemented a comprehensive risk assessment process.

8. The fourth sub-hypothesis shows a moderate effect of I&C on FD in the Palestinian government sector. I&C demonstrates a positive association between I&C and FD in the Palestinian government sector. Fragmented or opaque communication channels limit institutions' capacity to detect fraud signals early and coordinate an effective response. Weak communication undermines both deterrence and the capacity to mobilize investigative resources over time. Accordingly, there is potential for development in a few areas pertaining to communication and information exchange, even though there may be established procedures and practices in place.

9. The fifth sub-hypothesis shows a weak and statistically insignificant effect of monitoring fraud deterrence in the Palestinian government sector. Without continuous oversight, such as follow-up on audit recommendations, review of control performance, and tracking of compliance, fraud risks persist even in the presence of other control measures. The minimal monitoring capacity observed here reflects broader institutional weaknesses in the Palestinian public sector. The government may not have a thorough and

reliable system in place to regularly analyze and evaluate the efficacy of internal controls, despite having put in place some monitoring procedures.

10. The results of the second main hypothesis show that forensic accounting has a negative and statistically significant moderating effect on the relationship between internal controls and fraud deterrence in the Palestinian public sector. It is worth noting that the model has become more relevant because of the increased ability of forensic accounting and internal controls to separately deter fraud. However, when used together, forensic accounting reduces the effect of internal control in deterring fraud, indicating the importance of forensic accounting and internal control in deterring fraud. From the researcher's point of view, the roles of working teams must be coordinated and new policies and legislation must be developed to reduce fraud in Palestine. The findings highlight the importance of integrating internal control and forensic accounting technologies intelligently, avoiding duplication or over-complications that might reduce their effectiveness.

11. The first sub-hypothesis on control environment showed that FA did not moderate the relationship between IC and FD. CE had no discernible moderating effect, and neither the main variable nor the interaction variable reached significance. The results show that forensic accounting has not influenced the relationship between the control environment and fraud deterrence in the Palestinian government sector. This is because of the weakness of professional legislation in Palestine. Strategies and policies must be formulated to develop internal controls and legal structures, and enhance institutional capacity.

12. The second sub-hypothesis on control activities shows that forensic accounting moderates the relationship between control activities and fraud deterrence. These results demonstrate the important role of forensic accounting in strengthening internal control over fraud deterrence in the Palestinian government. The positive relationship between the interaction variable and the effect of increased fraud deterrence effectiveness provides evidence that forensic accounting contributes significantly and pivotally to strengthening oversight measures to deter early fraud, strengthen governance and integrity, and enhance the efficiency of financial investigations.

13. Third sub-hypothesis of risk assessment. The results indicate a statistically significant negative relationship between the interaction of risk assessment and forensic

accounting and the relationship between risk assessment and fraud deterrence in the Palestinian government sector. The negative relationship resulting from the interaction variable reduces the role of risk assessment in fraud deterrence. These results highlight the importance of creating a cooperative framework and good integration between risk assessments and forensic accounting units to enhance the efficacy of fraud prevention in the government sector.

14 . Fourth sub-hypothesis: The results indicate a statistically significant negative relationship between the interaction of information and communication and forensic accounting on the relationship between information and communication and fraud deterrence in the Palestinian government sector. The negative impact of the interaction variable on the relationship between information and communication is due to the lack of coordination and planning between the application of forensic accounting and communication and information in fraud deterrence. This leads to duplication of procedures and wasted time owing to overlapping roles. Furthermore, there is a lack of cooperation between oversight and forensic accounting staff, which negatively affects fraud deterrence.

15. Fifth sub-hypothesis on monitoring. The results indicate a statistically insignificant negative relationship between the interaction of monitoring and forensic accounting and the relationship between monitoring and fraud deterrence in the Palestinian government sector. The negative and statistically insignificant result of the interaction variable of monitoring and forensic accounting in deterring occupation is due to the weak implementation of internal oversight to serve financial investigations effectively. The weakness of the government's organizational and administrative structure, along with the financial crisis, has led to the government's inability to conduct effective and efficient training for internal control personnel and forensic accountants to achieve the desired results in deterring fraud.

The results of this study, which examined the impact of internal control on fraud deterrence in the Palestinian government sector and the moderating role of forensic accounting, the study results showed a positive relationship between internal control and fraud deterrence in the Palestinian government sector. The model's strength explains 21.1% of the variance in the Palestinian government sector's ability to deter fraud. In the second model, the explanation percentage increases to 36.2% when forensic accounting is included

as a moderating variable. This indicates the importance of enhancing the effectiveness of internal controls in deterring fraud in Palestine.

5.2 Conclusion

The results showed that the most influential control elements in fraud deterrence were oversight, risk assessment, and information and communications. However, the control environment shows a negative and statistically insignificant result. Monitoring did not reveal any statistically significant relationship. From the respondents' perspective, forensic accounting showed an average result of fraud deterrence due to the lack of a specialized professional body and the shortage of specialized personnel. Using the second model, the results show that the interaction variable between forensic accounting and internal control has a negative and statistically significant effect, indicating that forensic accounting mitigates the relationship between internal control and fraud deterrence. This study emphasizes the need for integration and coordination between forensic accounting and internal control systems to avoid overlap between the two systems.

Among the study's most important recommendations are the establishment of a specialized professional body to regulate the forensic accounting profession, the teaching of forensic accounting and fraud curricula in Palestinian universities, and the issuance of specific laws to regulate the profession. Furthermore, it is necessary to improve the technology used in forensic accounting and control and to encourage scientific research in forensic accounting and fraud.

The results of this study open the way for further research in Palestine in other sectors, such as the private sector, and for similar studies to be conducted in neighboring countries, developing countries, or developed countries, given that this study is one of the few to explore this topic. In addition, the study could be enriched with additional findings such as governance variables, artificial intelligence, and technology.

5.3 Research implications

5.3.1 Recommendations.

- Government workers should hire forensic accounting specialists to teach and enlighten management and staff about fraud incidents and their detrimental effects, ensuring that all parties involved are aware of fraud.
- The establishment of a professional organization in Palestine to oversee the work of forensic accountants should be coordinated with the country's accounting boards. This committee offers policy recommendations on how to conduct investigations, including setting up uniform protocols. Its responsibilities include safeguarding members through inquiries and legal proceedings.
- All forensic accountants and internal audit professionals in the public sector should be trained in the procedures necessary to deal with internal audits and forensic accounting to achieve results that serve all stakeholders.
- Palestinian higher education institutions should include forensic accounting in their undergraduate level plans.
- Academic institutions should encourage research opportunities in the fields of fraud, forensic accounting, and related areas of control and fraud investigation techniques to enhance the development of forensic accounting.
- The government, particularly the Ministry of the Interior through its military apparatus and the Anti-Corruption Commission, should establish forensic accounting units to help deter fraud in Palestine.
- Serious, professional, specialized training for auditors working in the auditing profession in Palestine on forensic accounting and fraud topics to assist as expert witnesses in courts and before prosecutors, especially concerning litigation support.
- The Palestinian government should review and strengthen its control environment with relevant stakeholders, both internal and external, to raise awareness of ethical values and organizational culture, which will contribute to increased compliance with internal policies.

- Coordination between the government, internal and external oversight bodies, the Palestinian Judicial Council, the Palestine Monetary Authority, and the Anti-Corruption Commission ensures consistency between the application of forensic accounting and internal oversight and updates legislation, instructions, and regulations that ensure effective implementation without overlapping powers.

5.3.2 Contributions of the Study

5.3.2.1 Theoretical and Academic Contributions

Focusing on the use of external resources such as forensic accounting services to deter fraud and internal control procedures, specifically in the Palestinian public sector, this study complements earlier research and advances our understanding of forensic accounting, fraud, and management personnel within the public sector. The second theoretical contribution of this study is that it provides a framework to identify the factors that may influence the organizational and legal structure in the use of consultants and administrative personnel, such as forensic accounting services.

5.3.2.2 Practical Implications

The implications of this study's findings are crucial for policymakers, regulators, and managers of the Palestinian government sector. The first proof that robust internal controls (CE, RA, MO, I&C, and CA) deter fraud highlights the importance of enhancing the effectiveness of IC among government bodies. By establishing these processes, ministries can avoid leakage and improve the efficiency of public spending. Second, it suggests that forensic accounting is a salient moderating factor. This implies that traditional IC, although necessary, is insufficient when political pressure and corruption are pervasive. Creating FA branches within ministries, courts, and oversight agencies could strengthen fraud-detection capabilities, reduce case backlogs, and enable more evidence-based decision making. Such roles are particularly significant in Palestine, where a fractured accountability system combined with poor institutional victimization has traditionally served to undermine the efficiency of accountability and fiscal control.

Third, our findings may have implications for training and capacity. The low significance that respondents attach to fraudulent investigation services (as a proportion of accounting investigations and litigation support) creates potential for the professionalization of forensic accounting in Palestine. FA certification programs are examples of existing steps, collaboration with international FA organizations, and integration of digital forensics into the academic curriculum scheme. These steps would improve the deterrent value of internal control systems in addition to increasing the amount of investigative activity. This study also offers practical implications for audit practice. Fraud detection: External auditors and anti-corruption organizations can utilize the evidence to refine audit planning, focusing on high-risk areas such as procurement, payroll, and resource distribution. The integration of forensic tools into normal audit processes fosters a culture of deterrence rather than detection, which may lead perpetrators to accept the possibility of being detected, thereby ensuring that stricter controls are applied within the fraud and forensic environment.

5.3.2.3 Social Implications

This study also has a social significance. Corruption in the public sector is not just expensive but also has other consequences. By demonstrating that IC combined with FA enhances fraud prevention, we provide a direction for fostering societal trust in state organizations. Better monitoring means that fewer public resources are left unaccounted for and perceptions of systemic unfairness are diminished. Additionally, this study emphasizes the growing significance of FA and its transparency. A culture of high corruption perception promotes a forensic culture, and citizens are assured that corruption will be investigated and punished, thereby building a culture of accountability. This has the potential to shift public attitudes from normalizing fraud as a “way of life” towards understanding integrity as a communal social norm. It also affects social order and development.

Fraud saps the government’s capacity to deliver education, healthcare, and infrastructure. “Reducing leakages through better control and forensic audits means public funds can be invested in development projects and inclusive growth, leading to a reduction

in poverty. This has a multiplying impact on social welfare and cohesion, particularly in vulnerable contexts, such as Palestine, where economic capacity is highly constrained. Finally, this study adds to the voices of civil society. The results can be used to advocate for reforms that would lead to more open processes in public finances and could also enhance collaboration between citizens, non-governmental organizations (NGOs), and oversight agencies. Through the institutionalization of forensic accounting, fraud will not only be deterred, but will also democratize information, which will enable citizens to hold the government accountable. This is consistent with the broader objectives of good governance and political institutional development in the long run.

5.3.3 Future research

This study aimed to demonstrate the relationship between internal controls and their impact on fraud deterrence in the Palestinian government sector. A moderator variable was added to enrich the study, but many more studies should be conducted in the future. Among these, studies have been conducted on companies listed on the Palestine Stock Exchange. Another study can be conducted and applied solely to the judiciary of Palestine. In addition, this study could be applied to non-profit organizations operating in Palestine, and it is possible to apply this study to the local government sector in Palestine.

Additionally, modern technology can be studied as a moderating variable instead of forensic accounting for the relationship between internal controls and fraud deterrence in the public and private sectors in Palestine.

Impact of forensic accounting techniques on fraud detection in Palestinian companies listed on the stock market.

A study of the ability of the Palestinian Ministry of the Interior to apply forensic accounting techniques and services in criminal investigations to economic crimes.

Study of the impact of artificial intelligence in enhancing the effectiveness of internal control systems in the Palestinian government sector.

5.4 The study's Limitations

Conceptual limitations: As the topic of forensic accounting is contemporary in the accounting profession, few studies have addressed forensic accounting in the Arab and Palestinian environments. Many individuals with an interest in the accounting profession, particularly auditors, are unsure of the application of forensic accounting and its requirements.

Time limits: Three academic semesters, one calendar year.

Spatial limit: The study will be conducted in Palestine, and the target population will include external auditors, judges, prosecutors of economic crimes, members of the Anti-Corruption Commission, members of the Financial and Administrative Control Bureau, and employees of the Financial Follow-up Unit. Owing to the study's focus on the government sector, the findings may not apply to other sectors in Palestine, including the private sector and publicly traded corporations. The study also used only questionnaire replies, which means that the respondents' honesty or viewpoints may have affected their answers. Additionally, because the study was survey based, it was unable to investigate additional characteristics that might affect fraud but were not included in the questionnaire. It is possible that the findings of this study cannot be applied to other nations, either developed or developing, because it was conducted in Palestine, a nation with substantial political and economic complexities in the government sector.

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Appendices

Appendix No. 1: Names of the arbitrators

Name	Institution	Mobile Number	Email
Prof.Mansour Ibrahim Saaydah	University of Jordan	00962777712177	msaaydah@ju.edu.jo
Dr.Othman Ahmad Khalil Sawafta	Palestine Technical University Kadoorie	0569774233	o.sawafta@ptuk.edu.ps
Dr.Naser Abdelkarim	Arab American University	0599990611	naser.abdelkarim@aaup.edu
Dr. Nael Al-Assa	Alqudes University	0597888562	assa_nama@yahoo.com
Dr. Abdul Latif Rabaya	Police College - State of Qatar	0599677366	yamen930@yahoo.com
Dr. Abdel Nasser Abdel Hadi	Police College - State of Qatar	0097433220556	mafernu@yahoo.com

Appendix No. 2 : Questionnaire

Arab American
University Graduate
Studies Faculty
PhD in Accounting and
Finance



questionnaire

Dear Sirs and Madam

Researcher Raafat Abu Al-Rub is preparing a doctoral dissertation in the Accounting and Finance Program at the College of Graduate Studies at the Arab American University. The dissertation is titled "The Impact of Internal Control on Fraud Deterrence in the Palestinian Public Sector: The Moderating Role of Forensic Accounting." Please kindly complete the questionnaire to support the success of this study. Please note that the data collected is for .academic research purposes and will be treated with strict confidentiality

With sincere thanks in advance for your cooperation

General guidelines:

1. Specifically, this questionnaire aims to collect data to measure the thesis variables, specifically to test the impact of internal control on fraud deterrence in the Palestinian public sector: the moderating role of forensic accounting. Please complete the questionnaire questions accurately, as this will provide strong evidence from the Palestinian context.
2. The questionnaire consists of 5 pages.
3. If you have any inquiries, do not hesitate to contact the researcher on mobile number 00970569006090 or through the following email: RAFAT881973@GMAIL.COM.
4. Please answer all questions, knowing that your answers will be treated with complete confidentiality and I assume full responsibility for them.
5. Leaving some of the questions blank makes the questionnaire unanalyzable, so I have .great hope that you will help me complete my thesis

Supervisory Committee

Prof. Zahran Daraghme - Arab American University

Dr. Mohammed Abu Sharba - Arab American University

Dr. Akram Rahhal - Al-Quds University

Researcher

Rafat Abu al-Rub

Year: 2025

Section 1 (Demographic Information), please select the option that applies to you.

1. Specialization

- a. Financial/Admin
- b. Law
- c. Other

2. Educational Qualification

- a. Diploma or below
- b. Bachelor
- c. Master
- d. PhD

3. Years of Experience

- a. Less than 9 years
- b. 10 to less than 14 years
- c. 15 to less than 20 years
- d. 20 years and over

4. Professional Certification

- a. ACPA
- b. Forensic Accountant
- c. AICPA
- d. Legal

5. Work Field

- a. Judiciary/Prosecution
- b. Anti-Corruption
- c. Audit/Control
- d. External Audit

6. Job Level

- a. Operational
- b. Top Management
- c. Middle Management

Section Two (Dimensions of Study): Please rate each statement based on your experience or perception and use a scale of 1 to 5, where: 1 is strongly disagree, 2 is disagree, 3 is neutral, 4 is agree, 5 is strongly agree.

Dimension 1 : Fraud investigation procedures, evaluating the effectiveness of the procedures performed by the fraud investigator during the fraud investigation to confirm the occurrence of fraud

A	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A1	The fraud investigator examines the credibility of the sources of financial documents.					
A2	The fraud investigator reviews financial report.					
A3	The fraud investigator assesses the risk of fraud.					
A4	Fraud investigator performs electronic examination to detect forensic evidence					
A5	A fraud investigator searches for					

	evidence of illegal practices.					
A6	A fraud investigator analyzes suspicious financial transactions.					

Dimension 2: Forensic Accounting Investigations Please rate your agreement with the following statements that describe the achievements of the forensic accountant in dealing with potential fraud cases.

B	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
B1	The forensic accountant works to identify misappropriated assets.					
B2	The forensic accountant identifies reversible internal transactions.					
B3	The forensic accountant works to identify financial accounting errors.					
B4	The investigative accountant coordinates with additional experts such as private investigators, forensic document examiners, and consulting engineers.					
B5	An investigative accountant works to identify and uncover potential illegal activities.					
B6	An investigative accountant investigates fraudulent investment schemes.					

Dimension 3: Litigation support Please indicate your level of agreement with the efficiency of the following litigation activities in the context of assisting in the litigation process

C	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
C1	Providing various stakeholders with expert witness reports.					
C2	Assistance in accounting matters related to existing or pending litigation.					
C3	Inquire about other expert reports presented to the courts.					
C4	Providing expert testimony as an expert witness in the litigation support service.					
C5	Determination of the value of financial damages in cases submitted to the court.					
C6	Attend trials to hear opposing expert testimony and assist in the examination of witnesses.					

Domain 4: Control Environment To what extent do you tend to agree with the following statement regarding the control environment?

D	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
D1	Employees maintain positive working relationships with each other.					
D2	Integrity, impartiality, and ethical values are adhered to.					
D3	There is a clear separation of roles and responsibilities.					
D4	All duties are performed in accordance with established standards.					
D5	Policies, procedures, and guidelines are documented and communicated to all employees.					
D6	Activities are conducted in an atmosphere of creativity and innovation.					

Domain 5: Control Activities. To what extent do you agree with the following statement regarding control activities

E	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
E1	Control activities are reviewed at several levels.					
E2	Accounts are reconciled monthly to detect errors and fraud.					
E3	Policies and procedures are in place to facilitate the recording of control activity transactions in accordance with regulations.					
E4	The internal auditor operates independently.					
E5	All control activity departments have clear levels of authority.					
E6	Policies and procedures are reviewed regularly.					

Domain 6: Risk Assessment To what extent do you agree with the following statement regarding risk assessment?

E	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
E1	Objectives are set to identify and assess risks that could hinder the achievement of those objectives.					
E2	Controls are in place to allow choices regarding financing options within the					

	accounting procedures.					
E3	Assessments are made regarding potential risks associated with changes in the operating environment.					
E4	Potential risks associated with changes in the onboarding of new employees are carefully evaluated.					
E5	Exposure to fraudulent behavior is assessed.					
E6	A robust and effective plan is in place to address all risks.					

Domain 7: Communications and Information. To what extent do you agree with the following statement regarding communications and information?

G	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
G1	Information flows freely without interference.					
G2	Effective communication channels exist for the transfer of information and data in all directions.					
G3	All communication channels are used by employees according to the nature of their work.					
G4	All operational information is provided to employees in a timely manner.					
G5	The necessary information is provided in a timely manner for decision-making.					
G6	A clear, written system exists for the communication and information flow between various departments and branches.					

Domain 8: Evaluation, to what extent do you agree with the following statement regarding monitoring?

G	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
G1	Monitoring strategies are used at all stages of the monitoring process.					
G2	Project implementation is monitored according to their monitoring and evaluation standards.					
G3	Comprehensive reports are prepared for all operations.					
G4	All assets are subject to monitoring to					

	ensure transparency.					
G5	Recommendations of the State Audit Bureau regarding internal control are implemented.					
G6	Segregation of duties exists between procurement, accounts payable, and payments.					

Domain 9: Please indicate the extent to which you agree with the association between the presence of these fraud indicators and the occurrence of fraud within the organization.

I	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I1	Financial transactions that are not fully recorded according to established accounting standards.					
I2	Unsupported or unauthorized balances or transactions.					
I3	Last-minute adjustments that significantly impact financial results.					
I4	Significant missing assets and documents.					
I5	Original documents are not available and are being replaced by electronic copies.					
I6	Recurring changes in accounting estimates that do not appear to be due to changing circumstances.					
I7	Unwillingness to revise disclosures in financial statements to make them more understandable.					
I8	Unwillingness to address identified internal control deficiencies in a timely manner.					

**Thank you for your cooperation.
Researcher**



الجامعة العربية الأمريكية
كلية الدراسات العليا
وكتوره الحاسبة و التمويل

استبيان

السادة ----- الافاضل

يقوم الباحث رأفت أبو الرب بإعداد رسالة دكتوراه في برنامج المحاسبة والتمويل بكلية الدراسات العليا في الجامعة العربية الأمريكية، تتناول رسالة الدكتوراه عنوان موسوم بـ **أثر الرقابة الداخلية على ردع الاحتيال في القطاع العام الفلسطيني: الدور المعدل للمحاسبة الجنائية**. يرجى من حضرتكم التكرم بتعبئة الاستبانة لإنجاح هذه الدراسة مع العلم بان البيانات التي سيتم جمعها هي لأغراض البحث العلمي وتعامل بسرية تامة.
مع خالص الشكر مسبقاً لتعاونكم

إرشادات عامة:

1. بشكل محدد، هذه الاستمارة تهدف لجمع بيانات لقياس متغيرات الرسالة، وبشكل محدد من اجل اختبار أثر الرقابة الداخلية على ردع الاحتيال في القطاع العام الفلسطيني: الدور المعدل للمحاسبة الجنائية. يرجى الإجابة عن أسئلة الاستبانة بدقة لما في ذلك من أثر في تقديم دليل قوي من الواقع الفلسطيني.
2. تتكون الاستمارة من ٥ صفحات.
3. في حال وجود أي استفسار لا تتردد بالتواصل مع الباحث على رقم جوال 00970569006090 أو من خلال البريد الإلكتروني التالي RAFAT881973@GMAIL.COM
4. يرجى من حضرتكم الإجابة عن جميع الأسئلة مع العلم بان اجابتم ستعامل بسرية تامة مع كامل مسئوليتي عن ذلك.
5. ترك جزء من الأسئلة فارغة يجعل الاستبانة غير قابلة للتحليل، لذلك أمني بكم كبير بمساعدتكم في إتمام رسالتي.

لجنة الاشراف

أ.د. زهران دراغمة – الجامعة العربية الأمريكية
د. محمد ابو شربة – الجامعة العربية الأمريكية
د. اكرم رحال – جامعة القدس

الباحث

رافت أبو الرب

العام: ٢٠٢٥

القسم الأول (المعلومات الديموغرافية)، يرجى تحديد الخيار الذي ينطبق عليكم.

- ١ - التخصص العلمي
 أ- علوم مالية وإدارية.
 ج- تخصص آخر اذكره -----
 ب- قانون.
- ٢- المستوى التعليمي
 أ- دبلوم فما دون.
 ج- ماجستير.
 ب- بكالوريوس.
 د- دكتوراه.
- ٣ - عدد سنوات الخبرة المهنية
 أ- ٩ سنوات فما دون.
 ج- من ١٥ الى ٢٠ سنوات.
 ب- من ١٠ الى ١٤ عام.
 د- أكثر من ٢٠ عام.
- ٤ - الشهادات المهنية
 أ- مدقق حسابات عربي ACPA
 ج- محاسب جنائي
 ب- شهادة مدقق أمريكية AICPA.
 د- شهاده حقوق
- ٥ - مجال العمل
 أ- القضاء والنيابة.
 ج- مكافحة الفساد.
 ب- الرقابة.
 د- مدقق حسابات خارجي.
- ٦ - الدرجة الوظيفية
 أ- الإدارة التشغيلية
 ج- الإدارة العليا
 ب- الإدارة الوسطي

القسم الثاني (مجالات الدراسة)، يرجى تقييم كل عبارة بناءً على تجربتك أو إدراكك واستخدام المقياس من ١ إلى ٥، حيث: ١ لا أوافق بشدة، ٢ لا أوافق، ٣ محايد، ٤ أوافق، ٥ أوافق بشدة.

المجال الاول: إجراءات التحقيق في الاحتيال، تقييم فعالية الإجراءات التي يقوم بها محقق الاحتيال أثناء التحقيق في الاحتيال للتأكد من وقوع الاحتيال

A	العبارة	موافق بشدة	موافق	محايد	غير موافق بشدة	غير موافق
A1	فحص مصداقيه مصادر الوثائق المالية					
A2	مراجعة التقارير المالية					
A3	تقييم مخاطر الاحتيال					
A4	الفحص الالكتروني لاكتشاف الأدلة الجنائية .					
A5	البحث عن الأدلة المتعلقة بالممارسات الخارجة عن القانون					
A6	تحليل المعاملات المشتبه به ماليا					

المجال الثاني: تحقيقات المحاسبة الاستقصائية، يرجى تقييم موافقتك على العبارات التالية التي تصف إنجازات محاسب التحقيق الاستقصائي في التعامل مع حالات الاحتيال المحتملة.

B	العبارة	موافق بشدة	موافق	محايد	غير موافق بشدة	غير موافق
B1	تحديد الأصول المختلطة					
B2	تحديد المعاملات الداخلية القابلة للعكس .					
B3	تحديد أخطاء الحساب المالي.					
B4	التنسيق بين الخبراء الاضافيين مثل المحققين الخاصين، وفاحصي المستندات الجنائية، والمهندسين الاستشاريين.					
B5	القدرة على تحديد وكشف الأنشطة غير المشروعة المحتملة.					

B6	التحقيق في مخططات الاستثمار الاحتمالية والكشف عنها.					
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المجال الثالث: نشاط التقاضي، يرجى الإشارة إلى مستوى موافقتك على كفاءة أنشطة التقاضي التالية في سياق المساعدة في عملية التقاضي

C	العبارة	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
C1	تزويد الجهات المعنية المختلفة بتقارير وجهة نظر الخبير.					
C2	المساعدة في مجال المحاسبة في الأمور المتعلقة بالقضايا القضائية القائمة أو المعلقة.					
C3	الاستفسار عن تقارير الخبراء الأخرى المعروضة على المحاكم.					
C4	تقديم شهادة متخصصة كشاهد خبير في خدمة دعم التقاضي.					
C5	تحديد قيمة الأضرار المالية في القضايا المعروضة على المحكمة.					
C6	حضور المحاكمات للاستماع إلى شهادة الخبراء المعارضين والمساعدة في استجواب الشهود.					

المجال الرابع: بيئة الرقابة، إلى أي مدى تميل إلى الموافقة على العبارة التالية المتعلقة ببيئة الرقابة؟

D	العبارة	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
D1	يحافظ الموظفون على علاقات عمل إيجابية مع بعضهم البعض.					
D2	يتم الالتزام بالنزاهة والحياد والقيم الأخلاقية.					
D3	يوجد فصل واضح بين الأدوار والمسؤوليات.					
D4	يتم تنفيذ جميع الواجبات وفقاً للمعايير المعتمدة.					
D5	يتم توثيق السياسات والإجراءات والإرشادات وإبلاغها لجميع الموظفين.					
D6	يتم تنفيذ الأنشطة في جو من الإبداع والابتكار.					

المجال الخامس: أنشطة الرقابة، إلى أي مدى توافق على العبارة التالية المتعلقة بأنشطة الرقابة؟

E	العبارة	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
E1	تتم مراجعة أنشطة الرقابة على عدة مستويات .					
E2	تتم تسوية الحسابات كل شهر للكشف عن الأخطاء والاحتيال.					
E3	توجد سياسات وإجراءات لتسهيل تسجيل معاملات أنشطة الرقابة وفقاً للقواعد.					
E4	يعمل المدقق الداخلي بشكل مستقل.					
E5	جميع إدارات أنشطة الرقابة لديها مستويات واضحة من السلطة.					
E6	يتم مراجعة السياسات والإجراءات بانتظام .					

المجال السادس: تقييم المخاطر، إلى أي مدى تتفق مع العبارة التالية المتعلقة بتقييم المخاطر؟

F	العبارة	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
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بشدة					
					F1 يتم وضع أهدافاً تسمح باكتشاف وتقييم المخاطر التي قد تُعيق تحقيق تلك الأهداف
					F2 توجد ضوابط للسماح بالاختيارات المتعلقة بخيارات التمويل ضمن الإجراءات المحاسبية المتبعة.
					F3 يتم إجراء التقييمات حول المخاطر المحتملة المرتبطة بالتغييرات في بيئة التشغيل
					F4 يتم تقييم المخاطر المحتملة المرتبطة بالتغييرات بتأهيل الموظفين الجدد بعناية.
					F5 يتم تقييم التعرض للسلوك الاحتمالي .
					F6 يوجد خطة قوية وفعالة للتعامل مع جميع المخاطر.

المجال السابع الاتصالات والمعلومات، إلى أي مدى تتفق مع العبارة التالية المتعلقة بالاتصالات والمعلومات؟

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	العبارة	G
					تتدفق المعلومات بحرية دون أي تدخل.	G1
					يوجد قنوات اتصال فعالة لعملية نقل المعلومات والبيانات في جميع الاتجاهات.	G2
					يتم استخدام جميع قنوات الاتصال من قبل الموظفين حسب طبيعة العمل.	G3
					يتم تقديم جميع المعلومات التشغيلية للموظفين في الوقت المحدد.	G4
					يتم تقديم المعلومات اللازمة في الوقت المناسب لعملية اتخاذ القرار.	G5
					يوجد نظاماً واضحاً ومكتوباً لآلية التواصل وتدفق المعلومات بين الأقسام والفروع المختلفة.	G6

المجال الثامن: التقييم، إلى أي مدى تتفق مع العبارة التالية المتعلقة بالرصد والتقييم؟

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	العبارة	H
					يتم استخدام استراتيجيات المراقبة في أي مرحلة من عملية المراقبة.	H1
					تتم مراقبة تنفيذ المشاريع وفقاً لمعايير المراقبة والتقييم الخاصة بها.	H2
					يتم إعداد تقارير شاملة لجميع العمليات.	H3
					تخضع جميع الأصول تخضع للمراقبة لضمان الشفافية .	H4
					تُنفَّذ توصيات ديوان الرقابة المالية والإدارية بشأن الرقابة الداخلية.	H5
					يوجد فصل للواجبات بين المشتريات والحسابات الدائنة والمدفوعات.	H6

المجال التاسع: يرجى الإشارة إلى مدى موافقتك على الارتباط بين وجود مؤشرات الاحتيال هذه وحدوث الاحتيال داخل المؤسسة.

غير موافق بشدة	غير موافق	محايد	موافق	موافق بشدة	العبارة	I
					وجود المعاملات المالية التي لا يتم تسجيلها بشكل كامل حسب المعايير المحاسبية المتبعة.	I1
					وجود ارصدة أو معاملات غير مدعومة أو غير مصرح بها.	I2
					تعديلات اللحظة الأخيرة التي تؤثر بشكل كبير على النتائج المالية.	I3

					I4	الأصول والمستندات المفقودة ذات الحجم الكبير.
					I5	عدم توفر المستندات الأصلية ويحل محلها المستندات المنسوخة إلكترونياً.
					I6	التغيرات المتكررة في التقديرات المحاسبية التي لا يبدو أنها ناتجة عن تغير الظروف
					I7	عدم الرغبة في مراجعة الإفصاحات في البيانات المالية لجعلها أكثر قابلية للفهم.
					I8	عدم الرغبة في معالجة أوجه القصور التي تم تحديدها في الرقابة الداخلية في الوقت المناسب.

شاكرًا لكم حسن تعاونكم
الباحث

اثر الرقابة الداخلية على ردع الاحتيال في القطاع الحكومي الفلسطيني: الدور المعدل للمحاسبة الجنائية

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ملخص

بحثت هذه الدراسة في أثر الرقابة الداخلية، كما هو مُبيّن في إطار COSO ، على ردع الاحتيال في القطاع الحكومي الفلسطيني، مع التركيز على الدور المعدل لخدمات المحاسبة الجنائية. كان الهدف الرئيسي هو تقييم أثر أطر الرقابة الداخلية COSO على ردع الاحتيال، والتحقق مما إذا كانت المحاسبة الجنائية تعدل هذا الأثر. كانت أداة الدراسة استبيانًا مُحكمًا مُصمّمًا لهذا الغرض، يحتوي على ٥٦ بندًا موزعة على تسعة مجالات. طُبّق الاستبيان على عينة عشوائية بسيطة من ٢٥٦ موظفًا، شملت التدقيق الخارجي، والسلطة القضائية، وديوان الرقابة المالية والإدارية، إلى جانب ممثلين عن هيئة مكافحة الفساد، والنيابة الاقتصادية، ووحدة المتابعة المالية. تشير النتائج إلى تباين كبير في تطبيق الضوابط الداخلية عبر المؤسسات الحكومية. حصلت أنشطة الرقابة على أعلى متوسط درجات ، تلتها بيئة الرقابة. في المقابل، أظهر تقييم المخاطر ، والمعلومات والاتصالات، والمراقبة أداءً أقل نسبيًا. تُظهر النتائج علاقة إيجابية ذات دلالة إحصائية بين الرقابة الداخلية الشاملة وردع الاحتيال. ووفقًا للنتائج، تلعب المحاسبة الجنائية دورًا معدلاً في زيادة تأثير الرقابة الداخلية على منع الاحتيال. وقد زادت القوة التفسيرية بعد ادخال المتغير المعدل. وخلصت الدراسة إلى أن دمج أنظمة رقابة داخلية قوية مع المحاسبة الجنائية يُشكل رادعًا فعليًا للاحتيال في القطاع الحكومي الفلسطيني. توصي الدراسة بإنشاء إطار رقابي مرن قائم على النزاهة والشفافية، وتوثيق الإجراءات والسياسات بشكل كامل، وتشكيل منظمة مهنية فلسطينية مستقلة للإشراف على المحاسبين الجنائيين. كما توصي باستخدام التقنيات الحديثة للكشف عن الاحتيال، وزيادة برامج التدريب المتخصصة لموظفي التدقيق، وتحسين التعاون بين الهيئات الرقابية والقضائية من خلال تحديد واضح للأدوار، ودمج المحاسبة الجنائية في المناهج الجامعية.

الكلمات المفتاحية: المحاسبة الجنائية، الرقابة الداخلية، ردع الاحتيال، لجنة كوسو (COSO) ،
القطاع الحكومي الفلسطيني