

Assessing the Relationship Between the COSO Internal Control System and Financial & Non-Financial Performance of Ghanaian Listed Commercial Banks in the Sustainability Era

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Abstract

This study aimed to examine the impact of the internal control system (ICS) on the performance of publicly traded Ghanaian commercial banks, within the context of the core components of the COSO integrated ICS. Accordingly, the study investigated employees' perceptions of the impact of the ICS components on financial performance-FP and non-financial performance-NFP and whether a significant relationship exists between these perceptions. In the study, the core components of the COSO's ICS (control environment, risk assessment, control activities, information-communication, monitoring) were considered as independent variables, while FP and NFP of the banks were considered as the dependent variables. In line with the study's objective, the hypotheses were designed as follows: H1: The ICS has an impact on the FP. H2: The ICS has an impact on the NFP. Methodologically, a descriptive online survey method was used to collect data. The survey was sent to 113 managers and employees working in the internal control and audit departments of 23 listed Ghanaian banks, and 73 employees, representing 64.6%, provided voluntary feedback. Data were analyzed using SPSS-25. The survey, which was suitable for a 5-point Likert scale, included statements regarding COSO internal control components and FP and NFP. The study revealed that there were no differences in FP among the ICSs but there were differences in NFP among the ICS. The study concluded a statistically significant relationship between the ICS and FP overall. Additionally, compared to other components whose impact on FP was limited, the COSO Information-Communication component indicated the highest significant relationship with FP and the greatest positive impact, while the control activities component had an inverse effect on FP. Furthermore, the study also revealed a significant overall relationship between the ICS and NFP. In addition, compared to other components whose impact on NFP was much more limited, the COSO Information-Communication component showed the highest significant relationship with NFP and the highest positive impact on NFP. This study is considered to contribute to the literature and to investors, shareholders, policymakers, etc., by examining all factors together, such as the impact of COSO internal control components on FP and NFP, and the internal control and audit department staff at the headquarters and branches of listed Ghanaian commercial banks.

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1. Introduction

The world has recently witnessed a series of globally impactful scandals, beginning with the Enron scandal in the US in 2001. Many internal and external factors played a role in the formation of these scandals, primarily the lack of internal control and the ineffective operation of internal control systems-ICSs. To address the causes of these scandals, which led to multifaceted negative consequences, damages, and loss of trust, the Sarbanes-Oxley Act (SOX) was enacted in the US in 2002. In addition to regulations addressing other causes, this law focused on the lack of internal control, the subject of our study, by introducing a wide range of strict provisions and sanctions requiring the establishment, existence, and effective operation of internal control systems within businesses (SOX, 2002).

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Following SOX, various internal control system models were developed, highlighting the significant increase in the importance of internal control and internal control systems. One of these models is the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Integrated Internal Control Framework, the most advanced internal control system developed for corporate businesses worldwide.

The COSO internal control system consists of five core internal control components such as control environment, risk assessment, control activities, information-communication, and monitoring. The primary aims of an internal control system in businesses are: protection of assets, transparency and reliable financial reporting, fraud prevention, regulatory compliance, accountability, effectiveness of operations, achievement of objectives, corporate risk management, sustainability, etc. An effective internal control system significantly contributes to achieving all of these objectives (COSO 2025).

This study mainly aimed to examine the impact of the internal control system on financial performance in publicly traded commercial banks in Ghana, within the context of the core components of the COSO integrated internal control system. The study also aimed to investigate the effect of the internal control system on the non-financial performance of the banks. Accordingly, the study investigated employees' perceptions of the impact of the ICS components on financial and non-financial performance and whether there was a significant relationship between these perceptions

This study is considered to contribute to the literature and to investors, shareholders, policymakers, etc., by examining all factors together, such as the impact of COSO internal control core components on financial and non-financial performance, and the internal control and audit department staff at the headquarters and branches of listed Ghanaian commercial banks.

Methodologically, a descriptive online survey method was used to collect data. The survey was sent to 113 managers and employees working in the internal control and audit departments of 23 listed Ghanaian banks, and 73 employees, representing 64.6%, provided voluntary feedback. Data were analyzed using SPSS-25.

In the study, the research model was developed to examine the impact of the COSO-based internal control system on the financial and non-financial performance of publicly traded Ghanaian commercial banks. The core components of the COSO integrated internal control system (i.e. control environment, risk assessment, control activities, information-communication, monitoring) were considered as independent variables, while financial performance and non-financial performance of the banks were considered as the dependent variables. In line with the study's objective, the hypotheses were designed as follows:

H1: The ICS has an impact on the financial performance. H2: The ICS has an impact on the non-financial performance.

The study consists of four sections. The first section includes the introduction. The second part covers theoretical and conceptual background, basic concepts, agency theory, institutional theory, contingency theory, lack of internal control as a cause of scandals, internal control system and its goals, COSO-based integrated internal control model and its core components. The relationship between internal control system, sustainability, and business performance, and related studies in the literature are also contained in this section. The third chapter contains the methodology, research and an application on the impact of the COSO internal control system on financial and non-financial performance of listed commercial banks, aim of the study, research model, population, sample, data collection, scale, hypotheses and limitations. The last part consists of statistical analysis and findings. The study ends with the conclusion and the reference list.

2. Literature review

2.1 Conceptual and theoretical background

2.2 Agency Theory

Almost every business has a shareholder (owner) and a director (agent). These two can be the same person or two separate individuals/parties. Agency Theory, developed by Jensen and Meckling (Jensen & Meckling, 1976), addresses the contractual relationship between the shareholder (principal) and the director (agent) and the potential conflicts of interest between them. Agency theory assumes that the separation of ownership and management will lead to one party having more information than the other. Agents are largely better informed about the management of the business than the owners (Arnold & De Lange, 2004; Lang, 2006; Eilifsen et al. 2006).

Additionally, the owner gives the agent more management authority to best represent their interests. The theory assumes that managers, being more knowledgeable about business operations, will tend to act in their own self-interest. An agent who possesses more information and acts on personal motives is defined by Sharma (1997); Bonazzi & Islam (2007); and according to Lan & Heracleous (2010), this situation can lead to the belief that agents will try to achieve their personal goals at the expense of the interests of the business owner or the business, which can cause a conflict of interests (Pratt & Zackhauser, 1985)

Since it is quite possible for conflicts of interest to arise from time to time between the principal party (shareholder/owner) and the agent/ representative/ senior management/ executives (Camci & Aksoy, 2024), agency theory attempts to prevent potential conflicts of interest between these two parties by increasing trust between them. To this end, it recommends the establishment of necessary basic control systems within the business, such as an internal control system. The internal control system is one of the core systems

that constitutes a safety valve for corporate governance, asset protection, reliable financial reporting, achieving goals, ensuring efficiency and productivity, regulatory compliance, corporate risk management, accountability, and sustainability (Eslem & Aksoy, 2026).

Internal control systems enable companies to establish reliable relationships with their stakeholders by ensuring the accuracy of financial reporting. From a risk management perspective, internal control systems and practices allow companies to identify potential crises in advance and take proactive measures against them; early detection of financial risks, operational errors, fraud, and ethical violations increases a company's crisis management capacity. On the other hand, the internal control system ensures the security of the company's operations by providing continuous monitoring of operational processes (Khitiri, 2017)

Therefore, it is important for business owners to establish an effective internal control system to ensure that their representatives work in the best interests of the business, improve performance, and achieve business objectives. Internal control systems and auditing are commonly used control methods. However, Wallace (1980) argues that auditing is not an appropriate control tool because auditors may conspire. Therefore, he argues that using an effective internal control system is more appropriate and beneficial to protect the interests of business owners, prevent conflicts, establish trust between parties, and achieve business objectives. When the COSO integrated internal control system is implemented correctly and effectively with all its core components, the possibility of achieving all the positive results expected from the internal control system, especially conflict prevention between parties, will increase (Aksoy & Saglam, 2020).

2.3 Contingency Theory

The environment in which a business operates plays a major role in its success. This is supported by contingency theory, put forward by Drazin and Van de Van (1958). According to this theory, the optimal organization of a business depends on the environment in which it operates. Two assumptions have been adopted by the followers of this theory. The first assumption suggests that no single strategy is considered superior and that there is no single best organizational form (Bergeron et al. 2001; Venkatraman, 1989). The second assumption states that the choice of approach, structure, or control system depends on the business environment, risk profile, strategy, size, organizational structure, and the best available tools (Donaldson, 2006).

Contingency theory states that a business cannot achieve optimal performance if it does not pay sufficient attention to the environment in which it operates. According to Jokipii (2010), firms structure themselves to adapt to the environment in which they operate, taking into account the characteristics of that environment. Therefore, an effective organizational structure is needed to improve and maintain performance. Internal control, as part of the corporate organizational structure, is the best tool used in this context. The theory assumes that a 'business environment' is very important in terms of determining organizational attitude, influencing control awareness, and providing a solid foundation for an active internal control system.

The COSO integrated internal control system, developed and most widely applied for corporate businesses worldwide, also includes, among its other main components, a core 'control environment' component that will make a significant contribution to the business environment in question.

2.4 Scandals, Internal Control System and its goals

Global scandals such as Enron and WorldCom in the 21st century posed much attention on internal control (IC) hence its importance increases in the management of businesses, organizations, government institutions, schools and countries. Lack of internal controls has been one of the primary causes of global scandals (Tekneci & Aksoy, 2025).

The main factors and causes contributing to these scandals and negative consequences worldwide, including the lack of internal controls, are as follows (Aksoy & Aksoy, 2020): Lack of internal controls, ineffective internal control system, unreliable information and financial reporting about businesses, violation of corporate governance principles, deterioration of auditor independence, undermining transparency and accountability, insufficient corporate accountability regarding fraudulent financial reporting, inadequacy and ineffectiveness of management, external audit and public authorities in monitoring the internal control system.

The Sarbanes-Oxley Act, enacted in the US in 2002, aimed to eliminate the root causes of scandals. This law, in addition to addressing the lack of internal controls, prevents and regulates the recurrence of all factors contributing to scandals, and mandates the existence and effectiveness of internal control systems in businesses (SOX, 2002).

IC lacks a universally accepted definition because as some scholars see it as a portion of an organization others see it to cut across all sections of the organization. According to Basel, IC is a continuous process operating within all levels in a bank and not a procedure exhibited at a particular time (Aksoy, 2007). IC is a complete system established by management to ensure efficiency, adherence to management strategies, safeguarding of business properties and transparency in reports and accuracy in records (Olatunji, 2009).

COSO defines internal control as "a process conducted by the board of directors and other employees designed to provide reasonable assurance that operations are carried out effectively and efficiently, financial reporting is reliable, and business activities are conducted in compliance with applicable laws and regulations, in order to enable a business to achieve its objectives" (COSO 2013). Internal control according to Hannah (2013) is a set of measures and strategies that certify effective processing of transaction in an

organization. In addition, Hopkin (2018) defines internal control as merged approaches, plans and measures that protect the resources of a firm and increase performance. Basel regulations mention that IC is a process, which is affected by all levels of a business and organization (Aksoy, 2005). Udu (2006) believes that booboos, oversights, fraud that devastate an organization's performance reduce drastically if an organization implements an effective ICS (Aksoy & Denkdemir). Meanwhile, Mayo and BPP (1988) are of the view that IC is the steps taken by an entity in its quest to protect its resources against fraud, inefficiency and waste as well as ensuring transparency in financial reporting. Furthermore, Awe (2005) defined IC as an implemented organizational structure, procedures and policies to prevent risk and ensure that organizational goals are reach based on management-initiated concerns. IC is also one of the key factors of chance management process In today's business world, change management is a core competency for successful companies that would like to build up to stay competitive. The objective of IC is to minimize errors, prevent waste of organization's resources, eliminate corruption and embezzlement, and enhance transparency in financial reporting.

Internal control systems are management mechanisms used by organizations to regulate their activities, minimize risks, and achieve goals An effective internal control system plays a vital role in improving corporate governance, risk management, and internal control processes within businesses(Cömert& Aksoy, 2025). The fundamental objectives of an effective internal control system can be summarized as: protecting assets and records, reliable financial reporting, achieving targets, compliance with business policies and regulations, preventing fraud, increasing the efficiency and effectiveness of business processes and operations, efficient and effective use of resources, corporate risk management, transparency, accountability, good governance, sustainability, etc.

Types of control activities include detective control, corrective control, preventive control, and compensating controls. Several internal control systems have been developed and used in several regions in the world. These include COSO, CoCo, CobiT, eSAC and SysTrust. Among these, the most advanced internal control system widely accepted worldwide for corporate businesses is the COSO integrated internal control framework

2.5 Coso Integrated Internal Control System

The COSO Integrated Internal Control Framework acts as a critical safety valve supporting businesses in achieving corporate goals and operating in accordance with corporate governance principles. It provides businesses with a fundamental roadmap and reasonable assurance in this regard by supporting the objectives of the internal control system, such as the reliability of financial reporting, the protection of assets, operational efficiency, regulatory compliance, and supporting businesses in achieving their missions, strategies, and related business objectives (Kayisi & Aksoy, 2024).

The COSO integrated internal control system includes the five core internal control components (i.e., control environment, risk assessment, control activities, information and communication, monitoring) listed in the table below (COSO, 2013).

Table 1: COSO Integrated Internal Control Framework

Core Components	Fundamental Principles
Control environment	• Honesty and commitment to ethical values • Fulfillment of oversight responsibilities • Defining duties, authorities, and responsibilities • Emphasis on competence • Accountability
Risk assessment	• Setting appropriate objectives • Identifying and analyzing risks • Assessing the risk of fraud* • Identifying and analyzing significant deviations
Control activities	• Selects and develops control activities • Selects and develops general controls over technology • Deploys control activities through policies and procedures
Information-Communication	• Use of relevant information • Establishment and effective operation of internal communication channels • Establishment and effective operation of external communication channels with external stakeholders
Monitoring activities	• Conducts ongoing and/or separate evaluations • Evaluates and communicates deficiencies

Source: (COSO, 2013; COSO, 2025).

Control Environment, the first core component of COSO, addresses the organization's commitment to integrity and ethical values, its management philosophy, and its operational and control culture and awareness. This component briefly includes the fundamental pillars such as the commitment of shareholders and senior management to integrity and ethical values, management's philosophy

* For the types of fraud, fraud risk factors and examples of fraudulent financial reporting, see Kayisi and Aksoy (2024).

and independence, definition and distribution of duties, authorities, and responsibilities, the value placed on competence, career planning, motivation, training, coaching, fair performance management, risk management, transparency, accountability, etc. (Aksoy & Mohammed, 2020).

Risk Assessment, another core COSO component, involves identifying, effectively analyzing, revealing the effects of, and preventing and managing all internal and external risks that a business may face, including the risk of fraud (COSO, 2013). Changes, new trends, developments, technologies, strategies, and digital tools in the age of digitalization and sustainability have made it necessary to analyze, monitor, and manage all business risks much more rigorously and effectively than before. In the digital age we live in, having an effective internal control system has become much more important in terms of achieving goals and ensuring sustainability (Aksoy & Hacıoglu, 2021).

The *Control Activities* component deals with the countermeasures and procedures that should be taken to minimize identified risks that may hinder the achievement of business objectives. These measures can be briefly summarized as the combined implementation of risk mitigation controls, technological control infrastructure, and procedures and measures created to prevent risks (COSO, 2025).

Information and Communication is another component of COSO's internal control system that plays a role in enhancing its effectiveness. This component includes establishing and effectively operating internal and external communication channels for the company's internal and external stakeholders, and the timely use of accurate and reliable information regarding activities (Karacan, & Aksoy, 2022).

Monitoring, the final core component of COSO, focuses on the continuous monitoring of the performance of the internal control system and the effectiveness of processes and procedures. The effective functioning of monitoring, along with its main focus areas, contributes to the efficient operation of the internal control system. This mainly includes identifying deficiencies and implementing improvement processes for those processes and procedures (COSO, 2025).

2.5 Performance Evaluation: Financial Performance and Non-Financial Performance

Performance evaluation is the assessment of how efficiently a business uses its resources to achieve its corporate goals. According to Okwo and Mariri (2012), performance evaluation is concerned not only with the good performance a business demonstrates, but also with the degree to which performance is integrated with providing quality service to stakeholders. Therefore, it is important that business activities are focused on strategic goals (Dixon et al., 1990). According to Neely et al. (2005), performance evaluation is the financial parameters that quantify when activities are used effectively and efficiently. According to Bourne et al. (2003), performance evaluation, defined as the use of multidimensional performance strategies, requires the inclusion of both financial and non-financial performance measurement metrics in the analysis.

Financial performance is the quantification of all strategies, policies, and activities of a business in monetary terms. According to Kinyua et al. (2015), financial performance is a total assessment of a business's financial condition over a specific period and can be used to make inter-sectoral and intra-sectoral comparisons of firms. Various parameters such as return on investment (ROI), return on assets (ROA), operating profit, net profit, etc., are used to measure financial performance (Mishkin, 2007). These measures can be relative or absolute (Khan & Jain, 2013). According to Lagat (2018), factors such as the internal control system, firm size, and capital structure are also among the determinants of financial performance. Fadzil et al. (2005) suggest that an active internal control system is clearly related to corporate performance success. Internal control systems have a positive impact on a business's ability to achieve its goals and on the transparency and reliability of financial reporting. Financial reporting is presented in year-end financial statements, and the primary purpose of these statements is to accurately, transparently, and reliably reflect the financial condition of businesses, thereby contributing to the determination of financial performance. (Doyle et al., 2007) suggest that stakeholders use information from financial statements for economic decision-making and that organizations should strive to achieve positive financial performance. However, Kinyua et al. (2015) believe that positive and reliable financial performance is only possible when errors in service processes and systems are eliminated. Financial performance plays a vital role in financial performance measurement. It is believed that there are some gaps in the parameters used to evaluate an organization's financial performance and therefore they are not 100% applicable for decision-making. For example, Smith (2005) and Venanzi (2011) suggest that financial performance parameters are historical and can be manipulated, such as ROI and ROA. Furthermore, managers, in their pursuit of positive financial performance, may place too much emphasis on short-term financial performance while neglecting long-term performance, and the consequences of this will be felt in the long term (Dallas, 2011; Drury, 2012).

The second part of the multidimensional performance measurement approach is non-financial performance metrics. Also called qualitative metrics, non-financial metrics, unlike financial performance parameters, cannot be expressed numerically because they are outside of accounting. Agyei-Mensah (2009) states that qualitative metrics are performance parameters used by cost and revenue organizations to examine and implement their actions without financial input. According to Kaplan (2014), some of the parameters used to measure non-financial performance include quality customer service, efficient use of resources, innovation, flexibility, and competitiveness. While Fitzgerald & Moon (1996) believe that non-financial performance plays a vital role in ensuring the long-term productivity of an organization, Kaplan (2014) argues that it is sometimes too broad in scope. Researchers such as Kaplan & Norton (1996); Fitzgerald & Moon (1996); and Abdel-Maksoud et al. (2007) have used non-financial metrics in various studies, which has demonstrated their reliability and validity.

2.6 Internal Control System, Sustainability and business performance

The internal control system is one of the fundamental elements of sustainability in businesses. This component, which is an essential factor for the long-term success of businesses and for building stakeholder trust, positively contributes to businesses achieving their sustainability goals. It also helps businesses effectively implement their sustainability strategies. From a sustainability perspective, an effective internal control system contributes to the economic sustainability, corporate continuity, and financial and non-financial performance of a business through improvements in the following areas (COSO, 2025): Reliable financial reporting, credit, liquidity, reduction in operational and fraud risk, effective risk management, increased financial resilience, investor confidence, reduction in non-performing loan risk, lower cost of capital, increased return on assets (ROA) and return on equity (ROE), financial stability, commitment to ethical values, increased customer trust, corporate reputation and employee performance, increased ESG compliance scores and Sustainability Performance, corporate transformation, transparency, accountability, strengthening corporate governance principles, etc.

Sustainability, digitalization, and technological advancements have had multifaceted and far-reaching impacts on businesses, particularly on business models encompassing internal control systems (Hacioglu & Aksoy, 2021).

2.7 Related Studies in the literature

Asiligwa and Rennox (2017) investigated whether there is a significant and positive relationship between the COSO-based internal controls of commercial banks and their financial performance. The study, which included a sample of 43 Kenyan commercial banks, revealed a significant and positive relationship between internal control and financial performance. Furthermore, the study showed that banks with effectively implemented COSO core components had higher financial performance.

Lagat (2018) examined the impact of internal control on financial performance. The study, which included a sample of 5 state-owned Kenyan sugar companies, collected data through a survey of managers in the human resources, accounting, procurement, and security departments and analyzed using SPSS-22. The study generally found that the internal control system has a positive and significant impact on financial performance. Regarding the core components of internal control, it was found that the control environment, risk assessment, and information-communication components had a positive impact on financial performance, while the control activities component had a negative impact and an inverse relationship.

Muthusi (2017) investigated the impact of the core components of the COSO integrated internal control framework on financial performance. Data were collected through a survey of 129 participants working in 43 commercial banks in Kenya and analyzed using SPSS-22. The study concluded that there is a significant positive relationship between all COSO core components and financial performance.

Another study by Omar (2021) examined the relationship between the effectiveness of the COSO internal control system and financial performance in four commercial Libyan banks. Data were collected through a survey of 406 employees working in the banks' supervisory units and audit committees, in addition to annual reports published by the Central Bank of Libya, and analyzed using SPSS-26. The study concluded that there is no significant relationship between the control activities component of COSO and financial performance, but there is a significant and positive relationship between the control environment, risk assessment, information-communication, and oversight components and financial performance.

Mawanda (2008) investigated the relationship between financial performance and the internal control system, which includes the control environment, internal audit, and control activities, in the context of a higher education institution in Uganda, by collecting data through a survey method. The study concluded that the control environment, internal audit function, and control activities are significantly related to financial performance.

Umar and Dikko (2018) examined whether there is a significant relationship between the core internal control components of COSO framework and performance in the case of Nigerian commercial banks. In the study, internal control components were designed as independent variables and performance as the dependent variable. Data were collected through a survey administered to 223 employees holding the titles of branch manager, internal control officer, and security officer in the banks and analyzed using SPSS-23. The study concluded that there is a significant relationship between the core components of the internal control system—control environment, risk assessment, control activities, monitoring—and bank performance, while indicating that there is no significant relationship between the information-communication component and bank performance.

Oppong et al. (2016) investigated how internal control affects performance in the context of seven faith-based non-governmental organizations (NGOs) in Ghana. In the study, 5 core COSO internal control components were designed as independent variables, and the performance of the NGOs was the dependent variable. Data collected from 118 volunteer participants were analyzed using SPSS-20. The study revealed that 4 of the COSO internal control system components, excluding risk assessment, functioned satisfactorily. The study also concluded that the internal control system contributed positively to performance in terms of economics and efficiency, but did not make them effective.

Mbilla et al. (2020) examined the relationship between the information-communication and monitoring components of the internal control system and financial performance in the context of 12 banks traded on the Ghanaian stock exchange. Primary data used in the study were collected from 12,300 employees via survey, and secondary data were collected from the banks' financials and

analyzed using SPSS-20 with ANOVA and regression analyses. The study concluded that the internal control system has a direct positive and significant effect on financial performance as a combined result. The study similarly indicated that information-communication system, as a core internal control component, have a positive and significant effect on financial performance, while the monitoring component did not directly affect financial performance.

Another study, by Ejoh and Ejom (2014), investigated whether there is a significant relationship between internal control activities and financial performance in higher education institutions, using the example of Cross River State College of Education-Akamkpa in Nigeria. The COSO control activities component was used as the independent variable, and financial performance as the dependent variable. Data were collected using survey, face-to-face interview, document review, and stratified sampling methods. The study revealed no significant relationship between control activities and financial performance.

Ahmed and Muhammed (2018) explored how internal control systems influence the financial performance of Asiacell, a telecommunications firm operating in northern Iraq. The research specifically assessed the relationship between internal control practices and organizational financial outcomes. Primary information was gathered through questionnaires administered to 30 employees, while secondary data were obtained from the financial statements. The collected data were analyzed using SPSS-22, applying statistical techniques such as multiple regression, correlation analysis, and one-way ANOVA. The findings concluded that the control environment, risk assessment, and control activities dimensions of the COSO framework were positively associated with financial performance. In contrast, the information-communication as well as monitoring components indicated a negative relationship with financial performance.

In a study by Mary et al. (2014) examined how internal control systems affect the financial performance of sugarcane outgrower firms in Kenya. The study employed a descriptive correlational survey targeting finance managers and heads of internal audit from nine sugarcane-growing companies. Additional secondary information was collected from annual reports, publications, and corporate documents, and all analyses were conducted using SPSS-19. The results revealed that the COSO-based internal control system had a statistically significant and positive impact on financial performance.

Nwobodo et al. (2020) investigated the association between internal control systems and non-financial performance indicators, specifically operational performance and bank efficiency, among selected Nigerian deposit banks. The study involved 292 senior and middle-level managers from 22 national and international deposit banks in Nigeria. The results revealed that effective internal control systems significantly and positively influence operational efficiency and overall bank performance.

Hanoon et al. (2021) analyzed the effect of internal controls on the financial performance of Iraqi banks. Data were collected through surveys distributed to 365 banking professionals, including general managers, accountants, auditors, chief financial officers, and audit committee members from 77 banks. The data were analyzed using SPSS and Smart PLS software. The findings showed that all five COSO internal control dimensions—control environment, risk assessment, control activities, information-communication, and monitoring—positively and significantly contribute to financial performance. The study further emphasized that inadequate internal controls may lead to poor financial outcomes.

Muraleetharan (2011) and Muraleetharan (2013) investigated whether internal control systems enhance the financial performance of public and private institutions in the Jaffna District of Sri Lanka. Using a sample of 181 employees, data were collected through questionnaires, observations, and face-to-face interviews. The study found that perceived internal controls significantly affect financial performance. More specifically, risk assessment, monitoring, and control activities had positive effects on financial performance, whereas the control environment and information-communication dimensions showed negative effects.

In another study by Muhunyo and Jagongo A. O. (2018) examined the relationship between internal control systems and financial performance in public higher education institutions located in Nairobi City County. Survey data were gathered from 96 employees. The results indicated that the COSO components of control environment, risk assessment, control activities, and information-communication significantly influence institutional financial performance. Additionally, the combined internal control variables were found to explain 99.1% of the variation in financial performance.

Ibrahim et al. (2017) investigated the impact of internal control systems on the financial performance of healthcare institutions in Ghana using data collected from 50 participants across five healthcare organizations. The study established a positive association between overall internal control systems and financial performance. Among the individual components, control activities, internal audit, and monitoring showed significant positive effects, while control environment and information-communication had no statistically significant impact. The researchers further concluded that healthcare institutions with stronger internal control mechanisms tend to achieve superior financial performance compared to institutions with weaker controls.

Worku (2018) explored the effect of internal control systems on the financial performance of commercial banks in Ethiopia, focusing particularly on risk assessment, control activities, and monitoring components. The research included 240 participants from 17 commercial banks, with data gathered through surveys and financial records and analyzed using SPSS. The study identified a strong positive relationship between control activities and financial performance, as well as a positive association between risk assessment and financial performance. However, no significant relationship was found between the monitoring component and financial performance.

2.8 Aim of the research

This study aimed to examine the impact of the internal control system (ICS) on the performance of publicly traded Ghanaian commercial banks, within the context of the core components of the COSO integrated internal control system. Accordingly, the study investigated employees' perceptions of the impact of internal control system components on financial performance and whether there is a significant relationship between these perceptions. Additionally, the study also examined employees' perceptions of the impact of the internal control system on non-financial performance and whether there is a significant relationship between these perceptions.

2.9 Importance of the study

This study is considered to contribute to the literature and to investors, shareholders, policymakers, etc., by examining all factors together, such as the impact of COSO internal control components on financial and non-financial performance, and the internal control and audit department staff at the headquarters and branches of listed Ghanaian commercial banks.

2.10 Research method, population, sample, data collection, scale, hypotheses

A conceptual framework according to Camp, (2001) is an arrangement, which the researcher trusts explains the phenomenon being studied. Thus, it describes the relationship that exist between dependent and independent variables. A conceptual framework connects the ideas, experimental research and vital theories used by the researcher to systemize knowledge embraced (Peshkin, 1993).

In the study, the core components of the COSO integrated internal control model (control environment, risk assessment, control activities, information-communication, monitoring) were considered as independent variables, while financial performance and non-financial performance were considered as the dependent variables. Accordingly, one of the dependent variables, the financial performance variable, was designed to include return on asset (ROA), bank liquidity, resource utilization, and return on equity (ROE), while the non-financial performance variable was designed to include elements such as increase in customer base, increase in service quality, increase in the ability to meet customer needs, and increase in new services compared to old services.

Table 2: Study Variables

Independent Variables	Dependent Variables
- Control environment - Risk assessment - Control activities - Information-Communication - Monitoring	- Financial Performance - Non-financial performance

Source: Authors

The table above shows the independent and dependent variables of the study.

The direction of the arrow in the middle reflects the flow of the relationship and the positive impact of internal control on the financial and non-financial performance of banks.

Methodologically, the sample group of the study consisted of 23 commercial banks traded on the Ghana Stock Exchange (GSE). The Ghana Stock Exchange, which began trading in 1990, is Ghana's main stock Exchange. A descriptive online survey method was used to collect data. The survey adopted from Amissah (2017) was sent to 113 managers and employees working in the internal control and audit departments of 23 listed Ghanaian banks, and 73 employees, representing 64.6%, provided voluntary feedback.

Data were analyzed using SPSS-25. The survey, which was suitable for a 5-point Likert scale, included statements regarding COSO internal control components and financial and non-financial performance.

To comply with the page limit of the article, instead of detailed tables within the scope of statistical analysis, mostly only the main findings of the analyses were summarized.

Various tests were conducted to achieve the study objectives. These included reliability and validity tests, descriptive statistics, correlations, analysis of variance-ANOVA, regressions, and Pearson t-tests.

Therefore, in line with the study's objective, the hypotheses were designed as below:

Table 3: Hypotheses

- | |
|--|
| H1: The ICS has an impact on the financial performance.
H2: The ICS has an impact on the non-financial performance. |
|--|

2.11 Limitations

The study is limited by the type and number of banks chosen, country selected, the number of participants, the survey questions

and answers, the statistical analysis method, and the tests used. Therefore, in order to reach more general results, it is suggested to expand the studies with more diverse and larger numbers of banks, bank types, countries, employees, survey questions and statistical methods.

2.12 Statistical analysis, findings and discussion

The SPSS-25 software package was used to perform the statistical analyses. To avoid exceeding the page limit of the article, instead of detailed tables showing the statistical analyses and long comments, only the important findings and summarized explanations were included.

2.13 Average Means and standard deviations

Descriptive statistics, including mean and standard deviation values, for COSO internal control components (independent variables) are given in the table below. The explanation of the means is as follows: 0.0-1.5 = very weak; 1.6-2.5 = weak; 2.6-3.5 = moderately effective; 3.6-4.5 = effective; and 4.6-5.0 = very effective. (Values above 4.0 in the table, both for each individual internal control component and for the overall mean, indicate the presence of an internal control system and that all internal control components are effective.

Table 4: COSO Components: General Average Means and Specifications

<i>COSO Components (variables)</i>	<i>Average means</i>	<i>Standard deviations</i>	<i>Specification</i>
Control Environment	4.20	.906	Effective
Risk Assessment	4.19	.857	Effective
Control Activities	4.13	.818	Effective
Information and Communication	4.13	.823	Effective
Monitoring Activities	4.07	.806	Effective
<i>General average of averages</i>	4.144	0.842	Effective

Source: Author)

2.14 Reliability test

The consistency and reliability of data and variables are tested using the Cronbach's Alpha coefficient. This coefficient takes values between 0 and 1, with reliability increasing as it approaches 1. In the literature, values above 0.7 are considered reliable (Sekaran & Bougie, 2016).

Table 5. Reliability Test of Dependent and Independent Variables

<i>Variables</i>	<i>No. of items</i>	<i>Cronbach's Alpha</i>	<i>Consistency</i>
Control Environment	72	.941	Better
Risk Assessment	72	.852	Good
Information-Communication	72	.864	Good
Control Activities	72	.911	Better
Monitoring	72	.860	Good
Financial Performance	78	.974	Best
Non-Financial Performance	78	.814	Good

Source: Authors

As can be seen from the relevant table, the Cronbach's Alpha values of the variables in our study ranged from 0.81 to 0.97, indicating that all of them have high reliability.

2.15 Normality test

In this section, the normality of the data was tested. The normality test, commonly used in statistics, indicates whether data is statistically normally distributed (Thode, 2002). For parametric tests (t-test, ANOVA, etc.) to yield reliable results, data must be normally distributed. A normally distributed dataset has a higher ability to represent the population. Normality is calculated using the t-test, Shapiro-Wilk test, Kolmogorov-Smirnov test, or Wilcoxon-Mann-Whitney test. The most common are the Shapiro-Wilk Test for datasets with fewer than 30 data points and the Kolmogorov-Smirnov Test for larger samples. Interpretation is based on the p-value (Sig.). If $p > 0.05$, the data is normally distributed, and parametric tests are used. If $p < 0.05$, the data is not normally distributed. Since the variables are not normally distributed, the use of non-parametric tests is appropriate (Ghasemi & Zahediasl, 2012).

The results of the normality tests for the dependent and independent variables are presented in the table below.

Table 6: Normality test of dependent and independent variables

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Control Environment	.130	72	.004	.883	72	.000
Risk Assessment	.132	72	.003	.920	72	.000
Control Activities	.084	72	.200*	.956	72	.014
Information-Communication	.178	72	.000	.920	72	.000
Monitoring	.157	72	.000	.945	72	.003
Financial Performance	.242	72	.000	.823	72	.000
Non-Financial Performance	.142	72	.001	.902	72	.000

Source: Authors

As seen in the table above, in the Shapiro-Wilk test, none of the variables have a normal distribution, and in the Kolmogorov-Smirnov test, only the control activities have a normal distribution. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. However, Pallant (2010) suggests that if the sample size is large, i.e., more than 30, the normality assumptions may be violated. Therefore, parametric tests were applied to the variables based on this assumption.

2.16 T- test

According to the rule of thumb of t statistics, a variable is significant if the t value is greater than two and or if the p value is less than 0.05. From the table, it is observed that, the independent variables (control environment, risk assessment, control activities, information-communication, monitoring) paired with financial performance-FP produces t values of more than 2. Hence, this implies that there is no difference in the internal control of the banks operating in Ghana in relation to financial performance.

On the other hand, the internal control components when paired with non-financial performance-NFP generates insignificant t values. This means that with regards to NFP, there are differences in the internal control systems of the banks operating in Ghana.

Table 7: T- test

Paired Samples Test		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Control Environment Financial Performance	.3853	.90258	.10564	.17480	.59598	3.648	72	.000
Pair 2	Risk Assessment-Financial Performance	.37292	.94584	.11147	.15066	.59518	3.345	71	.001
Pair 3	Control Activities –Financial Performance	.31994	.98611	.11621	.08822	.55167	2.753	71	.007
Pair 4	Information& Communication-Financial Performance	.31432	.88782	.10463	.10569	.52295	3.004	71	.004
Pair 5	Monitoring- Financial Performance	.26204	.93877	.11063	.04144	.48264	2.368	71	.021
Pair 6	Control Environment- Non-Financial Performance	.07261	.58897	.06893	-.06481	.21002	1.053	72	.296
Pair 7	Risk Assessment- Non Financial Performance	.05926	.58343	.06876	-.07784	.19636	.862	71	.392
Pair 8	Control Activities- Non Financial Performance	.00628	.58618	.06908	-.13146	.14403	.091	71	.928
Pair 9	Information & Communication- Non Financial Performance	.00066	.54346	.06405	-.12705	.12837	.010	71	.992
Pair 10	Monitoring- Non Financial Performance	-.05162	.61058	.07196	-.19510	.09186	-.717	71	.475

The t-test is a hypothesis test that shows whether the difference between the means of two groups is statistically significant. The t-test result is interpreted by looking at the p-value (significance level) and the t-value (t-statistic). If the t-value is greater than two and/or $p < 0.05$, the difference is statistically significant. The further the t-value is from zero (positive or negative), the greater the significance. To interpret the t-value, look at its distance from 0 and the p-value: a t-value close to 0 indicates no significant difference/relationship between the variables. A large t-value (positive or negative) indicates a statistically significant difference/relationship (Pallant (2010)).

In the table above, it is observed that when the independent variables (control environment, risk assessment, control activities, information-communication, monitoring) belonging to the COSO core internal control components are paired with the dependent variable, financial performance, they produce t-values greater than 2. Therefore, this situation means that there is no difference in the internal control systems of banks operating in Ghana regarding their financial performance. On the other hand, when the core internal control components are matched with the dependent variable non-financial performance, the t-values become uncertain, which means that there are differences in the internal control systems of commercial banks in Ghana in terms of non-financial performance. Therefore, in light of t-tests, it has become necessary to apply various tests such as correlation, regression, and ANOVA to determine the relationship between the independent variables (COSO internal control components) and dependent variables (financial and non-financial performance) of Ghanaian banks.

2.17 Pearson Correlation analysis

In this section, Pearson correlation was used to determine the relationship between dependent and independent variables. This is a statistical analysis that indicates the linear relationship between two variables, or the direction and degree of the relationship between one variable and two or more variables. The Pearson correlation coefficient (Pearson's r) value ranges from +1 to -1 and indicates the presence of a positive or negative relationship. If positive, it means that an increase in one variable leads to an increase in the other; if negative, it means that a decrease in one variable leads to a decrease in the other. A correlation value of zero (0) means that there is no relationship between the variables, and therefore, an increase or decrease in one variable does not affect the other (Tabachnick & Fidel, 2013).

The table below shows the correlations between the independent variables (*Control Environment-CE, Risk Assessment-RA, Control Activities-CA, Information-Communication-In&Co, Monitoring-M*) and the dependent variables (*Financial Performance-FP, Non-Financial Performance-NFP*) of COSO's core internal control components.

Table 8: Correlation Analysis

		<i>CE</i>	<i>RA</i>	<i>CA</i>	<i>In & Co</i>	<i>MA</i>	<i>FP</i>	<i>NFP</i>
<i>CE</i>	Pearson Correlation	1	.887**	.781**	.757**	.720**	.677**	.675**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	73	72	72	72	72	73	73
<i>RA</i>	Pearson Correlation	.887**	1	.810**	.739**	.699**	.641**	.660**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	72	72	72	72	72	72	72
<i>CA</i>	Pearson Correlation	.781**	.810**	1	.794**	.721**	.597**	.644**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	72	72	72	72	72	72	72
<i>In&Co</i>	Pearson Correlation	.757**	.739**	.794**	1	.795**	.704**	.711**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	72	72	72	72	72	72	72
<i>M</i>	Pearson Correlation	.720**	.699**	.721**	.795**	1	.656**	.616**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	72	72	72	72	72	72	72
<i>FP</i>	Pearson Correlation	.677**	.641**	.597**	.704**	.656**	1	.806**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	73	72	72	72	72	73	73
<i>NFP</i>	Pearson Correlation	.675**	.660**	.644**	.711**	.616**	.806**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	73	72	72	72	72	73	73

Source: Authors

As can be seen from the table, the results indicate that there is a positive correlation with a significance level (p) less than 0.05 between the COSO's control environment core component and financial performance-FP ($r=.677$) and non-financial performance-NFP ($r=.675$). This indicates that financial and non-financial performance are related to the increase in the control environment of the business. The study results also revealed that all of COSO's other core internal control components i.e risk assessment, control activities, information-communication, monitoring, showed positive correlations with both financial and non-financial performance variables, and all were significant. These were tested with RA ($r=.641$, $.660$; $p=.000$), CA ($r=.597$, $.644$; $p=.000$), Inf&Com ($r=.704$, $.711$; $p=.000$), and M ($r=.656$, $.616$; $p=.000$). This means that all variables increased concurrently. Since most of the relationships were above 60%, a linearity test was applied to check whether the variables were linear.

2.18 Regression Analysis

Model Summary for Financial and Non-Financial Performance

In this section, the independent variables representing COSO's core internal control components (Control environment, Risk assessment, Control activities, Information-communication, Monitoring) and the dependent variables representing the financial performance (FP) and non-financial performance (NFP) of Ghanaian banks were subjected to regression analysis at a five percent (5%) significance level. Two separate regression analyses were conducted for the two dependent variables against the independent variables. The results are presented in the table below.

Table 9. Regression Results for Financial and Non-Financial Performance

Model	R	R Square	Adjusted R square	Standard Error of the Estimates	Durbin- Watson
FP	.746	.556	.522	.84345	1.085
NFP	.743	.553	.519	.51893	1.398

Source: Authors

The correlation coefficient (R) in the first model is 0.746 (74.6%), indicating a strong positive relationship between the independent variables (control environment, risk assessment, control activities, information-communication, monitoring) and the dependent variable, financial performance. Furthermore, the R-squared coefficient, equal to 0.556, reveals that the independent variables have a 55.6% impact on the financial performance of Ghanaian banks. This also indicates the presence of other factors influencing the banks' financial performance, totaling 44.4%. The adjusted R-squared value of 0.522 shows a 52.2% variation in the financial performance of banks operating in Ghana.

Moreover, the correlation coefficient (R) in the second model, concerning non-financial performance, is 0.743 (74.3%), indicating a strong positive relationship between the dependent variable (non-financial performance) and the independent variables (control environment, risk assessment, control activities, information-communication, monitoring). Furthermore, the determinant of the R-squared coefficient, which is equal to 0.553, indicates that the independent variables have a 55.3% impact on the non-financial performance of Ghanaian banks. This implies that there are other factors affecting the non-financial performance of banks operating in Ghana, totaling 44.7%, but not included in this model. The adjusted R-squared value of 0.519 indicates that the independent variables explain 51.9% of the variation in the non-financial performance of banks operating in Ghana.

2.18.1 Anova (analysis of Variance)

Analysis of Variance (ANOVA), offers a robust way to better understand complex relationships by considering multiple factors and their interactions. First published in Ronald Fisher's book, ANOVA, also known as Fisher's Analysis of Variance, is a widely used statistical analysis. This method that in short, separates the total variance into its components to determine whether there is a relationship between variables, whether variables influence each other, whether they make a difference to each other, in other words, to indicate the interaction of independent variables with each other and their effects on the dependent variables (Fisher, 1992).

The table below presents the results of the ANOVA analysis performed for financial and non-financial performance.

Table 10: ANOVA for Financial Performance and Non-Financial Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
Financial Performance	Regression	58.797	5	11.759	16.530	.000
	Residual	46.953	66	.711		
	Total	105.750	71			
Non-Financial Performance	Regression	21.949	5	4.390	16.301	.000
	Residual	17.773	66	.269		
	Total	39.722	71			

Source: Authors

The analysis findings in the table above reveal that both regression models established are statistically significant in terms of both financial and non-financial performance. When the financial performance model is examined, it is seen that the sum of squared

regression is 58.797, and the sum of squared error (residual) is 46.953. The calculated significance level is 0.00, the F value is 16.530, and $p=0.05$. This indicates that the model is significantly fit when evaluating how the independent variables/predicators (CE, RA, CA, Inf&Com, M) affect the financial performance of banks operating in Ghana, as $p=0.05$ is greater than 0.00. Furthermore, the regression mean square is considerably higher than the mean square error. This denotes the high explanatory power of the first regression model regarding financial performance, the statistically significant effect of the independent variables on financial performance, and that the independent variables play a role in improving the financial success of the business. The ANOVA results regarding non-financial performance also show that the model is statistically significant. The significance level is 0.00, the F-value is 16.301, and $p=0.05$. The regression mean square (4.390) is also considerably higher than the mean square error (0.269). This indicates that the model is significantly fit when evaluating how the estimators (CE, RA, CA, Inf&Com, M) affect the non-financial performance of banks operating in Ghana, as the $p=0.05$ is greater than 0.00. Overall, the results of the ANOVA analysis indicate how that both the financial and non-financial performance models are statistically significant, that the independent variables have an effect on performance, and that the effect of the independent variables on financial performance is relatively higher compared to NFP, due to the slightly higher F-value. The coefficients of the models are briefed below.

Table 11: Coefficients of the Models

		<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>		
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	<i>t</i>	<i>Sig</i>
<i>Model 1</i> <i>Financial Performance</i>	Constant	-.2185	.737		-2.963	.004
	Control Environment Risk	.448	.328	.260	1.366	.177
	Assesment	.179	.365	.096	.491	.625
	Control Activities Inf&Comm	-.246	.325	-.123	-.757	.452
	Monitoring	.713	.297	.391	2.401	.019
		.353	.282	.179	1.254	.214
<i>Model 2</i> <i>Non-Financial Performance</i>	Constant	.391	.454		.862	.392
	Control Environment	.184	.202	.174	.910	.366
	Risk Assessment	.168	.225	.147	.750	.456
	Control Activities	.044	.200	.036	.220	.826
	Inf&Comm	.471	.183	.421	2.577	.012
		.033	.173	.027	.188	.851

Source: Authors The regression equation obtained for this research is shown below.

$FP = -2.185 + 0.448CE + 0.179RA - 0.246CA + 0.713In\&Co + 0.353MA$ Where: FP:Financial Performance; CE Control Environment; RA:Risk Assessment; CA:Control Activities; Inf&Com: Information& Communication; M:Monitoring

According to the regression equation above, the constant = -2.185 means that when all independent variables are set to zero, the FP of Ghanaian banks will be equal to -2.185, thus creating a negative effect; however, a one-unit increase in CE will result in a 0.044 increase in the banks' FP. In addition, a one-unit increase in the RA, Inf&Com, and M components will cause an increase of 0.179, 0.713, and 0.353 respectively in the FP of banks operating in Ghana, while a one-unit increase in control activities will result in a decrease of -0.246.

From the above findings, for the second model of non-financial performance, it is clearly seen that there is a positive and significant relationship between COSO's information-communication core internal control component and non-financial performance (NFP), as the p-value is 0.012, which is less than 0.05. This means that the information-communication internal control component makes a positive and significant contribution to this research. All other variables showed negative performance. This is evidenced by p-values of 0.366, 0.456, 0.826, and 0.851 for control environment, risk assessment, control activities, and monitoring activities, respectively. The regression equation obtained for the dependent variable, non-financial performance-NFP, is shown below:

$$NFP = 0.391 + 0.184CE + 0.168RA + 0.044CA + 0.471Inf\&Com + 0.033MA$$

According to the regression equation above, the constant = 0.391 means that when all independent variables are set to zero, the NFP of Ghanaian banks will be equal to 0.391. Furthermore, a one-unit increase in CE will result in a 0.184 increase in the net operating income (NFP) of banks. The same logic applies to the other variables. A one-unit increase in RA, CA, Inf&Comm, and M will cause an increase of 0.168, 0.044, 0.471, and 0.033, respectively, in the net operating income of banks operating in Ghana.

3. Findings and discussion

Descriptive statistics are a test conducted to confirm the presence and effectiveness of ICS in Ghanaian banks. Mean and standard deviation scores of IC variables were calculated. The mean and standard deviation values, both in terms of individual internal control components and the overall average, indicated the existence of an internal control system and that all internal control components were effective.

Next, the reliability of the collected data was tested using the Cronbach's Alpha coefficient. The reliability (Cronbach's Alpha) test results for the dependent variables (financial performance-FP and non-financial performance-NFP) were found to be .974 and .814, respectively; and for the independent variables (control environment, risk assessment, control activities, information-communication, monitoring) they were .941, .852, .864, .911, and .860, respectively. Cronbach's Alpha coefficients above 0.7 for all variables indicated a high degree of consistency and reliability for both the dependent variables (financial performance and non-financial performance) and the independent variables (control environment, risk assessment, control activities, information-communication, monitoring). These positive results allowed for further testing, specifically the normality test.

Normality test is one of the initial test run on collected data to determine the type of further test(s) that need to be run. None of the variables is distributed normally in Shapiro-Wilk test and only the variable "control activities" normally distributed in Kolmogorov-Smirnov test. Despite the fact that the data for this study was not normally distributed, still parametric test was conducted on the assumption the sample size is more than 30 as posit by Pallant, (2010) that, if the sample size is more than 30 or 40 normality assumptions can be violated.

In the t-test analysis, independent variables were paired with dependent variables to check for significant similarities or differences in the internal control systems (ICS) of Ghanaian banks. Based on the determined t and p values, when financial performance (FP) was paired with internal control components, it was revealed that there was no difference in financial performance among the banks' internal control systems, and that internal control components positively contributed to financial performance.

However, when internal control components was paired with non-financial performance (NFP), it was indicated that there were differences in non-financial performance among the banks' internal control systems, and a negative relationship existed between the Monitoring internal control component and non-financial performance. This means that the variables used are not the only variables affecting the non-financial performance of the banks, and other factors not addressed in the study, such as motivation, flexibility in work schedules, etc., may also be influential.

Correlation results have shown a strong relationship between the internal control system and all internal control components, and financial and non-financial performance. This means that financial and non-financial performance are directly related to increases in the components of the internal control system (CE, RA, CA, Inf&Com, MA). Additionally, regression model summaries for both dependent variables showed a strong relationship between internal control and financial performance ($R = .746$) and between internal control and non-financial performance-NFP ($R = .743$). In terms of financial performance, the independent variables (control environment, risk assessment, control activities, information-communication, monitoring) explain approximately 55.6% of the total variance of the banks. This means that, in addition to the COSO internal control framework, other factors with a 44.4% share in evaluating the financial performance of banks can also be used. Conversely, 55.3% of the total variation in non-financial performance (NFP) is explained by independent variables (control environment, risk assessment, control activities, information and communication, monitoring). In other words, other factors such as motivation and a favorable working environment affect 44.7% of the non-financial performance (NFP) of Ghanaian banks.

On Anova (Analysis of variance), at significant level of 0.05, the results of the study showed that the model was significant for both financial performance and non-financial performance. Both financial performance and non-financial performance-NFP had same p value of .000 and F score of 16.530 and 16.301 respectively. The findings indicated that the model is significantly fit in assessing the impact of the independent variables (*financial performance & non-financial performance*) and dependent variables (*control environment, risk assessment, control activities, information-communication, monitoring*) of the banks operating in Ghana.

Multiple regression analyses revealed a statistically significant relationship at a 95% confidence level between banks' internal control systems and Financial Performance and Non-Financial Performance. In other words, it was statistically significant that the internal control system significantly affects both financial and non-financial performance.

Regarding the relationship between the internal control system and financial performance-FP, when considering the components of the internal control system, all components except "control activities" had a positive effect on financial performance, while the "control activities" component had a negative effect. According to the regression model, a one-unit increase in the control environment, risk assessment, information-communication, and monitoring internal control components resulted in an increase in financial performance, while a one-unit increase in the control activities component resulted in a decrease in financial performance. Furthermore, the information and communication component was found to have the highest significant relationship with financial performance-FP and the highest positive impact on financial performance, compared to other COSO core internal control components.

Moreover, regarding the relationship between the internal control system and non-financial performance-NFP, a significant relationship was found between all internal control components (CE, RA, CA, Inf&Com, M) and non-financial performance. The study indicated all internal control components positively affected and increased non-financial performance. Additionally, the information and communication component was also found to have the highest significant relationship with non-financial performance and the highest positive impact on financial performance, compared to other ICS components.

The study also indicated that there are no differences between the ICS of the banks operating in Ghana with respect to FP but there are differences between ICS of Ghanaian banks with the regards to NFP. In addition, the results revealed that there is a stout positive

relationship between ICS (CE, RA, CA, Inf&Com, M) and FP as well as NFP. In general, internal control systems positively affects the performance of selected listed banks operating in Ghana.

Results of the Hypothesis Tests

Based on the analysis findings, hypotheses H1 and H2 were accepted.

4. Conclusion

This study aimed to examine the impact of the internal control system (ICS) on the performance of publicly traded Ghanaian commercial banks, within the context of the core components of the COSO integrated ICS. Accordingly, the study investigated employees' perceptions of the impact of the ICS components on financial performance-FP and non-financial performance-NFP and whether a significant relationship exists between these perceptions.

The study revealed that there were no differences in FP among the ICSs but there were differences in NFP among the ICS. The study concluded a statistically significant relationship between the ICS and FP overall. Additionally, compared to other components whose impact on FP was limited, the COSO Information-Communication component indicated the highest significant relationship with FP and the greatest positive impact, while the control activities component had an inverse effect on FP. Furthermore, the study also revealed a significant overall relationship between the ICS and NFP. In addition, compared to other components whose impact on NFP was much more limited, the COSO Information-Communication component showed the highest significant relationship with NFP and the highest positive impact on NFP.

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