

The impact of custom-made internal risk control systems on bank performance in Ghana

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Abstract

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Internal risk control systems are critical to the banking industry, since most of their business activities are prone to several risks. However, the internal risk control systems of most banks have not been customised to suit their business activities to mitigate the risks associated with their business operations. Given this, this study used the five COSO internal control components to assess the impact of custom-made internal risk control systems on bank performance, which was intended to provide comprehensive knowledge. The 10-year study from 2012-2021 is made up of 20 commercial banks, 10 savings and loans, 10 microfinance companies and 10 rural and community banks. Data was collected by means of a close-ended questionnaire designed on a five-point Likert scale, where 'strongly agree' and 'agree' were scored (1), whereas 'neither agree nor disagree', 'disagree' and 'strongly disagree' were scored (0). The secondary data was obtained from the audited annual reports of the banks using the Orbis database. The study used return on assets (*ROA*) as the performance indicator, and employed a custom-made control environment, risk assessment, control activities, monitoring, net interest margin, and custom-made information and communication as the independent variables. The study used descriptive statistics, correlation matrix, tolerance value, variation inflation factor, Cronbach's alpha, OLS, FE and system GMM in its analysis. The study found that the custom-made control environment, risk assessment, control activities, monitoring, net interest margin, and custom-made information and communication positively impact the return on assets, i.e. profitability. The study provided knowledge on the impact of custom-made internal risk control systems on bank performance. The study suggests that banks should identify and capitalise on the best mix of internal controls that suit their business environments and objectives. The

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imminent research can broaden the scope of the study by including (*ROE*), (*NIM*), or (*CTI*) as performance indicators in other organisations and economies.

Key words

custom-made, internal risk controls, COSO framework, bank performance

Introduction

Internal controls are critical to all businesses, especially the banking industry, whose business environment is exposed to several risks (Cucinelli, 2017; Temile et al., 2019; Hanon et al., 2021). In essence, banks have an enormous impact on the economic growth and financial stability of a country (Salameh, 2019; Ayagre et al., 2014). Accepting that internal controls are essential elements impacting the financial performance of companies, empirical evidence of contingency theory characteristics of internal control structures inside an organisational environment is essentially non-existent (Al-Matari et al., 2012; Kinyua, 2016; Kinney, 2000; Jokipin, 2006). The issue is unknown to previous and current researchers (Jokipin, 2010; Pham, 2021; Spira and Page, 2003; Shabri et al., 2016). Two related firms can adopt a single internal control system standard. However, the implementation may differ because of the significant differences in objectives and problem-solving strategies (Cadez and Guilding, 2008; COSO, 2017; Woods, 2009).

According to contingency theory, there is no perfect way to manage and solve institutional problems; instead, the best course of action depends on internal and external circumstances (Cowgill, 2000; Wang and Hooper, 2017; Annukka, 2010). Nevertheless, since the requirements of internal controls change depending on the features of an organisation, and these features include firm size, culture, objectives, and operational environment, organisations may require custom-made approaches to address and

manage a condition in an establishment (Jokipin, 2010; Gerdin, 2005; Mwichigi and Atheru, 2019; Lakis and Girinjas, 2012).

The term ‘custom-made internal risk control systems’ refers to internal control systems specifically designed to integrate a company’s objectives, the operational environment, and the sociocultural milieu (Kinyua, 2016). Customisations enable businesses to develop processes or procedures suitable to their goals; these enable staff to work more efficiently, leading to improved financial performance (Bure, 2019; Fisher, 1995; Hu et al., 2021). However, there are conflicting views and an overall lack of research regarding the impact of custom-made internal risk control systems in a highly dynamic environment where subject knowledge is rapidly and continuously evolving. As an illustration, the banking sector in Ghana is a prime example of this changing environment, where subject knowledge is advancing quickly. As a result, this research aims to identify the impact of custom-made internal risk control systems on bank performance in these highly dynamic environments.

Many empirical studies have extensively assessed the relationship between internal control systems and bank performance in the past (Aksoy and Mohammed, 2020; Kumari and Weerasooriya, 2019; Hanoon et al., 2021; Ironkwe and Promise, 2015; Asiligwa and Rennox, 2017). Ejoh and Ejom (2014) examined the impact of internal control systems on financial performance in higher education in Nigeria. Broadly

speaking, these studies thoroughly examined the theoretical framework of the subject using the COSO (1992) components of internal control, namely the control environment, control activities, monitoring, information and communication and risk assessment. However, these authors were unsuccessful in considering the contingency theory line of internal control structure, bearing in mind that contingency theory provides a novel technique by means of which to examine and build internal control systems in organisations (Jokipin, 2010).

From the above, it is evident that these studies only established the relationship between internal control systems and the financial performance of banks, paying less attention to the current substance. How financial institutions build their internal control systems and what elements characterise their present internal risk control designing approach is unknown, particularly in developing countries (Shabri et al., 2016). For that reason, most financial institutions undervalue custom-made internal risk control systems (Al-Matari et al., 2012; Jokipin, 2010). The objective of the study is to establish the relationship between custom-made internal risk control systems and bank performance, as the researcher has observed that banks in Ghana have less interest in developing their local methods of internal risk control systems. Foreign models are usually adopted; however, these are often not the best because work style and culture are primarily different, thus affecting their financial performance, and leaving a substantial study gap and a need to solve the issue in Ghana. On the other hand, Ghana is presently seeing new technological developments in its banking operations, where the telecommunications and banking industries have teamed up to extend financial services to customers via mobile wallets; this demonstrates resilience in the financial services space in Ghana (Alnaa et al., 2016; Owusu-Antwi, 2009; Mullineux and Murinde, 2014;

Napier, 2011). As a result, there is a need for this study to add to the body of knowledge and provide the necessary information on the need to develop internal control systems utilising the contingency theory method.

1. Literature review

According to corporate theory researchers, determining the optimal organisational structure for all organisations is attainable (Taylor, 1911). Nevertheless, the organisational structure has changed significantly (Lopes et al., 2019). According to Donaldson (2001), Taylor's earlier theories have failed since the governance styles and unexpected external circumstances of organisations influence structure (Elsayed and Elshandidy, 2021). As a result, there is no ideal method by which leaders or organisations should operate (Akeem and Fadipe, 2014). Business effectiveness is determined by its adaptability to structure and organisational factors such as the environment, strategy, technology, scale, and corporate culture (Kipyego and Naibei, 2017). Contingency theory refers to the ideas that explain the adaptability of organisational structure to situational circumstances. Many authors are concerned with contingency theory and present it in various ways. Management or optimised corporate organisation is under pressure from internal and external factors (Chenhall, 2003; Jalil, 2018). The best way to organise depends on the organisational environment of company activities (Chenhall, 2007). The effectiveness of the solutions relies on the conditions of the solutions implemented at the company (Shabri et al., 2016). The primary research themes in contingency, the scenario, and organisational structure must be compatible in order to operate appropriately in a firm (Jokipii, 2010; Drazin, 1985).

Organisations need suitable internal control frameworks to guarantee performance (Jokipii, 2010). The accessibility of information and compliance with all applicable

regulatory requirements are the central values of internal control systems in an organisation (COSO, 1992). However, the ability to conduct business activities under a set of internal controls is one of the main advantages of applying the COSO framework (Agbenyo et al., 2018). The primary purpose of the COSO framework is to guarantee a standardised operational process, reporting, and adherence; these three separate areas make up the COSO blueprint values. Internal controls increase efficiency and lower risks once organisations adopt the five COSO components: the control environment, risk assessment, control activities, monitoring, and information and communication (Jovetic et al., 2018; COSO, 2013). Nevertheless, this is contingent on how they have been designed and implemented (Wang and Hooper, 2017). According to contingency theory, there is no ideal way to manage and solve institutional problems; instead, internal and external circumstances determine the appropriate course of action (Ayagre et al., 2014; Cowgill, 2000). As a result, this proposition argues that companies require tailored approaches to control and manage a problem in an organisation (Jokipin, 2010; Gerdin, 2005). The theoretical relationship between internal control structure and the effectiveness thereof is founded in the COSO (1992) framework, which argues that five fully functioning internal control components can result in successful organisational internal control systems (Akeem and Fadipe, 2014). The framework suggests inequalities in internal control effectiveness among organisations, but does not detail why these differences occur (Khamis, 2013; Jokipii, 2010). As a result, contingency theory provides a relevant study strategy by suggesting that effectively customising an internal control system to the characteristics of a business will result in efficiency (Jokipii, 2010; Fisher, 1995). Donaldson (2001) approaches contingency theory early in organisational theory,

establishing the three fundamental aspects of the research model used in internal controls: (1) there is a relationship between contingency theory and internal control structure; (2) contingency theory defines internal control structure; and (3) the level of the internal control structure fits each level of contingency theory. The author asserted that the internal control framework is comparable to contingency theory. The COSO (1992) framework confirms that the requirements of internal controls change depending on the features of an organisation. These features include firm size, culture, governance philosophy, objectives, and operational environment (Lakis and Girinjas, 2012). This assertion in the COSO (1992) internal control framework is similar to contingency theory, emphasising that an organisation can select the most appropriate control systems when considering contingency theory characteristics (Chenhall, 2003). The COSO (1992) integrated framework maintained that two related firms could have one internal control system standard; however, its implementation may vary. These companies may have substantially different goals and approaches to solving problems.

The requirement for and the essentials of internal control systems may vary from organisation to organisation (Jokipii, 2010). The contingency theory is of the view that there is no perfect way of managing and solving institutional problems; instead, the optimal course of action is contingent or dependent upon the internal and external situation (Kinyua, 2016). This assertion suggests that organisations need custom-made methods of approach and controls to address and manage a condition (Mawanda, 2008). The view of the COSO internal control framework (1992) is similar to the argument of contingency theory, which suggests that institutions should think through contingency characteristics to select the most appropriate internal control systems for the organisation (Fisher, 1995; Chapman, 1997).

However, the essential elements of contingency theory have not been adopted as the cornerstone for efficient internal control systems; hence this study.

A framework of custom-made internal risk controls is a vital component of corporate management and the basis for companies to operate safely and firmly, as ineffective organisational controls contribute to weak systems, resulting in losses (Cheng et al., 2019). The recent occurrence of business scandals and accounting frauds is usually due to a breakdown of internal management systems (Kumbirai and Webb, 2010; Kinyua et al., 2015; Njiru and Bunyasi, 2016). According to Chapman (1997), internal controls are ongoing processes and are subject to changes and alteration; based on this assertion, organisations need to adopt internal control systems which are suitable and essential to their business activity for easy modification to build confidence (Tadesse and Murthy, 2021). Kinyua (2016) acknowledged that internal controls should be designed to fit seamlessly into a company's sociocultural setting to increase the efficiency of an organisation's internal control systems. Shabri et al. (2016) asserted that having secure internal control systems provides reasonable assurance of improving business performance, preventing management from encountering abuse of processes and achieving objectives. A company's values and goals must be considered when designing institutional internal control systems, as this provides some strategic advantages and economic benefits to the organisation (Fan et al., 2017; Kinyua, 2016; Salim and Yadav, 2012). Internal control customisation allows organisations to develop processes or procedures tailored to their objectives; these assist employees in working effectively, enhancing financial performance (Jokipii, 2010). In the face of globalisation, business practices are persistently changing; therefore, it is essential to adapt internal control systems that fit into the organisation's working conditions

to maintain its business culture and identity (Phornlaphatrachakorn and Kalasindhu, 2020). Custom-made internal controls can improve efficiency, achieve profitability, and ensure adherence to regulations, allowing management to evaluate the sufficient functioning of systems in an organisation; this would ensure that business assets are secured, management policies are followed, and the risk of fraud or mistakes is minimised (Bure, 2019). The absence of custom-made internal control systems may negatively affect financial performance (Asiligwa and Rennox, 2017).

The control environment component establishes an organisation's culture and work (Jovetic et al., 2018). This component relates to establishing an environment where individuals perform their activities and carry out their control duties (Pham, 2021). It sets the company's overarching control culture (Aksoy and Mohammed, 2020). An organisation's history and culture impact the control environment, and it has a considerable impact on organisational structure (Kinyua, 2016; Pany and Whittington, 2001). According to COSO (1992), the control environment sets the tone by creating internal control awareness among employees. Khamis (2013) found a significant positive relationship between the control environment and bank performance. Mawanda (2008) found a positive relationship between the control environment and the financial performance of institutions of higher learning in Uganda. Thi and Tran (2018) examined the effect of internal control on asset misappropriation in Vietnam. The study used the control environment to explore the impact of internal controls on asset misappropriation, revealing that the control environment presented the most substantial impact. Kinyua et al. (2015) examined the effect of the control environment on the financial performance of listed firms in Nairobi. The study showed a significant positive relationship between the control

environment and financial performance. A study by Mawanda (2008) asserted that institutions with a proper control environment could significantly improve their financial performance.

The risk assessment component refers to the methods for dealing with risks that threaten the firm's objectives (Isadora et al., 2022). It entails identifying, analysing, and evaluating relevant risks (Kumari and Weerasooriya, 2019). In 2004, COSO created enterprise risk management (ERM) to address risk management problems. Setting up risk procedures in an organisation, risk response and identification are all part of this framework (Rittenberg and Schwieger, 2001). COSO (2013) emphasised the importance of goal formulation in an organisation and related it to risk assessment as a precondition. Risk assessment entails watching and identifying relevant organisational risks that may prevent it from accomplishing its goals (Attefah and Darko, 2016). Risk assessment safeguards a company's internal processes, giving reasonable confidence that the company's specified objectives will be achieved. Ewa and Udoayang (2012) conducted a study to establish the impact of internal control design on the ability of banks to investigate staff lifestyles and fraud detection in Nigeria. The objective of the study was to examine how risk assessment can help to prevent fraud. The study found that weak risk assessment on control systems exposes employees to fraud. Thi and Tran (2018) researched the effect of internal control on asset misappropriation in Vietnam. The study employed risk assessment to examine the impact of asset misappropriation. The research revealed that risk assessment did not affect bank performance. Otoo et al. (2021) examined the impact of internal control systems on the performance of Ghanaian universal banks. The study employed a quantitative research method. A questionnaire was used to collect data from 160 respondents in 20 Ghanaian universal banks. Regression

analysis was used as an analytical tool. The study discovered that among the five COSO internal control frameworks, risk assessment significantly impacted the institution's financial performance.

The control activities component refers to rules, procedures, and practices that ensure objectives are met and successful risk mitigation methods are implemented (Aksoy and Mohammed, 2020). Authorisation and approval processes, separation of duties, resource and proceeding access controls, reconciliations, verifications, assessing work performance, and reviewing activities and operations are all control activities (Aikins, 2011; COSO, 2013). According to Whittington and Pany (2001), control activities are one of the integrated internal control components of COSO that improve the internal control efficiency of an organisation. Control activities are processes and regulations which guarantee that management instructions are followed across the company. Ejoh and Ejom (2014) examined the relationship between control activities and the financial performance of tertiary institutions in Nigeria. The study showed no significant relationship between control activities and financial performance.

The monitoring component refers to the determination of control quality (Asiligwa and Rennox, 2017). It includes continuous and periodic reviews of the external supervision of internal controls by management or other parties not involved in the process. These five components define the internal control structure in this study. Monitoring is routinely managing and supervising company activity for complaints and views. Internal audits are done regularly at a company as part of monitoring operations (Bowrin, 2004; Simmons, 1991). Internal auditing guarantees that organisational activity designs generate value and improve processes and performance (Thi and Tran, 2018). Monitoring supports a company in

achieving its goals by systematically assessing and increasing risk management control. Gupta (2001) asserted that monitoring is a function of internal auditors and established that their independence should not be compromised. Koutoupis and Pappa (2018) studied Greece's corporate governance and internal controls. The study evaluated the existing corporate governance structure and its connection with the monitoring function of the internal audit of the 25 most significant and most liquid companies on the Athens stock exchange in 2016, revealing that, of the five COSO internal control frameworks, monitoring most significantly impacted the financial performance of the institutions. The authors asserted that monitoring is a function of internal auditing and of internal controls; therefore, there is a need for the board of directors to make sure their internal audit functions are correctly established to ensure adequate monitoring and compliance. Otoo et al. (2021) examined the impact of internal control systems on the performance of universal banks in Ghana. The study used a quantitative research technique by means of which questionnaires were utilised to collect data from 160 respondents at 20 universal banks in Ghana. Regression analysis was employed as an analytical technique. The study found that monitoring impacts financial performance.

The information and communication component ensures that pertinent information is discovered, recorded, and delivered in a manner and period that allows people to carry out their tasks and obligations successfully (Shu et al., 2018). According to Aldridge and Colbert (1994), internal control demands that all relevant information be recognised, collected, and disseminated in a format and period that allows employees to carry out their financial reporting obligations (Koutoupis and Pappa, 2018). Effective communication should take place on a broad scale, with information

flowing down, across, and up through all levels of the business (Magu and Kibati, 2016). Considering its significance in influencing internal working relationships at all levels, recent research on internal frameworks has raised concerns about information and communication as one of COSO's most important internal control components (Amudo and Inanga 2009). A study by Ayagre et al. (2014) used monitoring to evaluate the effectiveness of the internal control systems of banks in Ghana, confirming that monitoring activities significantly impact the financial performance of banks. A study by Agbenyo et al. (2018) was conducted on the assessment of government internal control systems on the quality of financial reporting in Ghana. The study used the five COSO internal control components to examine the quality of financial reporting on government internal control systems. The study concluded that information and communication significantly impact the quality of financial reporting, especially when all parties adhere to the objectives. Abiola and Oyewole (2013) studied the impact of information communication on internal controls in Nigeria. According to the author, institutions need information communication and technology tools and techniques to produce quality, accurate, reliable and timely financial reports. The researchers added that information and communication impact internal controls and financial performance. The use of information communication and technology promoted the bank's customer services role. The study concluded that information communication and technology enhanced the efficiency and effectiveness of internal control systems and financial performance in the organisation. Asiligwa and Rennox (2017) asserted that information systems generate reports on financial, non-financial, operational, and compliance-related facts, making it encouraging to run and control operations in an organisation.

Earlier studies generated inconsistent results regarding the relationship between internal control systems and bank performance. Most of these studies were case study-based, focusing on individual institutions or companies that display certain traits or material weaknesses in their internal control systems. These studies were limited to private banks, thus placing caveats around their generalisation to other financial institutions. Nevertheless, some studies found that internal control systems have a positive relationship with bank performance; therefore, non-compliance with these processes can hinder an organisation in terms of achieving its objectives, while others established a negative relationship. Kinyua et al. (2015) and Thi and Tran (2018) examined the impact of the control environment on bank performance, concluding that the control environment indeed impacted bank performance. Ewa and Udoayang (2012) and Otoo et al. (2021) also established that risk assessment has an impact and can help to prevent fraud in an organisation. Furthermore, Koutoupis and Pappa (2018) and Otoo et al. (2021) confirmed that monitoring impacts bank performance. On information and communication, Ayagre et al., (2014), Agbenyo et al., (2018). Abiola (2013) and Asiligwa and Rennox (2017) examined the impact of information and communication on financial performance. The study concluded that information and communication significantly impact financial performance and reporting quality.

Although the abovementioned studies examined the relationship between internal controls and bank performance using the five COSO internal control components, they only considered the control environment, monitoring, information and communication, control activities, and risk assessment. Consequently, these studies largely disregarded the contingency theory approach, an essential component of

internal controls. Nevertheless, internal controls must be developed based on organisational values, backgrounds and norms, enabling management to monitor and assess employees efficiently; this research statement is lacking in previous studies (Aksoy and Mohammed, 2020; Kumari and Weerasooriya, 2019). Al-Matari et al. (2012) disclosed a significant lack of research regarding custom-made internal control systems and bank performance in both developed and developing countries. As a result, the current study considered internal control systems in a broader context, evaluating how custom-made internal control systems impact the financial performance of the Ghanaian banking industry. Therefore, the objective is to bridge the present research gap using the below hypotheses that a custom-made control environment, custom-made risk assessment, custom-made control activities, custom-made information and communication, and custom-made monitoring have an impact on the financial performance of banks in Ghana.

The following hypotheses will be tested based on the literature listed above and preceding internal control characteristics to meet the research objectives.:

- H₁: A custom-made control environment has an impact on the financial performance of banks in Ghana**
- H₂: Custom-made risk assessment impacts the financial performance of banks in Ghana**
- H₃: Custom-made control activities have an impact on the financial performance of banks in Ghana**
- H₄: Custom-made information and communication have an impact on the financial performance of banks in Ghana**
- H₅: Custom-made monitoring impacts the financial performance of banks in Ghana**

2. Methodology

The study used a survey research design to provide direction and the research framework to solve a particular phenomenon. This method was chosen because it allowed the researcher to collect data describing the conditions and problems that are pervasive at a point in time (Allwood, 2012). The study adopted a quantitative research approach as this method is logical, statistical, and unbiased. The purposive sampling technique was first used to select departments or groups suitable and relevant to the study (Kinyua et al., 2015). In all, 241 financial institutions comprised the potential sample; however, 95 institutions were sampled for the survey over a period of 10 years, from 2012 to 2021. Data unavailability, research interval, proximity, and bank type determined the sample size for the study (Holton and Burnett, 2005). The study selected eight key management and senior managers from each institution who head and supervise several essential departments and functions such as finance, internal audit, risk, human resources, I.T., marketing and business development, compliance, and banking operations. The above demographic is relevant because these individuals are the primary owners and caretakers of internal control systems, with substantial knowledge and abilities.

A semi-structured questionnaire was administered to management and senior managers of the 95 financial institutions. The semi-structured format was chosen to examine respondents' ideas, views, and understandings of the issue. Close-ended questionnaires were designed on a five-point Likert scale scaled as follows: 1=Strongly Agree, 2=Agree, 3=Neither Agree Nor Disagree, 4=Disagree, and 5=Strongly Disagree. The study measured the five-point Likert scale using the dummy pretence where 1=Strongly Agree and 2=Agree were scored (1), whereas 3=Neither Agree Nor Disagree, 4=Disagree,

and 5=Strongly Disagree were scored (0). The study used (ROA) as the performance metric. It employed independent variables such as a custom-made control environment, risk assessment, control activities, monitoring, net interest margin, and custom-made information and communication. Secondary data was obtained from the banks' audited annual reports through the Orbis database. The researcher conducted validity and reliability tests on measures adapted from literature and adhered to strict confidentiality with regard to the data collected (Asiligwa and Rennox, 2017; Agbenyo et al., 2018).

The study applied varied analytical methods in its preface analysis; this included descriptive statistics and normality tests such as skewness and kurtosis, a correlation matrix, tolerance value, variation inflation factor, and Cronbach's alpha coefficient. The study applied estimators such as fixed-effects regression and Ordinary Least Squares (OLS) regression. These varied analytical models were adopted from previous studies (Kinyua et al., 2015; Otoo et al., 2021).

On the other hand, this study applied the two-step System General Method of Moments (GMM) model. Researchers such as Athanasoglou et al. (2006) and Banto and Monsia (2021) are just some of those who have made extensive use of the General Method of Moments (GMM) model as first proposed by Arellano and Bond (1991). Due to its capacity to adjust for endogeneity using readily accessible lagged values in the dependent variable and of the exogenous regressors' lagged values in the form of instruments, scholars prefer the GMM method over panel regression (Al-Homaidi et al., 2020). Furthermore, compared to the conventional fixed or random effects panel regressions, the GMM technique manages unobserved heterogeneity and persistence of the dependent variable, leading to more reliable estimations of the regression parameters (Arellano and Bover, 1995; Blundell and Bond, 1998).

The equation may be represented by:

$$Y_{i,t} = \beta_0 + X_{i,t}\beta_1 + \varepsilon_{i,t} \quad i = 1, 2, \dots N \text{ and } t = 1, 2, \dots T \quad (3.1)$$

The study employs the following model specification:

$$ROA_{it} = \beta_0 + \beta_1 CCE_{it} + \beta_2 CCA_{it} + \beta_3 CCI_{it} + \beta_4 CME_{it} + \beta_5 CRA_{it} + \beta_6 NIM_{it} + \varepsilon_{it} \quad (3.2)$$

Where:

Y_{it} = the perceived performance indicator for the bank i at period t ,	$CCE_{i,t}$ = Custom-made control environment
β_0 = represents the constant variable,	$CCA_{i,t}$ = Custom-made control activities
$X_{i,t}$ = indicates a composition of independent variables.	$CCI_{i,t}$ = Custom-made information and communication
β_1 = coefficients of variables,	$CME_{i,t}$ = Custom-made risk assessment
i = denotes the cross-sectional dimension,	$CRA_{i,t}$ = Custom-made monitoring
t = represents the time-series dimension,	$NIM_{i,t}$ = Net interest margin
$\varepsilon_{i,t}$ = fixed effects decomposition of the error term.	

Table 1. Description and measurement of variables

Variables	Operationalisation	Data Source	Measurement
Return on Assets (ROA) (Dependent)	Net Income / total assets × 100	Orbis Data-base	Net income / total assets
Custom-made Control Environment (CCE) (Independent)	1. Integrity and ethical values 2. Organisational structure 3. Management philosophy 4. Assignment of authority 5. Human resource policy	Questionnaire	Five-Point Likert Scale
Custom-made Info & Communication (CCI) (Independent)	1. Information quality 2. Effective communication 3. Channel of communication 4. Relevance of information and communication 5. Consistency of information	Questionnaire	Five-Point Likert Scale
Custom-made Controls Activities (CCA) (Independent)	1. Policy and procedure 2. Perform outsourcing 3. Review performance 4. Segregation of duty	Questionnaire	Five-Point Likert Scale
Custom-made Risk Assessment (CRA) (Independent)	1. Risk identification, 2. Risk evaluation, 3. Risk mitigation	Questionnaire	Five-Point Likert Scale
Custom-made Monitoring (CMT) (Independent)	1. Ongoing monitoring 2. Separate evaluations 3. Report deficiency 4. Routine audit	Questionnaire	Five-Point Likert Scale

Variables	Operationalisation	Data Source	Measurement
Net Interest Margin (<i>NIM</i>) (<i>Control</i>)	Interest income minus interest expenses	Orbis Data-base	Int. income - Int. paid / Av. assets

Source: Author's own construction

3. Research results

Due to the lack of data in the research interval, the study sampled 95 financial institutions out of 241. However, 50 institutions comprising 20 commercial banks, 10 savings and loans companies, 10 microfinance companies and 10 rural and community banks took part in the study. These 50 institutions answered the study questionnaires with 500 observations, thus yielding a percentage response rate of 54%. Delice (2010) stated that any response rate of more than 50% is suitable for observation; therefore, this response is deemed adequate. The study applied varied analytical methods in its preface analysis; this includes descriptive statistics, a correlation matrix, tolerance value (TV) and variation inflation factor (VIF),

Cronbach's alpha coefficient, FE, OLS and a two-step System GMM model.

Table 2 provides the summary of descriptive statistics for the dependent and independent variables of the study. The descriptive statistics involve the means, standard deviations, minimum, maximum, skewness and kurtosis that examine and identify the basic positions of the study. The standard deviation determines the level of inconsistency in the estimates employed, while the skewness and kurtosis examine the normality of the distribution. According to Hair et al. (2010), data is regarded as normal if the skewness and kurtosis are within a range of -2 to +2 and -7 to +7, respectively. The results listed in Table 2 show that the data is normally distributed as they both reported within range (Bryne, 2010).

Table 2. Descriptive statistics

Var	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
<i>ROA</i>	500	23.69	9.429089	-20.42	59.640	2.496450	04207184
<i>NIM</i>	500	35686	4162979	-431.12	117.53	1.928772	6.530251
<i>CCE</i>	500	00738	0440163	0	1	-1.082501	2.171807
<i>CCI</i>	500	00738	0440163	0	1	-1.082501	2.171807
<i>CME</i>	500	00873	0444404	0	1	-1.036131	2.073567
<i>CCA</i>	500	00738	0440163	0	1	-1.082501	2.171807
<i>CRA</i>	500	00748	0450160	0	1	-4.609856	2.811563

Source: Stata computation, 2022

From Table 2, the study recorded a mean of 2.3% and a standard deviation of 9.4% for return on assets (ROA), which measures the returns the banks earn from their assets. This shows the money-making capabilities of

banks, and makes it clear that the banks are competing for profitability. On average, each institution earns 2.3% on every single asset investment. The standard deviation also means that their profit-making capacities differ by

9.4%. The study variables considered in the custom-made control environment were integrity, ethical values, organisational structure, management philosophy and operating style, assignment of authority and responsibility, and human resource policy and practices. The results showed that a custom-made control environment exists in the studied institutions, as 73% of the respondents disclosed that their control environment is tailored to suit their operations. However, 25% were unsure, and 2% indicated that their control environment was inadequately tailored. Per Table 2, the custom-made control environment recorded a mean of 0.7% and a standard deviation of 0.4%. The standard deviation of 0.4% shows variations in internal control processes among commercial banks.

The study employed policy and procedure, performed outsourcing, and reviewed performance and segregation of duty to measure the custom-made control activities of the institutions. Table 2 shows that 73% of the respondents admitted that their control activities were tailored towards their operations, while 25% were uncertain, and 2% pointed out that their control activities were not tailored to meet their operations. The study recorded a mean of 0.7% and a standard deviation of 0.4% for custom-made control activities, signifying the variation in control activity procedures among the institutions.

The study employed risk identification, evaluation, and mitigation to measure custom-made risk assessments. Table 2 shows that 74% of the respondents acknowledged that their internal risk assessment procedures were customised. By contrast, 22% were unsure, and 4% admitted that their risk assessment procedures were ineffectively designed for their operations. The custom-made risk assessment recorded a mean of 0.7% and a standard deviation of 0.5%. The standard deviation of 0.5% shows the variation in risk assessment procedures among the institutions.

The study employed information quality, effective communication, the channel of communication and relevance and the consistency of information to evaluate custom-made information and communication. Based on Table 2, the custom-made information and communication showed that 73% of the respondents stated that their information and communication procedures suit their internal communications. Then again, 21% were unclear, and 6% pointed out that their information and communication processes are poorly designed and tailored to suit their daily communication activities. The custom-made information and communication recorded a mean and standard deviation of 0.7% and 4%, respectively. This implies that, on average, each institution has 0.7% unique information and communication measures and differs from each other at a standard deviation of 4%.

As shown in Table 2, COSO principles such as ongoing monitoring, separate evaluations, report deficiency, and routine audits were utilised to evaluate the custom-made monitoring variable. The results showed that 90% of the respondents admitted that their monitoring actions are tailored towards their operations. However, 7% were uncertain, and 3% pointed out that their monitoring activities are imperfectly tailored to suit their daily banking operations. The study recorded a mean of 0.9% and a standard deviation of 0.4%. The standard deviation shows the differences in custom-made monitoring measures among the institutions. From Table 2, the net interest margin recorded a mean of 3.6% and a standard deviation of 4.1%. This infers that, on average, each bank earns 3.6% as net income on every loan investment; the standard deviation shows the differences in income earnings at 4.1% among the institutions.

The coefficient alpha, commonly known as Cronbach's alpha, was used to assess the data's internal consistency and dependability. Cronbach's alpha is a method

for determining internal consistency. According to Gliem and Gliem (2003), a value of Cronbach's alpha greater than 0.6 is regarded as a highly dependable and acceptable index (Nunnally and Bernstein, 1995). In this case, the custom-made control environment recorded 0.8067. Custom-made control activities scored 0.6845;

custom-made risk assessment had a score of 0.6931; custom-made monitoring scored 0.6821; and custom-made information and communication recorded 0.6616. The overall internal consistency score of 0.7542 is shown in Table 3. This indicates that the study instrument was dependable, stable, and sufficient.

Table 3. Cronbach's alpha reliability test

<i>Item</i>	<i>Obs</i>	<i>Sign</i>	<i>Item-Rest</i>	<i>Item-Rest</i>	<i>Average Correlation.</i>	<i>Alpha</i>
<i>ROA</i>	500	+	0.5332	0.3426	0.3351	0.7515
<i>CCE</i>	500	+	0.2801	0.0575	0.4102	0.8067
<i>CCI</i>	500	+	0.8346	0.7421	0.2457	0.6616
<i>CCA</i>	500	+	0.7676	0.6464	0.2656	0.6845
<i>CME</i>	500	+	0.7750	0.6567	0.2634	0.6821
<i>CRA</i>	500	+	0.7411	0.6096	0.2735	0.6931
<i>NIM</i>	500	+	0.5181	0.3244	0.3396	0.7553
<i>Test scale</i>					0.3047	0.7542

Source: Stata computation, 2022

Table 4 illustrates the correlation matrix computation, which evaluates the significance level and the absolute relationship between the dependent and independent variables. The results in Table 4 showed no serial correlations between the variables, implying no multicollinearity issue in the model employed. The test confirms that the variables are not correlated, as the correlation coefficients are less than 0.7. There is multicollinearity when the correlation coefficient exceeds 0.7 (Wooldridge, 2015). Table 4 below shows the positive correlation coefficients between custom-made information and communication. This allows one to infer that custom-made information and communication positively influence other components to function appropriately to enhance profitability.

Table 4 shows positive correlation coefficients between the custom-made control activities and other components. This

means that the existence of custom-made control activities in an organisation improves bank profitability and aids other components in functioning appropriately. The table also shows positive correlation coefficients between custom-made monitoring and other control components, which implies that bank profitability rises in direct proportion to custom-made monitoring. Table 4 displays positive correlation coefficients between custom-made risk assessment and other components. This means that custom-made risk assessment influences bank profitability. From Table 4, the correlation coefficients between the custom-made control environment and all other variables components had positive correlation coefficients. This suggests that an inefficient custom-made control environment harms bank profitability and can negatively influence other internal control components.

Table 4. Pairwise correlation matrix

I	ROA	AGE	CCI	CCA	CME	CRA	NIM
ROA	1.0000						
CCE	0.1940*	1.0000					
CCI	0.3698*	0.0700	1.0000				
CCA	0.3379*	0.0234	0.6884*	1.0000			
CME	0.3813*	0.0871	0.6103*	0.6519*	1.0000		
CRA	0.2513*	0.1904*	0.6669*	0.4798*	0.4801*	1.0000	
NIM	0.2262*	0.0693	0.3085*	0.2343*	0.2380*	0.2289*	1.0000

* p < 0.05, ** p < 0.01 (2-tailed)

Source: Stata computation, 2022

The study employs tolerance value (TV) and the variation inflation factor (VIF) to verify the presence of multicollinearity in the model. TV varies from 0.355227 to 0.951489, thus indicating that the model

lacks multicollinearity action, as shown in Table 5. The VIF ranges from 1.05 to 2.82, thus indicating that the model lacks multicollinearity. Nachane (2006) asserted that a VIF of less than 10% is acceptable (see Table 5).

Table 5. Variance inflation factor and tolerance value

Variable	VIF	1/VIF
CCI	2.82	0.355227
CCA	2.28	0.438784
CME	1.94	0.515093
CRA	1.90	0.527229
NIM	1.11	0.898639
CCE	1.05	0.951489
Mean VIF	1.85	

Source: Stata computation, 2022

From Table 6, the R-squared obtained under FE and OLS regression models were 48% and 44%, respectively. This implies that the model’s explanatory variables can explain 48% and 44%, respectively, of the variation in the performance indicator, namely return on assets. The loss under the FE and OLS models can be ascribed to additional variables not included in the research.

The F-statistic indicates that the explanatory variables can be related to bank performance. Based on the System GMM model,

AR(1) = 0.000, AR(2) = 0.631, Hansen = 0.389 and Sargan = 0.405. These test results suggest that the model considers heteroskedasticity to be consistent, as reported by the p-values for AR (2) and the Hansen statistic. From Table 6, the study tested for heteroskedasticity using the Breusch-Pagan/Cook-Weisberg test H_0 : Constant variance, Variables: fitted values of (CCI, CCA, CME, CRA, NIM, CCE), $\chi^2(6) = 22.24$, Prob > $\chi^2 = 0.1349$. This suggests there is no heteroskedasticity in the dataset and the model employed.

Table 6. Research results

Variables	Fixed Effects (FE) Estimates	OLS Estimates	Two-step System GMM Estimates
<i>L. ROA (-1)</i>			0.136 (0.083)
<i>CCE</i>	0.145 (0.101)	0.261*** (0.000)	-0.264 (0.167)
<i>CCI</i>	3.153 (0.091)	4.559* (0.017)	5.570 (0.091)
<i>CCA</i>	0.165 (0.898)	0.826 (0.547)	0.0845 (0.072)
<i>CME</i>	3.862*** (0.001)	5.473*** (0.000)	7.027 (0.435)
<i>CRA</i>	0.162 (0.084)	0.0584 (0.539)	0.160 (0.974)
<i>NIM</i>	0.0231* (0.022)	0.0327** (0.003)	0.0671 (0.770)
<i>_cons</i>	3.544 (0.106)	4.503** (0.002)	2.055 (0.818)
N. Observations	500	500	500
Groups /Instrument			50/27
Heteroskedasticity test (Breusch-Pagan/Cook-Weisberg test)			
<i>P</i> -value	Chi2 = 0.1349		
Chi2(6)	Chi2(6) = 22.24		
Year Dummies			Yes
R-Square	0.048	0.044	
F-Statistic (<i>p</i> -value)	0.0000***	0.0000***	
Arellano-Bond AR (1) <i>p</i> -value			0.000***
Arellano-Bond AR (2) <i>p</i> -value			0.631
Hansen test (<i>p</i> -value)			0.389

Source: Stata computation, 2022

Note ***, **, * are statistically significant at the 1%, 5%, and 10% level respectfully; t-statistics (in parentheses) are based on White's test for heteroskedasticity - consistent Std. error; *p*-value reported for AR (2) and the Hansen statistic. First-differenced residuals with first-order autocorrelation

are tested using the AR (1) and AR (2) procedures, respectively.

4. Discussion

Table 6 shows that the custom-made control environment had a significant positive

coefficient on return on assets with the OLS estimator. This finding implies that a custom-made control environment significantly impacts the financial performance of banks, and an increase in a custom-made control environment is likely to increase bank profitability. According to COSO (1992), the control environment includes employees' ethical beliefs, honesty, competency, managerial philosophy, working style and the delegation of authority and responsibility. Since the control environment instils internal control awareness in personnel to provide discipline and order, it serves as the foundation for other internal control components. COSO (2013) recognises that when internal auditors continually evaluate a well-made control environment, it will be sufficient to prevent attitudinal error, poor judgment, management overrides, or workers conspiring to evade control systems. This result is consistent with that of Kinyua (2016). However, it contradicts the findings of Magu and Kibati (2016), who found a substantial negative relationship between the control environment and ROA.

Table 6 demonstrates a substantial positive relationship between custom-made risk assessment and return on assets with the FE estimator. This result suggests that increased custom-made risk assessments can minimise fraud and increase profitability in an organisation. Custom-made risk assessments can influence an organisation's objectives and profitability since they can actively assist banks in analysing any possible dangers and financial losses. It also allows for continuous review, adaptation and evaluation of the control systems. This means that banks that have experienced substantial losses in the past might have failed to customise their risk assessment processes; by so doing, they would have been able to recognise and analyse threats to new products or significant changes in the business environment. In today's volatile environment, all banks are vulnerable to a wide range of risks, including credit, liquidity, foreign currency, market,

and interest rate volatility, all representing a danger to the survival or performance of the bank. According to contingency theory, there is no perfect solution by means of which to manage and solve institutional problems; instead, the best course of action is contingent or reliant on internal and external circumstances. This argument implies that Ghanaian banks require tailor-made risk assessments to handle and manage a problem (Mwindi, 2008). The result is consistent with the results of Rosman et al. (2016), but it is inconsistent with the findings of Bayyoud and Sayyad (2015).

Table 6 shows a significant positive relationship between custom-made control activities and return on assets with the system GMM estimator. This finding suggests that custom-made control activities positively impact the financial performance of banks. Custom-made control activities influence bank performance by providing acceptable policies, procedures, and mechanisms to ensure that managerial directives are appropriately carried out to help detect any mistakes or fraud. It is not only sufficient for management to establish policies and procedures for the bank's various divisions; they must regularly ensure that all areas comply with such policies and procedures. The control activities provide all the necessary actions to address risks and achieve organisational objectives. According to Ewa and Udoayang (2012), internal control activities such as approvals, authorisations, verifications, reconciliations, reviews of operating performance, security, and segregation of duties must occur throughout the organisation. Most of them are made possible with the help of the internal audit function. Bank departments or division-level management receive and review standard performance and exception reports daily, weekly or monthly. According to contingency theory, custom-made control activities allow constant serviceable reviews to occur at the top level and are usually more detailed. This conclusion is consistent that

of with Rosman et al. (2016), but contrary to that of Kinyua (2016).

Table 6 demonstrates a strong positive relationship between custom-made monitoring activities and return on assets with the FE and the OLS. This suggests that increasing custom-made monitoring will likely enhance the profitability of banks, and vice versa. Internal controls are continual operations, and it is generally acknowledged that banks effectively monitor and assess the control system's quality and efficacy over time. Monitoring an organisation's internal control systems guarantees no time gaps or errors and ensures the control systems are working correctly. According to the contingency theory, financial institutions can enhance their risk assessment process when they customise their monitoring procedures. This would allow for the constant reviewing of internal control systems and guarantee that internal auditors and other reviews are addressed as soon as possible. This conclusion supports the findings of Kumari and Weerasooriya (2019) and Alawattagama (2018), who discovered a positive relationship between monitoring and financial performance.

Table 6 shows a substantial positive relationship between custom-made information and communication and return on assets with all the estimators (FE, OLS and system GMM). This indicates that custom-made information and communication impact the financial performance of banks because of their position in influencing the working relationship within the organisation at all levels (Amudo and Inanga, 2009). According to Aldridge and Colbert (1994), internal control requires that all pertinent information be identified, captured, and communicated in a form and timeframe that enable people to carry out their financial reporting responsibilities. Effective communications should occur broadly, with information flowing down, across, and up within all the sections of the organisation (Asiligwa and Rennox, 2017). The information must be communicated

throughout the entire organisation to encourage personnel to carry out their responsibilities relating to objective achievement. Certain losses are incurred by banks because the relevant personnel are unaware of or do not understand the bank's policies. In several instances, information about inappropriate activities that should have been reported upward through organisational levels is not communicated to the board of directors or senior management until the problems become severe. In other instances, incomplete or inaccurate information in management reports creates a misleading impression of a business situation. Online information and communication platforms have now supplanted natural communication patterns in many businesses. According to industry observers, the internet has made job security a major worry, since technology changes regularly. This means that if financial institutions want to retain and communicate appropriately to their employees, they must customise their information and communication process for easy and constant revision, as the contingency theory emphasises. This result is consistent with that of Alawattagama (2018), but contrary to that of Odek and Okoth (2019).

Table 6 shows a positive relationship between net interest margin and return on assets with the FE and OLS estimators. This means that a rise in net interest margin is expected to enhance the profitability of banks. This indicates that institutions that pay close attention to interest revenue and interest cost are more likely to improve profitability. Bank performance is directly related to asset and liability management, emphasising excellent loan portfolio management with low recovery costs as banks generate more revenue from assets. Saksonova (2014) and Svetlana (2014) found a significant positive relationship between net interest margin and return on assets.

Table 7 presents the positions of hypotheses based on the assessment of the OLS, FE, and system GMM models used in the study.

Table 7. Status of hypotheses

Hypotheses	Standing
<i>H₁: A custom-made control environment impacts the performance of banks in Ghana.</i>	Maintained
<i>H₂: Custom-made risk assessment impacts the performance of banks in Ghana.</i>	Maintained
<i>H₃: Custom-made control activities impact the performance of banks in Ghana.</i>	Maintained
<i>H₄: Custom-made monitoring impacts the performance of banks in Ghana.</i>	Maintained
<i>H₅: Custom-made information and communication impact the performance of banks.</i>	Maintained

Source: own construction

Conclusions

Corporate practices are constantly changing in the face of globalisation; hence, it is critical to identify internal control systems that fit within an organisation’s working environment to retain its business culture and identity. Custom-made internal control systems enable a company to run efficiently, expand continuously, and respond to environmental opportunities and challenges. The current study seeks to bridge a gap caused by limited research on custom-made internal risk control systems and bank performance in Ghana. The 10-year research period from 2012 to 2021 included 50 regulated financial institutions, comprising 20 commercial banks, 10 savings and loans firms, 10 microfinance organisations, and 10 rural and community banks. It employed CCE, CCA, CRM, CCI and CME as independent variables. The study used ROA as the performance metric to ascertain the relationship between these explanatory variables. In addition, net interest margin (NIM) was included as a control variable. As a result, the study discovered a positive relationship between CCE, CCA, CRM, CCI, CME and NIM with ROA.

This study confirms the results of previous empirical studies; however, this current study suggests that efficient internal control systems are contingent on custom-made internal control systems. It concludes that custom-made internal risk control systems

create value and lower risks, thus ensuring the accuracy of financial information and regulatory compliance. For that matter, financial institutions should ensure all their internal control systems bear the characteristics of a custom-made approach to guarantee that employees do not circumvent internal control systems. The findings and conclusions of this study encouraged the following suggestions. Firstly, the management of banks should work together to identify and invest in the best mix of internal control systems that suit their business operations. Secondly, to realise the full financial benefits of internal control systems, managers should embrace CCE, CCA, CRM, CCI and CME to guarantee that employees do not circumvent the internal control process to provide an adequate flow of information, supervision and easier risk detection.

The approach used in this study enhances the understanding and significance of local methods of internal control systems; hence, this research gap has been addressed in this study. This study cited the essential structures of internal control systems that banks’ management should refined to improve financial performance. The results noted that CCE, CCA, CRM, CCI, CME and NIM are critical for banks to improve financial performance. The thorough consideration of the subject aided in determining the root causes of the growing misapplication of internal controls in organisations.

This comprehensive analysis offers an insight into efficient internal control design strategy. As a result, this study provided knowledge as it defines the various custom-made internal risk control characteristics that can inspire bank performance. Accordingly, it will assist organisations in reducing the number of errors and the amount of fraud, as it offers preventative measures that can be of assistance in establishing effective internal control systems. The study provides additional evidence to add to the existing literature on custom-made internal controls and the financial performance of financial institutions. The study enhances knowledge in practice by demonstrating the significance of the contingency theory approach to internal control systems. These results would enable banks to adapt to internal control systems that best suit their values, operations, and objectives. The results would enable them to understand the rudiments that affect profitability.

Furthermore, the results would also be significant to the various policy-making institutions such as the Bank of Ghana, the Ghana Association of Banks, and other regulatory bodies, thus providing evidence and guidance to design practical regulatory policies to harness bank profitability. Bank executives may cite the need to have custom-made internal control systems as the prerequisite to enhanced financial performance. The study was limited to 50 financial institutions with observations over the 10-year period of 2012-2021. It relied on the COSO framework and employed ROA as the performance metric. Future studies can expand the study by including (ROE), (NIM) or (CTI) in other organisations or countries.

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References

- Abiola, I., Oyewole, A.T. (2013), Internal control system on fraud detection Nigeria experience, *Journal of Accounting and Finance*, 13(5), 137-149.
- Agbenyo, W., Y. Jiang., Cobblah K. (2018), Assessment of government internal control system on financial reporting quality, *Journal of Economics and Finance*, 56(4). [https://doi:10.5539/ijef.v10n11p40](https://doi.org/10.5539/ijef.v10n11p40).
- Aikins, S. (2011), An examination of government internal audit role in improving financial performance, *Public Finance and Management*, 11(4), 306-337.
- Akeem, U. O., Fadipe, M. (2014), An empirical analysis of allocative efficiency of Nigerian commercial banks, *Journal of Economics and Financial Issues*, 4(3), 465-475.
- Aksoy, T., Mohammed, A. (2020), Assessing bank's internal control effectiveness: The case of Ghanaian banks, *Journal of Research in Business and Social Science*, 9(4), 196-206. <https://doi.org/10.20525/ijrbs.v9i4.743>.
- Alawattegama, K. (2018), The impact of enterprise risk management on firm performance, *International Journal of Business and Management*, 13(1), 225-237. [https://doi:10.5539/ijbm.v13n1p225](https://doi.org/10.5539/ijbm.v13n1p225).
- Aldridge, C.R., Colbert, J.L. (1994), Management's report on internal control and the accountant's response, *Managerial Auditing Journal*, 9(7), 21-28. <http://dx.doi.org/10.5296/csbn.v2i2.7320>.
- Al-Matari, E. Al-Swidi, A., Faudziah, Al-Matari, (2012), Impact of board characteristics on performance, *International Journal of Accounting and Financial Reporting*, 2(2), 10-332. [https://doi:10.5296/ijaf.v2i2.2384](https://doi.org/10.5296/ijaf.v2i2.2384).

- Al-Homaidi, E., Faozi A., Ali Y., Amgad K., (2020), Determinants of commercial banks' profitability India. *GMM, Journal of Monetary Economics and Finance*, 13, 34-67.
- Alnaa, S. E., J. Adongo, M. J. (2016), Comparative analysis of the profitability of local and foreign banks in Ghana, *Asian Economic and Financial Review*, 6(5), 238-246. <https://doi.org/10.18488/journal.aefr/2016.6.5/102.5.238.246>.
- Allwood, C. M. (2012), The distinction between qualitative, quantitative research methods is problematic, *Quality and Quantity*, 46(5), 1417-1429. DOI: 10.1007/s11135-011-9455-8
- Amudo, A., Inanga, L. (2009), Evaluation of internal control systems, A case from Uganda, *International Research Journal of Finance and Economics*, 12(5), 14-4.
- Annukka, J. (2010), Determinants and consequences of internal control in firms a theory-based contingency analysis, *Journal of Management and Governance*, 14(2), 115-144. <https://doi.org/10.1007/s10997-009-9085-x>.
- Asiligwa, G. Rennox (2017), The effect of internal controls on the financial performance of commercial banks in Kenya, *Journal of Economics and Finance Publication*, 10(2). <https://doi.org/10.9790/5933-08030492105>.
- Attefah, K., Darko, E. (2016), Financial ratios approach to evaluating bank performance, *Journal of Academic Research in Business and Social Sciences*, 6(6), 150-176. <http://dx.doi.org/10.6007/IJARBS/v6-i6/2191>.
- Athanasoglou, P., Matthaios, D., Christos, S. (2006), Determinants of Bank Profitability in the Southeastern European Region, WP No 47. Athens: Bank of Greece.
- Arellano, M., Bond, S. (1991), Tests of specification for panel data: Monte Carlo evidence and application to employment equations, *The Review of Economic Studies*, 58, 277-97. <https://doi.org/10.2307/2297968>.
- Arellano, M., Bover O. (1995), Another look at the instrumental variable estimation of error-components models, *Journal of Econometrics*, 68, 29-51. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D).
- Ayagre, P., Appiah-Gyamerah, I., Nartey, J. (2014), The effectiveness of Internal Control Systems of banks in Ghana, *International Journal of Accounting and Financial Reporting*, 4(2), 37-7. <https://doi.org/10.5296/ijaf.v4i2.6432>
- Banto, Jean, M., Atoke F. M. (2021), Microfinance institutions, banking, growth and transmission channel: GMM panel data analysis, *The Quarterly Review of Economics and Finance*, 79, 126-50. <https://doi.org/10.1016/j.qref.2020.06.004>.
- Bayyoud, M. Sayyad N.A (2015), The Impact of Internal Control and Risk management on Banks. *Journal of Economics, Finance and Management Sciences*, 3(3), 156-161. <https://doi.org/10.11648/j.ijefm.20150303.12>.
- Blundell, R., Bond, S. (1998), Initial conditions and moment restrictions in dynamic panel data models, *Journal of Econometrics*, 87(1), 115-143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8).
- Bowrin, A. R. (2004), Internal control in Trinidad and Tobago religious organisations, *Accounting Auditing and Accountability Journal*, 17(1), 121-152. <https://doi.org/10.1108/09513570410525238>.
- Bure, M., Tengeh, R. K. (2019), Implementation of internal controls and the sustainability of SMEs in Harare in Zimbabwe, *Entrepreneurship and Sustainability Issues*, 7(1). [https://doi.org/10.9770/jesi.2019.7.1\(16\)](https://doi.org/10.9770/jesi.2019.7.1(16)).
- Byrne, B. M. (2010), *Structural equation modelling with AMOS: Basic concepts applications and programming*, New Yor., Routledge. <https://doi.org/10.4324/9780203807644>.
- Cadez, S., Guilding, C. (2008), An exploratory investigation of an integrated contingency model of strategic management accounting, *Organisations and Society*, 33(8), 836-863. <https://doi.org/10.1016/j.aos.2008.01.003>.
- Chapman, C. S. (1997), Reflections on a contingent view of accounting. *Organisations and society*, 22(2), 189-205. [https://doi.org/10.1016/S0361-3682\(97\)00001-9](https://doi.org/10.1016/S0361-3682(97)00001-9).

- Chenhall, R.H. (2003), Management control systems design within an organisation: contingency-based directions, *Accounting Organisations and Society*, 8(2), 127–168. [https://doi.org/10.1016/S0361-3682\(01\)00027-7](https://doi.org/10.1016/S0361-3682(01)00027-7).
- Chenhall, R.H. (2007), Theorising Contingencies in Management Control Systems. Hopwood and M. Shields (Editions), *Management Accounting Research*, (1) Oxford: Elsevier. [https://doi.org/10.1016/S1751-3243\(06\)01006-6](https://doi.org/10.1016/S1751-3243(06)01006-6).
- Cheng, S., Felix, R., Indjejikian, R (2019), Spillover Effects of Control Weakness Disclosures: Role of Audit Committees. *Contemporary Accounting Research*, John Wiley & Sons, 36 (2): 934–957. <https://doi.org/10.1111/1911-3846.12448>.
- COSO, (1992), Internal control—integrated framework. The Committee of Sponsoring Organisations of the Treadway Commission, retrieved from: <https://www.coso.org/SitePages/Home.aspx>. (accessed 25 January 2022)
- COSO, (2013), Internal control—integrated framework, executive summary, The Committee of Sponsoring Organisations of the Treadway Commission, retrieved from: <https://www.coso.org/SitePages/Home.aspx>. (accessed 25 January 2022)
- COSO, (2017), Internal control—integrated framework, executive summary, The Committee of Sponsoring Organisations of the Treadway Commission. retrieved from: <https://www.coso.org/SitePages/Home.aspx>. (accessed 25 January 2022)
- Cowgill, G. (2000), Rationality and contexts in agency theory, *Routledge Agency* (1st edition), 7(6), 7–61. <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315866000>.
- Cucinelli, D. (2017), Internal Controls and Risk Culture in Banks in Palgrave Macmillan Studies in Banking and Financial Institutions, *Risk Culture in Banking*, 97–123. https://doi.org/10.1007/978-3-319-57592-6_5.
- Delice, A. (2010), The Sampling Issues in Quantitative Research, *Educational Sciences, Theory and Practice*, 10(4), 2001–2018
- Donaldson, T., Preston, L. E. (1995), The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65–91. <https://doi.org/10.2307/258887>.
- Drazin, R., Van de Ven, A. H. (1985), Alternative forms of fit in contingency Theory, *Administrative Science Quarterly*, Sage Publications, (2), 514–539. <https://doi.org/10.2307/2392695>.
- Ejoh, N., Ejom, P. (2014), Impact of internal control activities on the financial performance of tertiary institutions, *Journal of Economics and Sustainable Development*, 5(16), 133–143.
- Elsayed, M., Elshandidy, T. (2021), Internal control effectiveness, textual risk disclosure, and their usefulness: U.S. evidence, *Advances in Accounting*, 53(3). <https://doi.org/10.1016/j.adiac.2021.100531>.
- Ewa, E. U., Udoayang, J. O. (2012), The impacts of internal control design on banks, *International Journal of Research in Economic and Social Sciences*, 2(2), 32–43.
- Fan, Y., Li, C., Raghunandan, K. (2017), Is SOX 404 Internal Reporting an Effective Alternative to 404(b) Audits? *Auditing Journal of Practice and Theory* 36 (3), 71–89. <https://doi.org/10.2308/ajpt-51669>.
- Fisher, J. (1995), Contingency-based research on management control systems: Categorisation by the level of complexity, *Journal of Accounting Literature Gainesville*, 14, 24–53.
- Gerdin, J. (2005), Accounting system design: An empirical investigation using a multiple Contingencies Approach *Accounting, Accounting, Organisations and Society*, 30(2), 99–126. <https://doi.org/10.1016/j.aos.2003.11.003>.
- Gliem, J. A., Gliem, R. R. (2003), Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales, *Midwest Research-to-Practice Conference*.
- Gupta, P. P. (2001), Internal audit reengineering: Survey model and best practices, Altamonte Springs, The Institute of Internal Auditors Research Foundation.

- Hanoon, N., Khalid, A., Hanani, N., Rapani, A., Aljajawy, M., Alwaeli, A. (2021), The Impact of Internal control components and performance in Iraqi, *Journal of Contemporary Issues in Business and Government*, 27(3), 25-18. <https://doi.org/10.47750/cibg.2021.27.03.303>.
- Hair, J., Black, W. C., Babin, J., Anderson, R. (2010), *Multivariate data analysis* (7th ed), New Jersey. <https://www.drnishikantjha.com/papersCollection/Multivariate%20Data%20>.
- Holton, E. F., Burnett, M. F. (2005), The basics of quantitative research. *Research in organizations, Foundations and methods of inquiry*, 29-44. <http://www.kharazmi-statistics.ir/Uploads/Public/book/research%20in%20organization.pdf#page=48>.
- Hu, Q., Weng C., Wang, F. (2021), The effect of the internal control regulation on reporting quality in China, *Borsa Istanbul Review*, 21(4), 394-404. <https://doi.org/10.1016/j.bir.2020.12.006>.
- Ironkwe, U., Promise A. O. (2015), Impact of internal controls on financial management, *International Journal of Economics, Commerce, and Management*, 3(12), 2348- 0386.
- Isadora, M. D. S., Rosângela, Q. S. V., Rosilania, S. D. Q., Adriana, M. D. O., Letícia, F. D. O., Meskla, G. M. S. (2022), Internal controls for risk management: Perception of Auditors and Managers, *Da Silva MGM Revista Ambiente Contabil*, 14(1), 334-354. <https://doi.org/10.21680/2176-9036.2022v14n1ID27715>.
- Jalil, F. Y. (2018), Internal Control, Anti-Fraud Awareness, and Prevention of Fraud, *Journal Etikonomi*, 17 (2), 297-306. <http://dx.doi.org/10.15408/etk.v17i2.7473>.
- Jokipii, A. (2006), The Structure and Effectiveness of Internal Control: A contingency approach, *Acta Wasaensia Universitas Wasaensis, Vaasan Yliopisto*.
- Jokipii, A. (2010), Determinants and consequences of internal control in firms: a contingency theory-based analysis, *Journal of Management and Governance*, 14(2), 115-144. <https://doi.org/10.1007/s10997-009-9085-x>.
- Jovetic, S., Ljubisavljevic, S., Karapavlovic, N. (2018), Effects of Internal Control on the Financial Indicators of Companies, *Argumenta Oeconomica*, 1(40), 115-146. <https://doi.org/10.15611/aoe.2018.1.05>.
- Khamis, A. H. (2013), Contribution of internal control system to the financial performance of financial institution (unpublished PhD thesis), Zanzibar Mzumbe University.
- Kinney, W. (2000), Research opportunities in internal control quality and quality assurance, *A Journal of Practice and Theory*, 19(1), 83-90.
- Kinyua, J., Gakure, Gekara., Orwa (2015), Effect of Internal Control environment and financial performance of companies Quoted in the Nairobi Securities Exchange, *International Journal of Innovative Finance and Economics Research*, 4(5), 5-6.
- Kinyua, J.K. (2016), Effect of internal control systems on the financial performance of companies Quoted in the Nairobi Securities Exchange (unpublished PhD thesis), Jomo Kenyatta University. <http://ir.jkuat.ac.ke/handle/123456789/2135>.
- Kipyego, L., Naibei, I. K. (2017), Accounting Internal control systems and firm performance: Evidence from banks in Kericho County Kenya, *International Journal of Economics, Commerce and Management*, 5(11), 697-712.
- Koutoupis, A.G., Pappa, E. (2018), Corporate governance and internal controls, *Journal of Governance and Regulation*, 7(2), 91-99. http://doi.org/10.22495/jgr_v7_i2_p8.
- Kumari, K. A. H. M., Weerasooriya, W. M. R. B. (2019), Impact of effective internal control implementation on banks, *International Journal of Scientific and Research*, 9(12), 2250-3153. <http://dx.doi.org/10.29322/IJSRP.9.12.2019.p9645>.
- Kumbirai, M., Webb, R. (2010), Financial Ratio Analysis of Bank Performance in South Africa, *African Review of Economics and Finance*, 2, 30-53.
- Lakis, V., Giriūnas L. (2012), The Concept of Internal Control System: Theoretical Aspect, *Ekonomika*, 91(2), 142-152. <https://doi.org/10.15388/Ekon.2012.0.890>.

- Lopes, I., Marques, A., Louzada, L. (2019), Internal Control Weaknesses of Listed Companies In B3, *Revista Evidenciacao Contabil and Financas* 7(3), 105-126. <https://doi.org/10.22478/ufpb.2318-1001.2019v7n3.41207>.
- Magu, J. K., P. Kibati (2016), Internal control systems and financial performance, *International Journal of Economics, Commerce and Management*, 6(4), 783.
- Mawanda, S. P. (2008), Effects of internal control systems on financial performance in an institution of higher learning in Uganda, A Case of Uganda Martyrs University. <http://hdl.handle.net/20.500.12280/44>.
- Mullineux, A. W., Murinde, V. (2014), Financial sector policies for enterprise development in Africa, *Review of Development Finance*, 4(2), 66-72. <https://doi.org/10.1016/j.rdf.2014.05.001>.
- Mwihigi, G. N., Atheru, G. (2019), Internal controls and credit risk in commercial banks Nairobi securities exchange, *Journal of Finance and Accounting*, 4(1), 56-74. DOI: <https://doi.org/10.47604/ijfa.883>.
- Nachane, Dilip M. (2006), *Econometrics: Theoretical foundations and empirical perspectives*, Business and Economics, 884.
- Napier, M. (2011), Including Africa Beyond Microfinance: Centre for the study of domestic and foreign banks in the E.U. Research in Financial Innovation, 10 (4), 70-74.
- Njiru, D. K., Bunyasi, G. (2016), Effect of Internal Controls on Financial Performance of Water Companies in Kenya, *American Journal of Finance*, 1(1), 11-28. <https://doi.org/10.47672/ajf.81>.
- Nunnally, J. C., Bernstein, H. (1995), *Psychometric theory* (3rd ed.) New York. McGraw Hill, xxiv, 19(3), 752. <https://journals.sagepub.com/doi/10.1177/014662169501900308>.
- Odek, R., Okoth, E. (2019), Effect of Internal control systems and financial performance of Distribution Companies in Kenya, *Research Journal of Finance and Accounting* 10(20), 2222-2847. <https://doi.org/10.7176/RJFA/10-20-02>.
- Otoo, I., Asumah, S., Peprah-Amankona, G., Andzie, A. (2021), Impact of internal control systems on banks performance in Ghana, *Financial Risk Management*, 10(9), 473-486. <https://doi.org/10.4236/jfrm.2021.104025>.
- Owusu-Antwi, G. (2009), Impact of Financial Reforms on the Banking Systems in Ghana, *International Business and Economics Research Journal*, 8(3), 77-100. <https://doi.org/10.19030/iber.v8i3.3116>.
- Pany, K. J., Whittington, O. R. (2001), Research implications of the Auditing Standard Board's current agenda, *Accounting Horizons*, 15(4), 401. <https://doi.org/10.2308/acch.2001.15.4.401>.
- Pham, H. N. (2021), How does internal control affect bank credit risk in Vietnam? A Bayesian analysis, *Journal of Asian Finance, Economics and Business*, 8(1), 873-880. <https://doi.org/10.13106/jafeb.2021.vol8.no1.873>.
- Phornlaphatrachakorn, K., Kalasindhu, N. (2020), Internal Control Effectiveness and Business Survival, *Journal of Asian Finance Economics and Business* 7(12), 927-939. <https://doi.org/10.13106/jafeb.2020.vol7.no12.927>.
- Rittenberg, L. E., Schwieger B. J. (2001), *Auditing Concepts for a changing environment*, South-Western College Pub (3rd edition).
- Rosman, R. I., Shafie, N. A., Mohd Sanusi, Z., Johari, R. J., Omar, N. (2016), The effect of Internal Control Systems and Budgetary Participation on the Performance Effectiveness of Non-profit Organizations from Malaysia, *Journal of Economics and Management*, 10 (2), 523-539.
- Saksonova, S. (2014), Role of net interest margin in improving banks' asset structure and stability, *Social and Behavioural Sciences*, 15(6), 132-141. <https://doi.org/10.1016/j.sbspro.2014.09.017>.
- Salameh, R. S. (2019), What is the Impact of Internal Control System on the Quality of Banks' financial statements in Jordan, *Academy of Accounting and Financial Studies*, 23(5), 1-10.
- Salim, M., Yadav, R. (2012), Capital structure and firm performance: Evidence from Malaysian listed companies, *Procedia-Social and Behavioral Sciences*, 6(5), 156-166. <https://doi.org/10.1016/j.sbspro.2012.11.105>.

- Shabri, S. M., R. A. Saad., A. Bakar (2016), Effects of internal control systems on profitability, *International Reviews of Management and Marketing*, 6(8), 243-244.
- Shu, W., Chen, Y., Chen, Y (2018), Does Corporate Integrity Improve the Quality of Internal Control? *China Journal of Accounting Research*, 11(4), 407-427. <https://doi.org/10.1016/j.cjar.2018.09.002>.
- Simmons, R. (1991), Strategic orientation and top management attention to control systems, *Strategic Management Journal*, 11(2), 49-62.
- Spira, L., Page, M. (2003), Risk management: the reinvention of internal control and changing role of internal audit, *Auditing and Accountability*, 16(4), 640-661. <https://doi.org/10.1108/09513570310492335>.
- Svetlana, S. (2014), The Role of Net Interest Margin in Improving Banks' Asset Structure, *Social and Behavioral Sciences*, 15(10), 132 – 141. [https://doi: 10.1016/j.sbspro.2014.09.017](https://doi:10.1016/j.sbspro.2014.09.017).
- Tadesse, A., Murthy, U (2021), Does the Format of Internal Control Disclosures Matter? An Experimental Investigation, *Auditing Journal of Practice and Theory* 40(1), 91-106. <https://doi.org/10.2308/AJPT-17-171>.
- Taylor, F. W. (1911), *The Principles of Scientific Management*, New York: Harper.
- Temile, S. O., Enakirerhi, L. I., Felix, I. E., Jatniko, D. P. (2019), Risk management and internal control in Nigeria, *Humanities and Social Sciences Reviews*, 7(4), 943-949. <https://doi.org/10.18510/hssr.2019.74128>.
- Thi, T. T. H., Tran, M. D. (2018), The effect of internal control on asset misappropriation, The case of Vietnam, *Business and Economic Horizons*, 14(4), 941-953. <http://dx.doi.org/10.15208/beh.2018.64>.
- Wang, J., Hooper, K. (2017), Internal control and accommodation in Chinese organisations, *Critical Perspectives on Accounting*, 4(9), 18-30. <https://doi.org/10.1016/j.cpa.2017.04.003>.
- Woods, M. (2009), A contingency theory perspective on the risk management control system within Birmingham City Council, *Management Accounting Research*, 20(1), 69-81. <https://doi.org/10.1016/j.mar.2008.10.003>
- Wooldridge, Jeffrey M. (2015), *Introductory econometrics a modern approach*, Ontario: Nelson Education.

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