EFFECTS OF RISK-BASED INTERNAL AUDIT PRACTICES ON FINANCIAL PERFORMANCE OF INSURANCE FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE, KENYA

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ABSTRACT

As a primary business concern, financial performance is a key ingredient to overall stakeholder satisfaction. However, as evidenced by the statistical performance reports, it's clear that insurance firms in Kenya continue to post results that do not align with shareholder expectations and the trend seems to be progressively detrimental to the financial health of this sector. Cumulatively, the reduction in the overall operating profits, the increase in management expenses, the decline in the return on equity, the increase in the insurance fraud cases, and the increase in cyber threats despite a consistent increase in the gross written premium income is a key concern and does not in any way depict the overall stakeholder expectations. Additionally, the digital wave equally threatens to bring along additional risks associated with data manipulation, cybercrime, and business operations sustainability owing to the increase in the adoption of technology and digital platforms as they seek to expand their reach, enhance customer service delivery, and enhance their efficiency. The study objective was to determine the effects of the risk-based internal audit approaches (Cybercrime security controls, data analytics, and disaster recovery controls) on the financial performance of insurance firms listed at the NSE, Kenya. Firm size was used to moderate between risk-based approaches and insurance financial performance. Positivist research philosophy and causal research design were adopted where 6 Insurance firms licensed to trade at the NSE, Kenya were surveyed. Both primary and secondary data were used and were analyzed using both descriptive and inferential statistics and presented using graphs, statistical tables, and pie charts. The study found that Cybercrime security controls, data analytics controls, and disaster recovery controls had a statistically significant positive effect on the financial performance of Insurance firms listed at the NSE, Kenya. On the contrary, firm size was found not to have a statistically significant moderation effect on the risk-based internal audit approaches. The study concluded that firms that had Cybercrime security controls, data analytics, and disaster recovery controls in place were noted to have an increased operational efficiency that ultimately drove financial performance. Consequently, the study recommended that it would be prudent enough for insurance firms across the board to put in place a clear framework that seeks to embed Cybercrime security controls, data analytics controls, and disaster recovery controls through the Internal Audit units as a way of enhancing their operational efficiency which is what drives the control on the usage of the revenues generated.

Keywords: Cybercrime security controls, data analytics, disaster recovery controls, firm size.

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INTRODUCTION

Background of the Study

The Insurance sector is one of the most critical financial intermediaries within every country's economy. They help in the mobilization of savings that enable the economy to generate long-term financial resources while providing an ideal risk aversion mechanism that goes a long way to secure macroeconomic assets for both corporates and individuals thereby promoting economic growth. Molyneux et al. (2022). The insurance companies offer unique products that cater to personal/family needs, SME needs, and other customized specialty needs. As a result, they are constantly exposed to certain unique risks that pose dynamic control issues. As a result, therefore, governance and risk management from time to time would require adequate interventions hence the need for a proactive Internal Audit unit. (IIA, n.d.).

As insurance firms race to penetrate new markets and expand their product's reach, they are constantly opening to highly competitive & risky operating environments, harsh economic conditions, tougher financial environments with complex financial fraud syndicates & scandals that threaten to impact their financial performances. Deloitte (2013). Generally, there has been an increased concern over corporate accountabilities across various corporate entities and this has continued to fuel a lot of conflicts between the management and the shareholders. As a result of this, the overall role of the Internal Audit units has increasingly gained more importance as the shareholders seek to get an assurance of corporate governance, seek to wade off the associated risks and improve their financial gains. Deloitte (2013).

By the close of the year 2020, the global written premiums were USD 6,287 billion which was a 1.3% decline from the global written down premiums in 2019. This total written premiums for the year 2020 represented approximately 7.5% of the global gross domestic product (GDP) hence a testament to the impact of the insurance industry on the overall world's economy. Swiss Re Institute (2021). Africa's insurance market in 2020 recorded 60.2 billion in total written premiums accounting for approximately 1% of the total global written premiums. Compared to the total global premiums for 2019, this was a 2.9% decline in premiums. Swiss Re Institute, (2021).

The East African insurance market continues to deal with high operations costs, the need for highly customized products, an economic slowdown, regulatory technicalities, growing change in the insurance perception, and an overall change in the current operating model even as the firms seek to go digital. Deloitte (2020). The Kenyan Insurance market in the year 2020, recorded premiums of approximately $2.2 billion which is 3.7% of total Africa's gross written-down premiums. The industry has been recording an increase in the gross written-down premiums from the year 2016 to 2020, however, the total net profit has been on the decline across the same period thereby impacting the overall ROA and ROE. IRA (2021).

With this changing business environment, the need for a holistic business risk focus continues to emerge as the most preferable approach over the traditional operational approaches. There is a need for more focus on the operational, strategic, financial, and most importantly regulatory risks with

the Internal Audit units acting as the sole independent advisors. Deloitte (2013). The Internal Audit must provide independent and objective assurance of the actual organization's internal control processes, risk management, and governance. (Institute of Internal Auditors, n.d.).

Traditionally, the Internal Audit units placed more focus on the audit risks in the financial and compliance areas (Inherent risks, control risks & detection risks). However, with the emergence of IoT, there has been a strong change in the knowledge management system hence the need for continuously innovative management systems. Santoro et al (2018). So then, how do the Internal Audit units add value and or improve the overall operating procedures while lowering the overall business risks related to information technology fraud, economic, political, reputational risk, etc? This study, therefore, sought to assess and report whether the adoption of the Risk Based Internal Audit approaches will impact the overall performance of the Insurance firms that have been listed on the NSE, Kenya.

Financial Performance

Financial performance measures how well a firm has subjected its available resources to the primary business model and can generate adequate revenues to sustain its operations while meeting the stakeholder goals and targets. Opanga (2013). According to Ernest & Young (2021), the insurance market has been very complex and dynamic. This is because the largest growth opportunities have been tied up to the biggest risks thereby creating an uncertain projection on the financial performance of insurance firms.

Being very wide, the insurance sector has been fragmented into either long-term Insurance or General Insurance. In the 2020 financial period, general insurance accounted for approximately 56.5% of the total gross premium income. IRA (2021). The gross premium income increased by a margin of 2.3% with the asset base recording a growth rate of 8%. ROE and ROA both declined by 4.7% & 1.3% respectively and this was attributed to the increased capital market volatility and the increased expenditures because of the COVID-19 global pandemic. CBK (2021).

As the world economy re-emerges from the shocks of the pandemic, various critical economic factors are coming into play as the enablers of a broad-based economic recovery cutting across various nations. First, some companies and individuals are strongly experiencing financial strain and it would be quite difficult to continue sustaining premium subscriptions. On the contrary, both individuals and commercial entities are starting to re-evaluate the importance of insurance hence there is also an emergence of a greater need for insurance solutions especially the ones that would support business recoveries in the event of an unpredicted occurrence. Ernest & Young (2021). The steady growth of the economies of the African countries together with the unexplored insurance has poised Africa as one of the insurance hotbeds. It is only second to Latin America as the fastest-growing Insurance market. Before the economic slump because of the COVID-19 pandemic, McKinsey & company had estimated that the expected annual growth rate for the insurance sector would be in Africa would be 7% for the period 2020 to 2025**.** Bagus et al., (2020)**.**

Deloitte (2020) reported that the East African Insurance market continues to face a myriad of challenges that range from the high costs of transacting business, poor or low insurance penetration rates, complex Insurance products, and the emergence of the pandemic among other factors. However, there is a growth perspective arising from the challenges businesses and individuals have experienced while trying to maneuver the economic challenges arising from such, and the insurance market is set to rise and grow above the status and situation.

As the Insurance firms come up with & implement the re-emergence strategies from the shocks of the pandemic, there has been a continued re-definition of the roles of the Internal Audit units. The mandate to revamp the functioning of these units has been bestowed upon the Audit committees which have been tasked to ensure adequate approaches by the inclusion of new and dynamic practices that will ensure firm performance matches the management synergies, low exposure to risks, and steady financial performance.

The Insurance Industry in Kenya

In Kenya, the insurance sector is regulated, supervised, and governed by the Insurance Regulatory Authority (IRA). Over time, this sector has grown to become very attractive owing to the many international recognitions it has received which has increased its ability to attract lucrative investments with about 56 Insurance firms, 5 Reinsurance firms, and 204 insurance brokers. IRA (2020). As of the end of 2021, the industry recorded a gross premium income of Ksh. 270.5 billion, a 16% increase from 2020. The asset base grew to Ksh. 845.8 billion in 2021 which is a 10.4% increase compared to 2020. About 89.3% of these assets have been held as income-generating investments IRA (2022).

According to the IRA (2021), the Insurance sector in Kenya has continued to receive multiple local and international partners who have shown their interest and their willingness to acquire stakes from the Insurance companies operating in Kenya and regionally. For instance, in the year 2020, Allianz insurers and asset managers which is one of the leading insurance companies in the world acquired a 66% shareholding in Jubilee General Insurance making it the majority shareholder in the insurer. Geminia, Takaful & Saham Insurance companies demerged their businesses.

The Capital Markets Authority of Kenya (CMA) through the NSE emerges as one of the critical players harboring the responsibility of mobilizing, facilitating, and allocating the capital resources that help in the financing of long-term investments in the sector. It was tasked with overseeing the development of the capital markets in Kenya. The Nairobi Stock Exchange on the other hand has a responsibility of ensuring efficient trading through development and regulation. Muturi & Omondi (2013).

Out of the 56 Insurance firms licensed to offer Insurance services in Kenya, only 6 have been licensed to operate at the Nairobi-based securities exchange and they include; Jubilee Holdings Limited, CIC Insurance, Sanlam Insurance, Liberty Insurance, Kenya-reinsurance & Britam Insurance. CBK (2021).

Statement of the Problem

The Insurance sector directly contributes to the Kenyan economy through the mobilization of funds, provision of financial security, and promotion of direct and indirect investments. It heavily supports the financial intermediation process and as such, its performance strongly impacts the overall performance of other players across various sectors of the economy. Ansah-Adu et al (2012 as cited by Murigu, 2014).

According to the published insurance financial reports, over 5 years (2017-2021), the insurance sector recorded steady growth in the gross written premium incomes from Kes.207.6 billion to Kes.270.5 billion in 2017 & 2021 respectively which is a 30.3% increase in premiums across the period. On the flip side, however, the overall management expenses across the 5 years grew from Kes. 41.1 billion to Kes. 46.7 billion in 2017 & 2021 respectively which is about a 13.6% increase thereby resulting in an overall decline in net profits across the 5 years from Kes. 13.6 billion to Kes. 5.7 billion in 2017 & 2021 respectively. IRA (2022).

The overall insurance sector returns on equity across the 5 years dropped from 9.7% in 2017 to 5.1% in 2021. Return on Assets equally declined from 3.2% in 2016 to 1.6% in 2021. The sector has also recorded a staggered fraud trend over the 5 years with motor vehicle insurance fraud and Agent fraud cases leading with 167 and 131 cases respectively out of the total 571 insurance fraud cases reported across the period. IRA (2022). Additionally, the cybersecurity threats have more than doubled to the insurance firms owing to the increase in the adoption of technology and digital platforms as they seek to expand their reach, enhance customer service delivery, and enhance their efficiency. (IRA,2021). The main reason why shareholders choose to invest in any given company is that they have evaluated and have projected the ability of the company to give them value on their investments through the generation of adequate cashflows enough to meet all the stakeholder's needs and finally retain residual distributions enough to meet the shareholder's expectations. Denis (2019). Cumulatively, the increase in management expenses, the reduction in the overall operating profits, the decline in the return on equity, the increase in the insurance fraud cases, and the increase in cyber threats despite a consistent increase in the gross written premium income is a key concern and does not in any way depict the overall stakeholder expectations. As a function of the board, the Internal Audit units are generally evaluation functions available to examine the functionalities of the management, the operational effectiveness of the company, and the overall risk environment to ensure that the management works towards its objectives as has been set from the onset. Girmay (2016).

So, how then can the Internal Audit Units be embedded into the overall operations environment to ensure that they complement the management's actions and be able to help positively drive the agendas of the companies? How can the audit units help improve the strategy implementation and monitoring process, and bring onboard alternative approaches while also continuing to offer the consulting and assurance function to the board of directors? This research, therefore endeavored to determine whether the adoption of the "Risk Based Internal Audit Approaches" (Cybercrime security controls, Data analytics controls, Disaster recovery controls) by the Internal Audit Units

would have an impact or would be able to complement the management efforts which would go a long way to enhance the overall financial performance of insurance companies that have been licensed to trade at the NSE, Kenya.

Objectives of the Study

The general objective of this study was to determine the effect of risk-based internal audit approaches and the financial performance of insurance firms listed at the Nairobi Security Exchange, Kenya.

The specific objectives of this study were.

i. To determine the effect of Cybercrime security controls on the financial performance of insurance firms listed at the Nairobi Security Exchange, Kenya.
ii. To evaluate the effect of data analytics controls on the financial performance of insurance firms listed at the Nairobi Security Exchange, Kenya.
iii. To examine the effect of disaster recovery controls on the financial performance of insurance firms listed at the Nairobi Security Exchange, Kenya.
iv. To determine the moderating effect of firm size on the risk-based internal audit approaches on the financial performance of insurance firms listed at the Nairobi Security Exchange, Kenya.

LITERATURE REVIEW

Theoretical Literature

The theories that have been put forward by the various researchers and scholars regarding postulated relationships across the various study variables have been discussed here and they include; the information System Success Model, Agency Theory, Chaos Theory, and Growth of the Firm Theory.

Information System Success Model (ISSM)

Championed by DeLone & McLean (2003), the ISSM has been credited for promoting studies on the use of information systems and their usability success. According to this model, the success of the implementation of the information system depends on the system quality (Reliability, adaptability, response period usability, etc.), information quality (Relevant, easy to understand, secure, etc.), usage of these information systems (Navigation, information retrieval, etc) and the user interactions & satisfaction (through the transaction process).

This model argues that the system quality and information quality jointly or singularly impact the system user interactions and or satisfaction. As a reliable & powerful communication and trading platform, the internet is an information system that acts on a specific measurement framework built on a communication perspective. Looking at an e-commerce platform, the primary users of this platform are the suppliers and the customers while making their purchases and completing other

transactions. The internal users are the final recipients of this transactions reports that are eventually used to impact individuals, organizations, and the country's economies. Shannon & Weaver (1949). This theoretical model underpins the cyber security controls systems because it emphasizes the prerequisites for a satisfactory usability and security of an information system thereby enhancing the user's interactions.

Agency Theory

Brought into the limelight by Jensen & Meckling (1976). The theory gained relevance through the provision of insights into the organization's performances and focused on two key attributes. Firstly, the theory narrows down the organization into two main components that are the managers and the shareholders. Secondly, it acknowledges that these two main components are individuals who have their interests and that any of these components may want to put their interests ahead of the other parties. Daily, Dalton, and Canella (2003).

Agency theory acknowledges the fact that there exists a conflict between the two main components of the organization because the managers are deemed to be agents of the shareholders appointed with the main mandate of fulfilling the shareholder's objectives which is to enhance the firm's value. They are therefore expected to act in a mannerism that fulfills what the owners anticipate from their investments. Rashid (2013). Agency theory resonates with this study because it acknowledges the fact that conflict of interest shall always exist between the management and the owners of the company and as such the shareholders would always want to scrutinize the impact of the various management styles towards the fulfillment of their interests.
This theory, therefore, serves to complement two aspects of this study. Firstly, it underpins the data analytics control's objective in this study. As a result of the increasing use of huge data and information by firms, Agency theory explains how the combination of data analytics & information systems is a strategy that can be deployed by the management to positively impact the financial performance of the firms. Secondly, it underpins the fact that Internal Audit units are very crucial in the re-assurance of the shareholders. They check to ensure that the overall management actions are tailored toward the effective and efficient operationality of the key functions of the organizational performance.

Chaos Theory

Advanced by Edward Lorenz (1963), the theory was concerned with the unpredictable emergence of events. It gave a theoretical view on the ideals of how events would over a short period turn from stability to a point of instability. Lorenz argues that systems are very sensitive to their original conditions hence a slight change would immediately result in a terrific unplanned outcome. Gardini et al. (2020).

This theory has from time to time been used to give an understanding of approaches to disasters and or the emergence of catastrophes. It emphasizes that for organizations to be able to understand the potential of catastrophes, they should envision the organization system from a distance, understanding the organization's patterns and knowing which patterns would easily lead to which

scenarios. Chaos theory further explains how the organization allows its employees to work and the minimum acceptable behavior at the workplace heavily determines how the employees can handle situations as and when they occur.

According to Wheatley (2011), chaos is the last stage in any system's movement away from an orderly arrangement. At this stage, there is a lot of turbulence, a lack of direction, and an absence of actual sense of meaning. This theory supports the disaster recovery controls variable because it tries to emphasize that, catastrophes have no timing. They can occur at any point in time and maybe their occurrence may not coincide with the absence or presence of the organizational hierarchy holders. Hence the need to empower a free-willed employee system that understands procedures through continuous and consistent training would be ideal to help in the organizational sustenance.

Growth of the Firm Theory

Advanced by Penrose (1959), the theory provided guidelines that would guide the efficient and profitable growth of the firm. The theory unravels the logical frameworks that should be investigated and those which would help guide the growth of the firm.

Penrose (1959) conceptualized the firm as an institution that is created by the people to serve the purpose of the people. As a result, therefore, the custodians of the administrative roles in this case the managers continually strive for the survival of this firm through innovative ideas and new resource combinations. This theory goes ahead to evaluate the link between firm growth and profitability. (Penrose, 1959) looks at profitability as a pre-requisite for company growth hence the reason why investment decisions are controlled by long-run profit motivations. Additionally, Penrose (1959) views firms as a collection of productive resources whose management over time influences the administrative decisions that could be taken over the specified interest.

This theory underpins the Firm Size variable of this study because it explains the prerequisites of the growth of a firm and the collective firm considering other combinational factors in this study.

Empirical Literature

This section presents the study's literature review from a global, regional, and local perspective as regards the Cyber Crime Security Controls, Data Analytics Controls, and Disaster Recovery Controls towards the financial performance of Insurance Firms with Firm Size as a moderating variable.

Cyber Crime Security Controls and Financial Performance

In their research "Cybercrime as an emerging threat", Malik and Islam (2019) investigated the effects of information system awareness and its relationship to cyber-crimes over organizational performance. Their findings were that Cybercrimes impacted the progression of firm performances and continue to recommend that it was the duty of the firms to ensure continuous and progressive training and awareness on Cybercrime s as part of the cyber security controls.

Arcuri et al. (2018) did a study on the sensitivity of the stock returns of companies as a result of IT systems security breaches. The findings of this study reveal that any IT system security breach announcements always negatively impacted the market returns. It acknowledges that the impact of a cyber-attack on a company can range from financial, reputational, and legal consequences. Despite the major and visible impacts, there are additional invisible impacts that are attached to the cyber breaches. The study agrees with the fact that firms need to heavily invest in cyber risk countermeasures, create action plans, and set aside budgets for such training and repayments in the event of any eventualities.

Qudaih et al. (2014) in a research on persuasive technology contributions towards enhancing Information Security awareness acknowledge that globalization and the increasing reliance on the internet continue to expose the vulnerability of various organizations across the globe to cyber-risks such as DOS attacks, unauthorized data accesses, viruses and phishing among other forms of attacks hence the need for implementation of Cybercrime controls and continuous information system controls to enhance cyber-risk security. Bendovschi (2015) studied Cyber – Attacks (trends, patterns, and security countermeasures). The study aimed to give an overview of the situation regarding cyberspace engagements. The study reveals that cyber attackers are continuously evolving, and they keep developing new ways in which they can exploit the cyber network.

An interesting finding here again is that the main driver of cyber-attack is the absence of full control of cyber instruments, human error, and the use of inefficient and or faulty programs. The study further reveals that cyber-attacks were indiscriminate and were meted upon all company sizes. This study recommends tightening of cyber controls both internally and externally. Bendovschi (2015). Neghina and Scarlat (2012) did a study on managing IT security. The study aimed to assess, identify and bring to light the importance of designing proactive and effective security strategies that can address Cybercrime issues. This paper highlights that cyber-attacks can be channeled towards any type of company and can cause damage. It, therefore, finds it desirable for every company to maintain procedural risk-based policies that are actionable and capable of controlling the occurrence of any form of damage.

This research agrees with the fact that cyber risks are a growing menace across the globe due to the continued adoption of e-commerce and various organizational networking aspects. Therefore, while budgeting and forecasting business performances, the impact of cyber-attacks cannot be ignored and must be a salient feature because it would likely cause disruptions in the data management, revenue streams, firm's reputation, and market value among other impacts.

Data Analytics Controls and Financial Performance

Gahi et al., (2016) did a study on big data analytics (Security & privacy challenges). The paper aimed to assess the benefits of adopting data analytics & the downsides of securing data and upholding data privacy. The study argues that when building a big data environment, there were a good number of concerns required such as data privacy, useful application of this data i.e.,

computation of this data, quality of the type of data extracted, access controls to the data storages, communication lines across the transfer of this data among other things.

The paper equally highlights certain controls that could be applied to protect access to this data from time to time and this included the use of encryption techniques, applying authentication techniques, activity trials, and enforcement of legal rules among other techniques. Curry et al., (2022) in their publication (Technologies and Application of big data value) acknowledge that the application of big data technologies enables organizations to gain some form of a competitive edge. It influences how the company can drive its digital transformation agenda but on the other side explains what it takes to understand the technology with the capability to extract value from big data.

Gul & Ellahi, (2021) researched the relationship between data analytics and firm performance. It investigated the impact of firm investment in data analytics and the overall firm financial performance. The findings revealed that productivity in the companies that had adopted big data analytics technology had recorded an increase in overall financial performance by approximately 10%. Despite that, the overall impact of the adoption of this technology on certain key profitability indices such as ROA & ROE returned a negative relationship. The study therefore recommended that the firms ought to adopt and as a matter of priority invest in technologies that are innovative enough to derive analytical value from the already available data as this will help them remain competitive.

Kagechu, (2018) also researched the big data impact on overall organizational performance. The study aimed at determining the extent of big data analytics impact on the financial performance of banks licensed and permitted to trade at the NSE. The finding here revealed that the financial performance of banks licensed to operate at the NSE and the adoption of big data analytics had a positive linear relationship. And as such, this led to an increased optimization of company resources, enhanced services to the customers, and cost savings among other things.

Disaster Recovery Controls and Financial Performance

Labus, (2017) researched the e-business continuity management in the insurance sector, the evaluation aimed to improve the establishment of effective disaster recovery control practices within the insurance firms which had inculcated the application of modern technology in the insurance sector. It concluded that given the ever-growing cyber-crime, financial scandals hitting corporates, and terrorism among other emerging issues, the absence of a disaster recovery control practice can result in huge losses and or lead the company to a point of no return due to the emerging risks that the business has been exposed to.

Margherita & Heikkilä, (2021) researched the business continuity during the Covid-19 global pandemic. Their study reviewed the types of actions that companies undertook as a response measure to the pandemic. It focused on 50 companies with a global portfolio and were top-ranking in terms of revenue performance. The findings from this study indicated that these large corporations did a lot to ensure continuity of their operations. It also found out that some companies managed to create value by reaching out to new clients via digital platforms, turning more to CSR

activities, and engaging in research and development activities as this helped them to be more visible to their client target base.

Kavonga, (2017) in her study on the impact of a business continuity plan on service delivery of insurance firms in Kenya found out that most of the insurance firms in Kenya had adopted the use of ICT systems to perform their day-to-day critical duties. However, there was a lot of laxity in implementing a continuity plan or a form of a backup to ensure that they minimized system failures and that their recovery time would improve in the event of a threat to their systems.

Labus et al., (2017) did research on adaptive e-business continuity management. The study sought to investigate the need for disaster recovery control practices, however it focused on those practices that were suitable for modern technological environments (e- BCM). This research already acknowledges the need for and the impact of disaster recovery controls and therefore looks at switching this towards more favorable practices for ICT-inclined businesses. This study found that continuous improvement in disaster recovery controls and progressive business impact analysis highly influence an effective establishment of a proper disaster control procedure.

Caruana, (2016) in his research on the business continuity plan maturity index conducted on licensed financial services firms wanted to establish whether established and large financial institutions had stronger and well-grown disaster control practices compared to small and growing financial institutions. The study also investigated the extent to which banks had implemented their recovery plans as compared to other financial sector institutions like insurance firms.

The research found out that most of these organizations had done a disaster control plan that was tailored towards the IT infrastructures leaving out the other business units. Additionally, the size of the disaster recovery organization also determined the extent of setting up and application of a diss practice because it entailed the application of different levels of resources. It was seen that most of these institutions had in place a disaster recovery plan. However, there were a lot of inadequacies in the implementation by the well-established organizations signaling a higher exposure to recovery in the event of a risk occurring. This study also found out that the banks had exhibited a more compliant practice as compared to the other financial institutions hence signaling that more work was needed especially across the insurance sector.

Firm size

Abbasi & Malik, (2015) researched on the moderation effect of firm size on the financial performance of firms that had reached their growth stage. The study aimed to determine if firm size had a moderating effect on the relationship between firm performance and the growth of the firm. Firm growth entails the expansion of the company's capabilities in terms of customer reach, asset base, and network reach among other factors. The study found that firm growth and financial performance had a positive relationship in the presence of firm size.

In a determinant of financial performance research by Vu et al., (2019), the study reviewed the relationship of firm size alongside other macroeconomic factors to the financial performance of

firms listed on the Vietnamese securities exchange. The findings revealed a strong positive relationship between firm size and financial performance and in this case, it heavily influenced the competitive positioning and financial returns capability for this firm. Karuga, (2017) also researched how firm size affected the financial performance of deposit-taking Saccos in Kenya. The findings revealed that with all other factors held constant, firm size had a direct impact on the overall financial performance of deposit-taking Saccos.

Kijkasiwat and Phuensane, (2020) also researched the moderating effect of firm size on innovation and performance of the firm. The study reviewed the financial returns, innovativeness, and financial access capabilities of SMEs operating across 29 countries. Firm size had a positive moderation effect on innovativeness and financial performance hence it heavily influenced the key assessment indicators for the financial performance assessment capabilities of various firms.

Conceptual Framework

2.2 Conceptual Framework

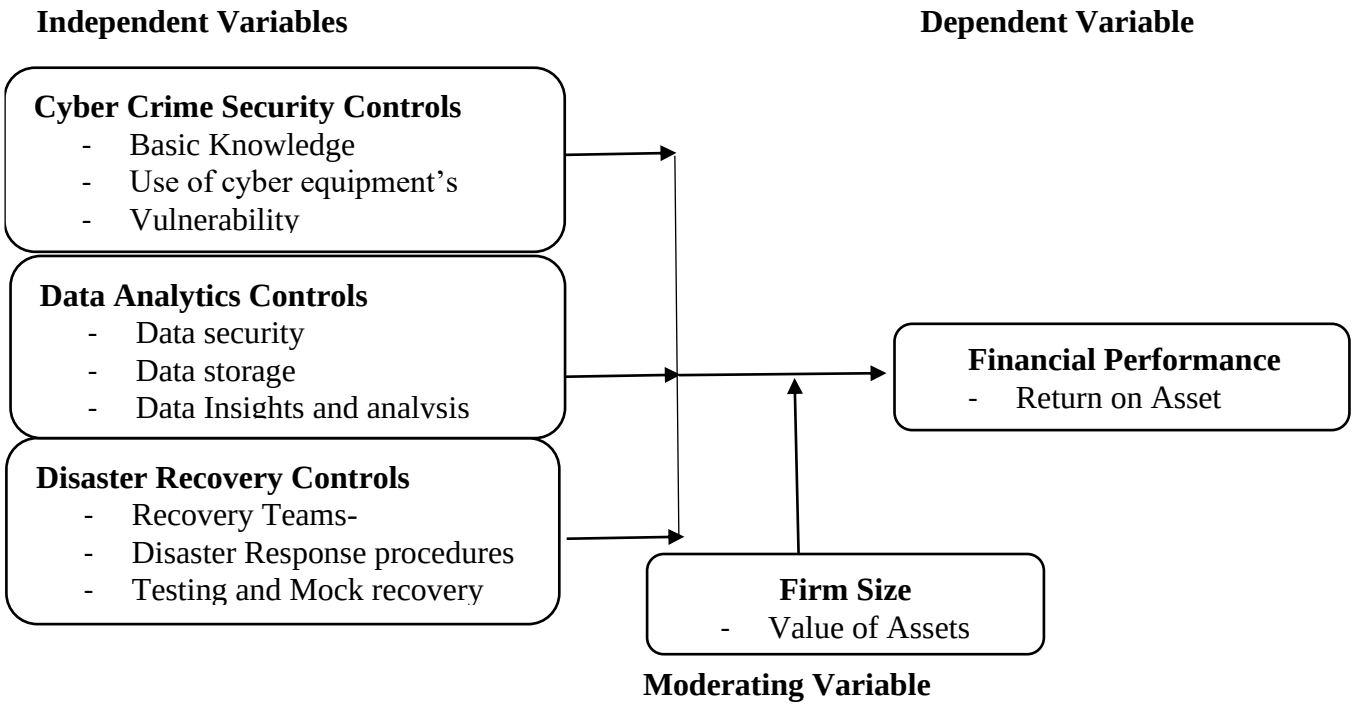

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

This study, adopted a causal research design, and since it focused on Insurance firms trading at the NSE, Kenya, it collected quantitative data from the supervisory and statistical reports from the insurance regulator's portals, and qualitative data was collected using questionnaires. The data was then checked for completeness and consistency and further, diagnostic tests were run for multicollinearity, normality, and homoscedasticity.

A panel regression model was adopted to present the existing relationship between the various variables and to determine and tell the strength of each independent variable presented as shown below.

$$Y_{it} = \beta_{0it} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon$$

Where;
Y – Financial Performance (Dependent Variable).
i – Firm.
t – Time (period).
β_0 – The constant of the model.
$\beta_1, \beta_2, \beta_3$ – The regression coefficients of the variables.
X_1 – Cybercrime security controls (Independent Variable)
X_2 – Data Analytics Controls (Independent Variable)
X_3 – Disaster Recovery Controls (Independent Variable)
ε – Stochastic error term estimate

For the moderating effect model, the Whisman and Meclland, (2005) two-step procedure was used in this study to assess the moderating variable effect on the risk-based internal audit approaches and financial performance and the resultant model was as shown below.

$$Y_{it} = \beta_{0it} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_4 + \varepsilon + \beta_5 X_{1it} * X_4 + \beta_6 X_{2it} * X_4 + \beta_7 X_{3it} * X_4 + \varepsilon.$$

Where;
$\beta_5, \beta_6, \beta_7$ are the regression coefficients for the moderation effect
$X_{1it} * X_4$ – Interaction between Cybercrime Security Controls & firm size
$X_{2it} * X_4$ – Interaction between Data Analytics Control & Firm Size
$X_{3it} * X_4$ – Interaction between Disaster Recovery Controls & Firm Size

Research Findings and Discussions

Using both the correlation and regression analysis, inferential statistics were drawn and have been discussed below.

Correlation Analysis.

To determine the strength and direction of the linear relationship between two or more variables, Pearson's correlation analysis was conducted, and the results are shown below.

Table 1: Correlation Analysis

		Cyber Crime Security Controls	Data Analytics Controls	Disaster Recovery Controls	Firm Size
Financial Performance (ROA)	Pearson Correlation	.572**	.462**	.606**	-.453**
	Sig. (2-tailed)	0	0.001	0	0.001
	N	50	50	50	50

The analysis results presented in table 4.10 above revealed that Cybercrime security controls and financial performance recorded a correlation of r=0.572 at p-value=0.000 signifying a positive and strongly significant relationship. Data analytics controls & financial performance recorded a correlation value of r=0.462 and a p-value of 0.000. This also implied a positively significant but weak relationship. Finally, disaster recovery controls had a correlation of r=0.606 at a p-value of 0.000 implying that disaster recovery controls had a strong, positive, and significant relationship with the financial performance of listed insurance firms in Kenya. These findings implied that enhancing Cybercrime security controls, data analytics controls, and disaster recovery controls would result to increase in the financial performance of listed insurance firms in Kenya.

Regression Analysis

To test the joint influence of the study's independent variables (Risk-based audit approaches) on the dependent variable (Financial Performance) considering time (t), a panel regression model was adopted.

Table 2: Model Summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.680	0.463	0.428	1.519494

From the results, the R-square which is the coefficient of determination equaled 0.463. This, therefore, implied that Cybercrime security controls, data analytics controls, and disaster recovery controls jointly explained 46.3% of the changes in the financial performance of listed insurance firms in Kenya while all the other factors were held constant.

Table 3: Analysis of Variance

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Regression	91.57	3	30.523	13.22	.000
Residual	106.208	46	2.309		
Total	197.777	49			

From the results (f-statistics =13.22, p-value= 0.000), it is evident that the model fitted had a goodness of fit hence viable to predict the relationship between independent variables (Cybercrime security controls, data analytics controls, and disaster recovery controls) and dependent variable.

Table 4: Regression Coefficients

	B	Std. Error	Beta	t	Sig.
(Constant)	1.85	0.614		3.011	0.004
Cyber Crime Security Controls	0.502	0.211	0.315	2.376	0.022
Data Analytics Controls	0.582	0.161	0.462	3.607	0.001
Disaster Recovery Controls	0.570	0.206	0.378	2.77	0.008

Hypothesis Testing

With a coefficient of β=0.502 and p=0.022, the regression results on Cybercrime security controls evidence that Cybercrime security controls had significant and a positive relationship with the financial performances of the insurance firms listed at the NSE, Kenya. Consequently, a change in the cybercrime security controls variable resulted in a direct change in the financial performance of the studied insurance firms (NSE listed). The null hypothesis **(HO_1)** that Cybercrime security controls had no significant effect on the financial performance of Insurance firms listed at the Nairobi Securities Exchange, Kenya was rejected and therefore concluded that Cybercrime security controls statistically had a significant effect on their financial performances.

With a regression coefficient of β=0.582 and p=0.001, it was evident that Data analytics controls portrayed the existence of a significant and positive relationship with the financial performances of the studied firms. Therefore, an observed unit change in the data analytics controls variable resulted in a 0.582 unit change in financial performance. The null hypothesis **(HO_2)** that data analytics controls did not have a significant effect on the financial performance of Insurance firms listed at the Nairobi Security Exchange, Kenya was therefore rejected, and the study concluded that data analytics control had a direct significant drive on the financial performance of the studied insurance firms.

A regression coefficient of β=0.570 and p=0.008 for the disaster recovery controls variable indicates that there is a positive and significant relationship between disaster recovery controls and the financial performance of listed insurance firms in Kenya. The findings implied that a unit change in disaster recovery controls would result in a 0.570 unit change in the dependent variable of the listed insurance firms in Kenya. The null hypothesis **(HO_3)** of the study that disaster recovery controls had no significant effect on the financial performance of Insurance firms listed at the Nairobi Security Exchange, Kenya was therefore rejected and concluded that disaster recovery controls have a significant effect on the financial performance of Insurance firms.

With the help of (Whisman and Meclland, 2005) two-step verification process, the moderating variable effect on the risk-based internal audit approaches and financial performance of the insurance firms licensed to trade at the NSE, Kenya was assessed. It included fitting a regression model with independent variables and moderating variables as predictor variables. This intended to test whether the moderating variable was also a predictor variable. The coefficient of the moderating variable (Firm size) revealed a β of 1.264 and a p-value of 0.190. As such, it concluded that firm size was not a predictor variable of financial performance for the listed insurance firms in Kenya. Hence not a suitable moderating variable.

To test for moderating effect, the study adopted a moderated multivariate regression where the product of independent variables and moderating variables was computed to generate interaction variables X_1*Z, X_2*Z, X_3*Z, these interaction variables were then included in a multivariate regression model as predictor variables (step two). Interaction variables with coefficients of p-values less than 0.05 were deemed to have a significant moderating effect.

Since no interaction variables (X1*Z, X2*Z, X3*Z) had a significant coefficient, the study could not reject the null hypothesis **(HO_4)** that firm size had no significant moderating effect on the risk-based internal audit approaches towards the financial performance of Insurance firms listed at the NSE, Kenya. Therefore, it was evident that firm size had no significant moderation effect on the relationship between risk-based internal audit approaches and the financial performance of the insurance firms licensed to trade at the NSE, Kenya.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In reference to the study objectives and hypothesis results, the study made the following conclusions. Firstly, the study affirmed that Cybercrime Security Controls had a statistical significance on the overall financial performance of the Insurance firms listed at the NSE, Kenya. This revealed the essence of companies to create policies and guides that seek to enhance the basic employee knowledge of the company cyberspace, the use of cyber or digital access equipment, and the ability of the company to tame any form of system vulnerability that could be exploited to capture the normal operations of the firm. As such, due to the growing adoption of information technology across various insurance firms, it is prudent to ensure that the firms can build enhanced cyber security controls that would enable their ability to sustain any form of turbulence.

Secondly, Data analytics controls were also determined to have a statistical significance on the overall financial performance of the Insurance firms listed at the NSE, Kenya. Narrowing this down, we find that data security, data storage, and having a clear data insight and analysis mechanism would help propel the ability of insurance firms to chart a clear path around nearly all sectoral dimensions. As such, building data analytic controls around these three key areas would be a greater starting point for the development of a workable process and procedure that would lead to optimizations of the necessary and required key aspects of these Insurance firms.

Thirdly, Disaster recovery controls were also found to be statistically significant towards the financial performance of the NSE, Kenya listed Insurance firms. A look at the business environment today, there is a lot of turbulence in the markets arising from the need to build a stable and self-reliant business. Disaster recovery controls should be embedded as part of the overall operational processes that do not directly contribute to the financial performance but significantly affects the ability to have a sustainable financial performance.

Recommendations

Policy Implications and Recommendations

The following recommendations were drawn from the findings and the conclusions of this study. Firstly, Cybercrime controls were found to be significant to financial performance. The hypothesized test results showed that where the companies instituted proper cyber-control mechanisms, there was a direct and significant effect on their financial performance. Secondly, Data Analytics controls were also found to be significant in the financial performances of the listed insurance firms. The hypothesis results indicated that where the company had put together its data analytics capabilities, then there was a significantly positive performance trajectory. Lastly, Disaster recovery controls were also found to be statistically significant to the financial performance of the NSE, listed Insurance firms. The hypothesis results revealed that when the disaster recovery controls were embedded in the general company operations then they gave an assurance on the overall operations hence a sustained business performance. This study therefore recommends that the organizational boards together with their senior management teams should strive and create a framework that allows the Internal Audit Units to be able to channel their efforts and abilities directly or indirectly to the operational environments while also maintaining their oversight and assurance functions and independence as they report to the boards. The Internal Audit Units can help to build and operationalize Cybercrime controls, Data analytics controls, and Disaster recovery controls because they have the technical capabilities, they have the knowledge and are able to directly embed their skills to assist in the operational areas where possible.

As a heavily regulated sector of the economy, the Insurance industry has a very huge number of players. This study focused on the listed Insurance firms because, by the fact that they are listed, there was a double regulation from both the Insurance Regulatory Authority (IRA) and the Capital Markets Authority (CMA). Therefore, if the study variables were found to be heavily impactful in this environment, then it means that if replicated across the other unlisted Insurance Firms, then it poses a great and positive capability of re-shaping and influencing the overall and general performances of these Insurance Firms.

Contributions to Knowledge

This study stands instrumental in the enhancement of the finance theory, actual company's operational practices, and overall policy developments and enhancements. The study makes contributions to the finance theory by proposing additional operational and firm elements that can be incorporated in the businesses (Cybercrime controls, data analytics controls, and disaster

recovery controls) and which have significantly been found to enhance the overall financial performance. Additionally, this study forms a basis for other researchers and academicians to explore other mechanisms that could be incorporated into business operations based on the research gaps highlighted by the researcher and help fill these gaps.

Recommendations for Further Research

The recommendations are based on the study's encounters and would be important for corroborating the study for the benefit of the stakeholders in the Insurance industry. First of all, this study focused only on the Insurance Firms Listed at the NSE, Kenya. As such this could have been limiting because there are more than 50 other unlisted insurance firms that can be incorporated. As such, this study, therefore, recommends that research can be done on the unlisted Insurance firms using the same variables. Secondly, the variables for this study were found to only explain about 46.3% of the financial performance of the studied firms. As such, the study recommends that further research can be done with the inclusion of other variables that could potentially enhance the R-square for the study and perhaps influence more on the financial performance.

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