International Journal of
Technology and Systems
(IJTS)

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International Journal of Technology and Systems
ISSN 2518-881X (Online)
Vol.9, Issue 2, No.1, pp 1 – 20, 2024

www.iprjb.org

Information Systems and Performance of Insurance Firms in Nairobi County, Kenya

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Article History

Received 20th April 2024

Received in Revised Form 19th May 2024

Accepted 11th June 2024

How to cite in APA format:

Wanjohi, N., & Waithaka, S. (2024). Information Systems and Performance of Insurance Firms in Nairobi County, Kenya. *International Journal of Technology and Systems*, *9*(2), 1–20. https://doi.org/10.47604/ijts.2658

Abstract

Purpose: The goal of the study was to ascertain how information systems influenced the insurance industry's performance in Nairobi County, Kenya.

Methodology: This study employed a descriptive research design. The respondents were drawn from all 58 insurance firms in Kenya as listed by Insurance Regulatory Authority (2023). The study sample comprised of five senior management officer from each of the target population of 58 insurance companies in Kenya. Stratified sampling procedure was applied to select the subjects of study based on geographical location in Nairobi County. Data collection was done using structured questionnaires. The questionnaire had both open-ended and closed-ended questions. Descriptive and inferential statistics were employed in the study to analyze the data. The coding and analysis were performed using SPSS version 21, and the results were shown as tables.

Findings: The study concludes that technical factors have a positive and significant impact on Nairobi County insurance businesses' performance. The study discovered that the performance of insurance companies in Nairobi County is influenced by information system compatibility, confidentiality, ease of use, and reliability. the study comes to the conclusion that Nairobi County's environmental features significantly and favorably affect the performance of insurance companies. The study found that the performance of insurance companies in Nairobi County is influenced by competition, industry size, and pressure from suppliers and customers. Additionally, the study concludes that organizational factors have a positive and significant impact on Nairobi County insurance companies' performance. The study discovered that supplier and consumer pressure, industry size, and competition all had an impact on Nairobi County's insurance companies' performance. Resources factors encompassing availability of financial, human, and technological resources were established as the most influential component of the information systems with regard to performance of the insurance firms.

Unique Contribution to Theory, Practice and Policy: The study was ancored on Technology Acceptance Model (TAM). The study also recommends that management should allocate financial resources strategically, focusing on areas that directly contribute to business growth, such as marketing, technology upgrades, and talent acquisition. In addition, management should ensure efficient use of financial, human and technology resources by closely monitoring expenses, avoiding unnecessary costs, and seeking opportunities for cost-saving measures.

Keywords: *Information Systems, Performance, Insurance Industry*

INTRODUCTION

The business climate of today coupled with great emphasis for technology requires innovation, rational thoughts, swift action and adaptation to changing trends (Scott-Kennel & Giroud, 2015). There is a great reward for organizations that embrace the demand for innovation which is spurred by technological progress, change in demographics, globalization, shortage of skilled/experienced staff, web and internet (Fillol, Lohmann, Turcotte-Tremblay, Somé, & Ridde, 2019). The need to reduce market costs while remaining competitive in the market has driven companies to use Information Systems which has resulted in reduced prices of goods and services (Jepkorir, Mose, & Tobias, 2022).

According to Eltahir (2020), businesses use information systems to spread information regarding their product, sell their product as well as get reviews and feedback from their customers. In addition, clients use the internet based Information Systems to compare prices, different features of a good and explore the after-sale-service that comes with acquisition of a product or service from a certain business (Jeon, Lee, & Kwon, 2015). Alraja, Imran, Khashab, and Shah (2022) noted that an important benefit of using information systems is to enable easy sharing of information and resources among various organizations. Almadi (2013) stated that universities could enable sharing of electronic information through linking universities using e-services such as e-learning and e-research.

As such, it becomes evident that there are inherent advantages to having information systems in an entity. Given that firms aspire to grow and develop, it thus becomes necessary to determine the implication of information systems on the respective organisation (Al-Hajj & Zraunig, 2018). Measuring performance relative to the availability of information systems in a firm becomes necessary. Thus, using the insurance sector as a case study, the research sought to determine how an organization's performance is impacted by the adoption of information technologies within the organization.

Information Systems

Information systems refers to a set of interrelated components such as computer hardware and software, data, and people which help with retrieving, processing, storing and sharing information which helps with decision support within a firm (Vanaja, Suresh, Srilatha, Kumar, & Bharath, 2018). Nayak, Bhattacharyya, and Krishnamoorthy (2019) defined information systems as an innovation based on technology, which is made for the benefit of businesses, communities and individuals. Information systems act as a pillar for several organizations as they aid managers and their teams with analysis, visualization of complex subjects and generate new products. Zheng and Guo (2020) supports this by noting that information system is a set of components that aid to gather (input), process, store and disseminate (output) data information to help achieve a desired goal. Information system therefore is an organized blend of computer components meant to store, manipulate and share data and information in a firm.

Information systems play a critical role in several sectors including insurance, business, small and big enterprises, government, finance or education. (Naicker & Van Der Merwe, 2018). In recent times, several organizations have adopted information systems as it has made it possible for them to store, manipulate, issue and sharing information between the firm and its clients. Globally, organizations have taken up use of information to help cut costs, improve efficiency and enhance customer service (Inyang & Okonkwo, 2021).

Information systems are a complete strategy for expanding and updating a company's line of goods, services, and markets through the adoption of new or modified techniques (Shqipe, Gadaf, & Veland, 2013). It entails a drastic shift in the way ideas are generated and new goods, services, and industrial processes are created (Pisano, 2015). The trends in investments and acceptance of information systems have resulted in rising demand to lower costs, improve output, and gain a competitive advantage.

Insurance Industry

Mustafina, Kaigorodova, Alyakina, Velichko, and Zainullina (2020) describes insurance as a service that is available for the collective good of the society since it has great externalities. According to Hocking et al. (2014), the insurance sector is now regarded as one of the most inventive in the entire globe. The development of technologies that are being used at various phases of the supply of insurance services is one of the main elements driving this process. The increasing reliance of insurance companies on information systems in other industries necessitates flexibility in their development strategy's strategic planning.

Kenya's insurance sector is subject to Cap 487 Insurance Act, controlled by Insurance Regulatory Authority (IRA, 2023). Its main responsibility is the formulation of policies governing the operations, licensing and supervision of all insurers in Kenya. Insurance firms have implemented the Association of Kenya Insurers (AKI), the Association for Insurance Brokers of Kenya (AIBK), and the Medical Insurance Practice Association of Kenya (MIPAK) as associations that are a part of the insurance players.

Kenya insurance companies in the recent past have experienced increased level of competition due to the increased number of firms that have joined the insurance business and foreign insurance companies and investment firms (Shitanda, Musyoki, & Nganu, 2020). The impact of information systems and the entry of foreign insurance companies into the insurance market has intensified. Coupled with low insurance penetration in Kenya at 3.4 percent of GDP (general insurance) and 1.9 percent (life insurance) (IRA, 2023), there is need for insurance companies to be innovative, creative and adopt relevant technologies in their service delivery.

The implementation of technology in insurance companies through new processes has led to improved quality and quantity of products and speed of processes (Gikonyo, 2014). The use of mobile technology in the form of applications that make it possible to purchase insurance goods like travel, auto, and medical insurance has led to an increase in insurance penetration in Kenya as well as convenience and uptake of more insurance products.

Technological Facets and Information Systems

Based on analysis of organizational performance attributable to information systems, certain innovation aspects have been acknowledged as crucial factors of such performance. Kar and Navin (2021) identified various attributes of information systems that can influence performance of system and organizations as: observability, relative advantage, complexity, trial ability, and compatibility. A research done by Klapkiv and Klapkiv (2017), sustains that the five aspects of information systems characteristics highlighted by Kar and Navin (2021) influence the performance of entities. Various researchers have used these IS aspects when determining the implication of the performance of systems in a firm and this progresses as a wide-ranging subject of discussion.

Stephen, Tom, Julius, and Almadi (2013) found that perceived cost and complexity of IOIS were the two technological factors preventing its implementation in Kenyan universities. Their

study examined the relationship between technological components and inter-organizational information systems performance by Kenyan universities. In their investigation on what influences implementation of information technology, Afshar and Fayyazi (2014) found that Complexity was one of the determinants for acceptance of cloud computing systems. Taheri, Sarfaraz, and AliAkbar (2014) on the other hand found that the choice of an organization to adopt an innovation is based perceived complexity by MSMEs. There exists an inverse relationship between implementation and perceived complexity in these firms.

According to Oberoi and Kansra (2022), the term "trial ability" describes how far an organization is able to evaluate an idea on a small scale. Several research have found a correlation between trial ability and e-commerce espousal or intention to use, as demonstrated by Lee et al. (2011). In his study Ahmer (2013) found that implementation of innovation is based on the degree of commitment required when testing it. In addition, certain innovations exhibit difficulty in use during the trial period. Such level of technological espousal can thus point to some predetermined or expected improvement in performance.

Perceived Observability variable on the other hand, indicates the level to which others can experience or see the results of an innovation (Ahmer, 2013). According to Ashrafi and Murtaza (2008), there is a link between perceived observability and the performance of e-commerce. This suggests that the benefits an SME is likely to gain from adoption of an e-commerce technology greatly impacts their decision regarding its adoption. The results of the study however dispute past studies such as, To and Ngai (2007), who do not find a link between observability and adoption of innovation technologies.

Environmental Factors and Information Systems

The pressure firms face to survive and stay competitive has forced them to adopt and implement IT (Huy, 2012). This is the only way that firms can enhance the manner in which they provide services to customers, grow, manage changes and improve their performance. Previous studies indicate that firms are likely to adopt IT innovations due to the pressure by customers. It also enhances their performance through service delivery and customer satisfaction (Y. Liu, Peng, & Yu, 2018).It has therefore become increasingly vital for firms to adopt and implement the new technologies. Other driving factors for firms to adopt IT are internal factors including venturing into new markets, keeping the existing market, prospects for growth, industry dynamics and the need to remain competitive (Ramdani, and Lorenzo, 2009).

The dynamics of supply chain management have impacted manufacturing sectors in Kenya to embrace IT systems, according to a research by Kamau et al. (2013) on environmental variables that affect supply chain management adoption in the manufacturing industries there. This is driven by the perceived benefits and pressure by stakeholders for effective manufacturing processes. Ashrafi and Murtaza (2008) discovered in their study on adoption of Information Technology in medium-sized and small enterprises that a number of external forces, including competitors, the government, and pressure from customers and suppliers, were some of the factors that compelled SMEs to adopt information technology.

In contrast, Huy (2020) found that there was a relationship between adoption of e-commerce and the manager’s insights on the existing competition in the market, pressure from industry, customer behavior and overall performance. These findings point to the use of various approaches in the implementation of an IS to promote performance. Furthermore, Huy (2012) recommended that the acceptance of IT impacts the competitive environment through various

ways; altering the industry structure, shifting the existing rules and defining new ways to gain a competitive edge by businesses and thus improve performance.

Organization Characteristics and Information Systems

In their study on Logistics information systems implementation: an experiential examination in Malaysia, Sivan et al. (2023) studied the link between level of LIS acceptance and organizational variables. The study based on manufacturing companies studied variables including company size and its operational nature. Results from the study showed that the organizational profile variables had an impact on the levels of logistics information systems (LIS) implemented and are guided by the expected level of performance.

A study by Razali and Vrontis (2010) found that the greatest determinant of acceptance of technology by employees was participation by top management and organizational commitment. The study focused on implementation of HRIS system in the Malaysian Airlines System. A study by Sparling et al. (2007) also indicated that employees with knowledge and experience on ICT are likely to adopt and embrace an innovation for efficiency and enhanced performance. This therefore implies that past IT experience and skills affects adoption of a system and performance.

According to a study by Naicker and Van Der Merwe (2018), the adoption of new technology is correlated with both organizational and external factors. There was however a negative relationship between technology factors and adoption of IBIS within the organization. Ahmer (2013) found that top management support and HRIS expertise were contributors to the choice of HRIS implementation.

According to Ayana's (2014) research on the elements influencing the adoption of electronic banking in Ethiopia's banking sector, there aren't enough administrative and technological resources to enable the development of e-commerce. Thus influencing the level of performance attributable to technology in Ethiopian banks. Similarly, Asongu, Nnanna, and Acha-Anyi (2020) noted that one of the crucial factors which determine whether HRIS in Hong Kong is successfully adopted is top management support. The adoption of an innovation technology varies depending on culture (Murphy & Southey, 2003).

Resource Availability and Information Systems

Development in various firms is a product of a number of variables. According to Kaigorodova et al. (2018), firms have the imminent objective of ensuring there is gradual growth in all dimensions. They noted that resources form the integral part of this growth. According to Paruchuri (2020) the ease with which firms access and utilize resources determines the progression of such firms. This is because production in firms is a function of resources. In this regard, resources form the critical variables in the operations of entities.

Alainy, et al (2009) in an analysis of deviations between the production levels of firms that are relatively similar in size highlights the inherent implication of resources. According to Alainy, et al (2009) the efficiency with which firms access resources determines their levels of output and the resultant cost of production therein. This assertion in economic view of the formation of monopolies. According to Alainy, et al (2009) monopolies can be formed where a firm gets express access to a given resource. Such a case arises where the competitors of such a firm have no access to such a resource.

Ayana (2014) on the other hand highlights the implication of a firm accessing a given resource in more efficient manner in comparison to the competitors. According to Ayana (2014) such a

scenario results in an instinctive higher level of growth in that firm compared to its rivals in the market. The efficiency in access can result from either a lower cost in acquiring the resource, a better technology in utilizing the resource, et cetera. Ayana (2014) notes that this occurrence explains the deviations that are evident in firms that is seemingly similar in capabilities but record substantially different levels of output or revenues.

Statement of the Problem

Most players in the service industry including insurance firms have been very active in adopting technological solutions to facilitate delivery of their services. These solutions often take the form of management information systems aimed at integrating the organizations' processes and procedures in an automated manner. Several researchers have looked at different aspects of this trend with minimal focus on possible relationships between the insurance firms' adoption of the IS and their performance, especially in the Kenyan context. For instance, Klarner (2010) notes that there is a large disparity in the performance levels of businesses using information technology across different sectors. Kaigorodova, Mustafina, and Alyakina (2018) observed that the introduction and advancement of information systems have been met with a positive attitude in not only the insurance industry but also in most economies as well. They highlighted the full benefits of information systems that are subject to an array of factors. This implies that firms will not automatically benefit from information systems outright. Torres (2015) researched on innovation, self-effectiveness and small enterprise performance of 256 small-scale French businesses. The results showed that self-effectiveness has positive influence on company efficiency, but creativity and company achievement are entirely influenced by entrepreneurship orientation. Owuor (2018) also brought up the dearth of studies on how insurance businesses' embrace of technology affects the effectiveness of their operations. The glaring lack of this critical information on IS adoption among the insurance firms in Kenya inhibits sound decision making among the industry stakeholders. Specifically, an in-depth study was needed to establish how technological factors, environmental factors, organizational characteristics and resource availability aspects of information systems influence performance within the insurance industry in Kenya.

LITERATURE REVIEW

Theoretical Review

Technology Acceptance Model (TAM)

Different experts have produced a number of theories to explain why businesses adopt technical breakthroughs. TAM is one of oldest theories that seeks to explain the IT espousal behavior (Park, 2009). The theory is pinned on the idea that usage of a system within a firm is often based on two factors; perceived usefulness and perceived ease of use (Park, 2009).

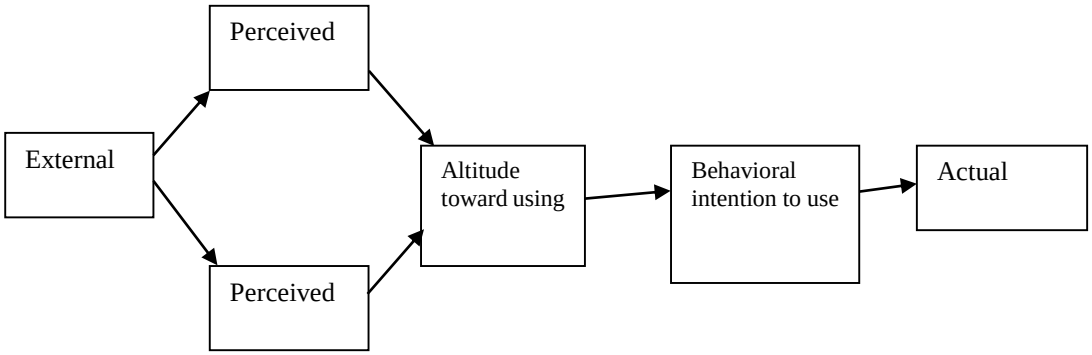

Figure 1: Technology Acceptance Model

Source: (Surendran, 2012)

The Technology Acceptance Model (TAM), as proposed by Park (2009), is a refined form of TRA. It is one of the best and strong theories, which clearly highlights the adoption of Information Technology (IT)/ Information System (IS). Lee and Xia (2006) used the model to evaluate the adoption of personal computing systems in small organizations and its impacts on work performance.

The Technology Acceptance Model aims to illustrate how people's environment influences their feelings, ideas, and choices. Electronic commerce is being adopted by businesses because of its perceived utility and convenience of use, say Grandon and Pearson (2011). On the other hand, Sivan et al. (2023) tend to contend that a simple model would not suffice to explain the decisions of organizations to adopt a certain system or technology. They argue that there would be differences in decisions based on organizations and other driving factors.

A study on the application of TAM in M-Banking deployment in Kenya by Lun, Omwansa, and Waema (2012) showed that consumers' attitudes toward adoption of information technologies like M-banking were significantly influenced by their perceptions of the technologies' perceived usefulness and simplicity of use. This model is focused on the insurance companies and how internal issues affect the introduction of new technologies. According to the hypothesis, IT has far-reaching effects on company productivity. Our theory is appropriate for our study because it sheds light on how technical aspects affect the public's willingness to adopt new information systems.

Conceptual Framework

Conceptual frameworks stem from a wide array of ideas and theories that guide the researcher to identify the gap leading to a problem, defining guiding questions and finding the relevant literature. The independent variables are technological facets of information systems, resource availability aspect, organizational and environmental characteristics of information systems, while the dependent variable is the performance of insurance firms. The intervening variables are government policies on insurance, and regulation in the insurance industry.

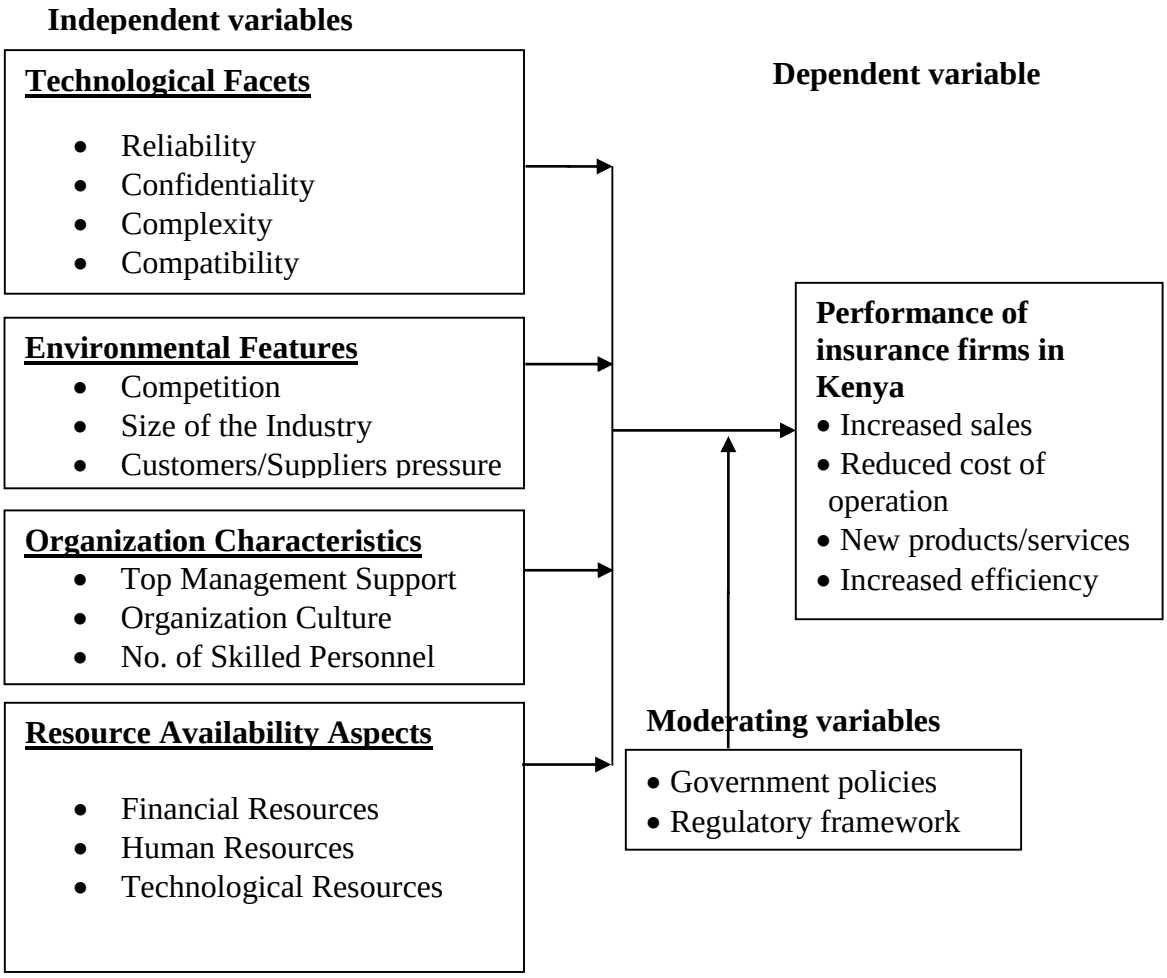

Figure 2: Conceptual Framework

Source: (Researcher, 2024)

Research Gap

The results of literature analysis showed that numerous research have made an effort to explain performance in terms of different information system features. According to the literature analyzed for this study, organizational, technological, resource, and environmental contexts was a key player in the theories now in use about how information systems affect performance. Scholars have conducted a variety of studies throughout the years to ascertain the elements adoption of advancements in information technology. Teo et al.'s (2009) study on e-procurement adoption and Lin's (2007) analysis of the impact of learning capacity on perceptions of innovation and company success are two notable studies.

The influence of various parameters may vary based on the kind and aspect of information system taken into consideration as well as the expected degree of performance, according to a general observation made by the authors of the research listed (Kar & Navin, 2021). Innovation research however lacks a defined framework and is marred with problems as noted by Lee and Xia (2006).

These challenges include; the need to focus on the different characteristics of IS and the need to avoid generalizations from the individual level of performance of firms. In other words, the organizational unit rather than individuals undergoing performance improvement should be the focus of data collection. As a result of this, this study attempts to lessen these concerns by combining TAM, TOE and RBT model in determining the influence of information systems on performance of the insurance industry only and specifically in Nairobi County in Kenya.

METHODOLOGY

This study employed a descriptive research design. The respondents were drawn from all 58 insurance firms in Kenya as listed by Insurance Regulatory Authority (2023). The study sample comprised of five senior management officer from each of the target population of 58 insurance companies in Kenya. Stratified sampling procedure was applied to select the subjects of study based on geographical location in Nairobi County. Data collection was done using structured questionnaires. The questionnaire had both open-ended and closed-ended questions. Descriptive and inferential statistics were employed in the study to analyze the data. The coding and analysis were performed using SPSS version 21, and the results were shown as tables.

Descriptive Statistics Analysis

Technological Factors and Performance of Insurance Firms

The information technology that comprises the infrastructure, hardware, and software components of the insurance businesses' information systems was used to measure the technological characteristics of information systems and their impact on the performance of the sampled insurance firms. The respondents were asked to rate the degree to which they agreed with claims made on technological aspects and the operations of insurance companies in Nairobi. The respondents' degree of agreement was determined using a 5-point Likert scale, where 1 denoted severely disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. In order to further refine the scale, the neutral responses were left unchanged and the positive responses were grouped into "Agree" and the negative responses into "Disagree."

Table 1: Technological Factors and Performance of Insurance Firms

	Agree (%)	Neutral (%)	Disagree (%)	Mean	Std. Dev.
The information systems are largely reliable, available and interconnected.	51	34	15	3.973	0.981
Information system users are able to coordinate and easily retrieve relevant information from our databases.	50	29	21	3.896	0.947
Data management services are reasonably good and confidential.	49	28	23	3.966	0.850
Existing information systems are largely compatible and efficient.	47	29	24	3.931	0.914

The general outlook of the results indicates that most of the respondents agreed with all of the tabulated statements according to their percentage distribution in the analysed scale. This was also confirmed by their mean rating for each of the statements were above 3.6. For instance, the most acknowledged aspect of the technological factors among the respondents was the fulfilment of communication network in terms of connectivity, reliability, and availability of the network within the sampled insurance firms as indicated by 51% of the respondents who

agreed with statement. A mean rating of 3.973 (std. dv = 0.981) shows that any randomly selected employee from the sampled insurance firm would agree (3.973) with the statement on connectivity, reliability, and availability of the network. The respondents also agreed that information system users are able to coordinate and easily retrieve relevant information from their databases. This is shown by a mean of 3.896 (std. dv = 0.947).

This was followed by good and confidential data management services within the firms as evidenced by mean of 3.966 (std. dv = 0.850). Compatibility and efficiency among different systems within the firms was also acknowledged by the respondents with a mean rating of 3.931 (std. dv = 0.914).

The above findings imply that all the tabulated technological aspects of the information systems are necessary factors in the promotion insurance firms' performance. These observations are in agreement with the findings of Kar and Navin (2021) who established that the decision to acquire technology depends on what is there on the market and the compatibility of new technologies with what an organization already has. Additionally, Mugo et al. (2018) discovered that deposit-taking SACCOs' performance is improved by their use of mobile communication services.

Environmental Factors and Performance of Insurance Firms

Determining the impact of information system environmental elements on the insurance industry's performance in Nairobi was the study's second particular goal. The degree to which respondents agreed with statements regarding environmental factors and the performance of Nairobi's insurance industry served as the basis for measuring this. The outcomes are displayed in Table 2.

Table 2: Environmental Factors and Performance of Insurance Firms

	Agree (%)	Neutral (%)	Disagree (%)	Mean	Std. Dev.
Size of the Industry has grown due to technology adoption.	63	21	16	3.996	0.865
Customers pressure has pushed us to implement technology resulting to increased sales.	61	24	15	3.819	0.945
Industry rivals who apply information systems have increased efficiency than those that do not	56	31	13	3.731	0.908
High-profile competitors in the sector employ information systems to reduce operational cost.	52	31	17	3.711	0.776

The mean agreements and the analyzed percentages show that a greater proportion of respondents agreed with all of the assertions about environmental factors. The statement that the scale of the industry has increased as a result of technology adoption was the one with the highest degree of agreement, as reported by 63% of the respondents. A mean of 3.996 (std. dv = 0.865) supports this. Furthermore, a mean of 3.819 (std. dv = 0.945) of 61% of respondents agreed that pressure from customers has forced insurance businesses to embrace technology, which has increased sales. Moreover, 56% of respondents concurred that competitors in the industry who use information systems are more efficient than those who don't. A mean of 3.731 (std. dv = 0.908) demonstrates this. 52% of respondents, with a mean score of 3.711 (std. dv = 0.776), agreed that well-known competitors in the industry use information technologies to cut costs associated with operations.

The study findings concur with Huy (2020) who established that the use of various approaches in the implementation of an IS to promote performance. Ultimately, Mary et al. (2019) came to the conclusion that a firm's competitiveness increases when process, marketing, and organizational innovations are implemented.

Organizational Factors and Performance of Insurance Firms

Determining the impact of information system organizational elements on the insurance industry's performance in Nairobi was the third particular goal of the study. The respondents were asked to rate their agreement or disagreement with a number of statements about organizational characteristics and the state of the insurance market in Nairobi. The study employed a 5-point Likert scale, wherein 1 denoted severely disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. The outcomes were shown in Table 3.

Table 3: Organizational Factors and Performance of Insurance Firms

	Agree (%)	Neutral (%)	Disagree (%)	Mean	Std. Dev.
Our insurance company's senior executives have a strong support for information system rollout to reduce operational cost.	67	18	15	3.936	0.708
IT management services easily manage systems across business units effectively and efficiently.	65	20	15	3.928	0.925
Our organization has embraced technology as way of doing business thus increasing efficiency.	61	19	20	3.842	0.821
Our organization offers periodical training on technology to staff.	59	16	25	3.838	0.809

The organizational components of the information systems as stated in the above-tabulated statements were positively acknowledged by a larger number of respondents. According to 67% of respondents, senior executives at each insurance company strongly support the implementation of information systems to lower costs associated with running their businesses. A mean of 3.936 (std. dv = 0.708) showing that a randomly chosen employee from the sampled insurance business would concur with the same assertion supports this. In a similar vein, 65% of participants concurred that IT management services facilitate the effective and efficient management of systems between business units (mean = 3.928; standard deviation dv = 0.925). Furthermore, 59% of respondents (mean of 3.842; standard deviation dv = 0.821) stated that their organization had adopted technology as a means of conducting business in order to boost efficiency. This result supports the observation made by Molloy and Ronnie (2020) that innovation plays a significant role in the insurance industry's performance today.

The respondents concurred that they receive regular offers of technological training. The mean of 3.838 (std. dv = 0.809) supports this. These outcomes are consistent with the research conducted by Barbosa and Musetti (2019), who demonstrated that the organizational profile variables influenced the implementation levels of logistics information systems (LIS) and are determined by the anticipated performance level. Furthermore, Stephen et al. (2019) came to the conclusion that the relationship between information technology adoption and performance is influenced by user perception. According to Nyanchama et al. (2018), the variable of employee performance is primarily impacted by the variances that are obvious in organizational culture, human resource practices, nature of work, and business strategy.

Resource Availability Aspects and Performance of Insurance Firms

The study's fourth particular goal was to evaluate how resource availability factors affected insurance companies' performance. The respondents were asked to rate their agreement with a number of statements about the performance of insurance companies and the availability of resources. The study employed a 5-point Likert scale, wherein 1 denoted severely disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. The outcomes were shown in Table 4.

Table 4: Resource Availability Aspects and Performance of Insurance Firms

	Agree (%)	Neutral (%)	Disagree (%)	Mean	Std. Dev.
Financial Resources are prioritized for technology implementation leading to new products and services.	71	14	15	4.168	0.905
Our firm has invested in technology training and awareness thus increasing efficiency.	68	13	19	3.959	0.885
The use of technology resources to handle customers/suppliers information is what makes us competitive.	67	17	16	3.920	0.605
Our insurance company has put a lot more of a focus on R&D and technologies to boost sales.	60	19	21	3.897	0.786

According to the findings, the majority of respondents generally agreed with all of the comments made about the resources available among the sampled insurance firms. The majority of respondents (71%), who concurred that funding should be given priority when implementing innovative technologies that result in new goods and services, were particularly noteworthy. A mean of 4.168 (std. dv = 0.905) supports this. Comparably more respondents (68%) concurred that their insurance companies have made investments in technological awareness and training, which has increased productivity (mean = 3.959; standard deviation = 0.885). Furthermore, 67% of respondents concurred that our ability to manage supplier and customer information through technology is what sets us apart from the competition. A mean of 3.920 (std. dv = 0.605) illustrates this.

A mean of 3.897 (std. dv = 0.786) indicates that 60% of respondents believed that their insurance provider had increased its attention on R&D and technology in order to increase sales. These findings are consistent with those of Kaigorodova et al. (2018), who found that a firm's ability to acquire and use resources impacts how far it can advance. This is essentially because resources determine how much can be produced by an entity. In this sense, resources are the essential elements that determine how entities operate.

Performance of Insurance Firms

The study looked at several areas of the performance of the insurance firms based on the respondents' considered opinions before assessing the impact of information technology on the firms' performance. The respondents were asked to rate their agreement with several claims made about the effectiveness of insurance companies. The study employed a 5-point Likert scale, wherein 1 denoted severely disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. The outcomes were shown in Table 5.

Table 5: Performance of Insurance Firms

	Agree (%)	Neutral (%)	Disagree (%)	Mean	Std. Dev.
Our insurance firm have become more efficient in dealing with customer/suppliers due to technology.	69	18	13	4.084	0.997
Compared to the industry's top rivals, our company's market share grew due to use of information systems.	62	20	18	3.958	0.831
In our business, there has been an increase in the introduction of brand-new, cutting-edge technological goods and services.	60	19	21	3.931	0.851
There has been reduction in cost of operation following technology adoption.	58	21	21	3.879	0.912

According to the findings, the vast majority of respondents agreed with every statement made about the performance of the insurance companies that were sampled. According to 69% of respondents, technology has made their insurance company more effective in how it interacts with clients and suppliers. A mean of 4.084 (std. dv = 0.997) supports this. Furthermore, a mean score of 3.958 (std. dv = 0.831) indicates that respondents believed that the company's usage of information systems increased its market share relative to its top competitors in the industry. The respondents also concurred that their company's market share increased in comparison to its top competitors in the industry. The participants concurred that there has been a rise in the launch of novel, state-of-the-art technology products and services. A mean of 3.931 (std. dv = 0.851) illustrates this.

Based on the findings, the participants concurred that the implementation of technology had led to a decrease in operating expenses. A mean of 3.879 (std. dv = 0.912) corroborates this. The results corroborate those of a related study conducted in 2021 by Kiptoo, Kariuki, and Ocharo, which reported a notable improvement in the performance of insurance companies in Kenya. They observed that the improved performance of the companies can be attributed to wise operational management practices. Among the tactics were creative thinking, lower operating expenses, and prudent handling of the companies' cash.

Inferential Statistics

The study employed correlation and regression analyses to establish any possible relationships between each of the four aspects (technological factors, environmental factors, organizational factors and Resource Factors) of information systems and performance of the insurance firms. Regression analysis was used to ascertain the degree to which the four independent variables jointly predict the performance of the insurance firms as well as the individual contributions (the coefficients) of the four variables to the firms' performance. Correlation analysis was used to ascertain the strength of the relationship between the individual independent variables and the firms' performance.

Correlation Analysis

The performance of insurance companies in Nairobi was the dependent variable in this study, and the degree of connection between the independent variables (technological, environmental,

organizational, and resource factors) and the dependent variable was assessed using Pearson correlation analysis as shown in Table 6.

Table 6: **Correlation Coefficients**

		Firm Performance
Technological Factors	Pearson Correlation	.840**
	Sig. (2-tailed)	.002
	N	211
Environmental Factors	Pearson Correlation	.856**
	Sig. (2-tailed)	.001
	N	211
Organizational Factors	Pearson Correlation	.851**
	Sig. (2-tailed)	.002
	N	211
Resource Factors	Pearson Correlation	.859**
	Sig. (2-tailed)	.000
	N	211

Results from Table 6 show that, with all four of the firms' information system components having Pearson correlation coefficients above 0.80, there was a positive and substantial association between the firms' performance and their information systems. Taylor (2018) attests to the relationship's strength. According to him, a correlation value of 0.80 to 1.00 indicates a very strong association, whilst those of 0.60 to 0.79, 0.40 to 0.59, and 0.20 to 0.39 suggest strong, moderate, and weak relationships, respectively.

It was shown that the performance of insurance companies in Nairobi was most strongly correlated with resource factors (r = 0.859, p value = 0.000). The strength and important role that the availability of financial, human, and technological resources plays in cultivating a functioning information system for superior performance of an insurance firm's performance is indicated by both the correlation coefficient (0.859) and the P-value (0.000). The study is more than 95% confident ($p<0.05$) that the resource availability component of IS has an impact on the performance of insurance firms, as indicated by the P-value of 0.000. As a result, the firm's performance will probably grow by 0.859 units for every unit invested in resource improvement. According to Gupta et al. (2020), the availability of excellent organizational resources is the primary factor that drives sustainable organizational performance. These findings corroborate their findings. Technological, financial, and human resources logically drive the mobilization of other forces of production to improve the performance of the company (Gupta et al., 2020).

The impact of environmental factors on the performance of insurance enterprises was found to be more significant than that of resource factors, with a P-value of 0.001 and a Pearson correlation coefficient of 0.856. This is a positive and significant relationship that suggests that, as Njuguna and Waithaka (2020) also noted with reference to Porter's Five Forces Model, factors like pressure from the firms' competitors, the size of the insurance industry, and the bargaining power of stakeholders like suppliers and customers are important determinants of the firms' performance.

The performance of insurance companies in Nairobi also showed a strong link with organizational factors (r = 0.851, p value = 0.002). Because the p value of 0.002 was less than 0.05 (the significant level), the connection was considered significant. The outcomes validate

the findings of Barbosa and Musetti (2019), who discovered a strong relationship between organizational traits and business performance.

Additionally, the findings showed that the performance of insurance companies in Nairobi and technical advancements have a positive link (r = 0.840, p value = 0.002). Given that the p value 0.002 was below the significance level of 0.05, the connection was considered significant. The outcomes agree with those of Oberoi and Kansra (2022), who discovered a strong link between technical components and an organization's ability to succeed.

Regression Analysis

The preceding section of this analysis emphasized the use of multivariate regression analysis to evaluate the degree to which the dependent variable (the performance of insurance firms in Nairobi) is predicted by the four independent variables (technological factors, environmental factors, organizational factors, and resource factors). This was demonstrated by the model summary (Table 7) and analysis of variance (Table 8).

Table 7: **Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925	.848	.849	.10120

a. Predictors: (Constant), technological factors, environmental factors, organizational factors and resource factors

The model summary table indicates the extent to which the four independent variables jointly predict performance of the sampled insurance firms. However, it does not show whether such prediction has statistical significance and the possible suitability of the model (model fit) for the data. Therefore, results in Table 7 indicate that any variation in performance of the insurance firms is 84.8% attributable to the joint interactions of the firms' technological, environmental, organizational, and resource factors. The percentage influence of the four factors is drawn from the squared value of the correlation coefficient (0.848 = 84.8%).

It was crucial to then determine if the model prediction suited the data and was statistically significant. Analysis of variance (ANOVA) with a 95% confidence level was used for this. Table 8 presents the findings.

Table 8: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.027	4	3.018	75.45	.000[b]
	Residual	6.568	166	.040		
	Total	**18.595**	**170**			

a. Dependent variable: performance of insurance firms
b. Predictors: (Constant), technological factors, environmental factors, organizational factors and Resource Factors

Table 8 results indicate that the model fits the data reasonably well and that its prediction is statistically significant. The larger value of F computed (75.45) compared to the F crucial of 2.426 and the P-value of 0.000 both corroborate this. The aforementioned view aligns with Greenland's (2019) focus on the P value as a reliable standard for selecting a regression model and doing an analysis of variance. Consequently, the model shown in Table 8 is a trustworthy resource for forecasting insurance company performance based on the four predictors: resource factors, organizational factors, environmental factors, and technological variables.

The final step in the regression analysis involved determination of the individual contributions of each of the four independent variables to the performance of the sampled insurance firms. This was accomplished through computation of the variables' beta coefficients as presented in Table 9.

Table 9: **Regression Coefficients**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.341	0.089		3.831	0.000
Technological Factors	0.369	0.099	0.368	3.727	0.002
Environmental Factors	0.387	0.095	0.386	3.949	0.000
Organizational Factors	0.381	0.096	0.382	3.969	0.001
Resource Factors	0.398	0.102	0.399	3.716	0.002

a Dependent Variable: Performance of Insurance Firms

Based on the findings, the resource aspects of the information system (Resource factors) stands out as the factor with the greatest contributor (β=0.398, p value= 0.002) to the overall performance of the insurance firms. This result supports those of the correlation analysis in which the same variable yielded the highest Pearson correlation coefficient. A prior finding by Paruchuri (2020) also confirms the significant influence of institutional resources to the overall organizational performance.

The variables that had a significant impact on the performance of insurance enterprises were environmental factors (β = 0.387, p value = 0.000). The p-value of 0.000 was below than the 0.05 criterion, indicating that the association was deemed significant (Menyhart, Weltz & Győrffy, 2021). The results support Huy's (2020) findings, which show a robust correlation between environmental parameters and firm performance. The study established that effective competition strategies influences firm performance in a positive way.

Organizational factors accounted for the third largest portion of the insurance firms' overall performance (β =0.381, p value = 0.001). Given that the p value of 0.001 was lower than the significant level of 0.05, this likewise comes into the category of statistically significant connections. The outcomes support the findings of Barbosa and Musetti (2019), who discovered a strong relationship between organizational traits and corporate success.

The performance of insurance enterprises was significantly impacted by technological factors (β1=0.369, p value = 0.002). Because the p value of 0.002 was lower than the significance level of 0.05, the connection was deemed significant. The outcomes corroborate the findings of Oberoi and Kansra (2022), who discovered that organizations that have adopted state-of-the-art technology solutions generally perform better than their peers who haven't quite attained the same technological milestone. In conclusion, the mathematical interpretation of table 4.12 takes the form of a linear regression model presented as;

$$Y = 0.341 + 0.369X_1 + 0.387X_2 + 0.381X_3 + 0.398X_4 + \varepsilon$$

Where Y is performance of insurance firms in Nairobi*;* X_1 is technological factors; X_2 is environmental factors; X_3 is organizational factors; and X_4 is characteristics of information systems. The implication is that each of the four aspects of information systems are statistically significant determinants of the firms' overall performance. However, characteristics of the information systems adopted by the insurance firms are the most influential determinants

(39.8%) of the firms' overall performance. This confirms an observation by Mikalef and Gupta (2021) that a system is as a good as its unique features.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Technological Factors and Performance of Insurance Firms

The study concludes that technical factors have a positive and significant impact on Nairobi County insurance businesses' performance. The study discovered that the performance of insurance companies in Nairobi County is influenced by information system compatibility, confidentiality, ease of use, and reliability.

Environmental Factors and Performance of Insurance Firms

Furthermore, the study comes to the conclusion that Nairobi County's environmental features significantly and favorably affect the performance of insurance companies. The study found that the performance of insurance companies in Nairobi County is influenced by competition, industry size, and pressure from suppliers and customers.

Organizational Factors and Performance of Insurance Firms

Additionally, the study concludes that organizational factors have a positive and significant impact on Nairobi County insurance companies' performance. The study discovered that supplier and consumer pressure, industry size, and competition all had an impact on Nairobi County's insurance companies' performance.

Resource Availability Aspects and Performance of Insurance Firms

The study also reveals that factors associated with resource availability have a favorable and significant impact on the performance of insurance companies in Nairobi County. The study discovered that the financial, human, and technological resources of insurance companies in Nairobi County have an impact on their success.

Recommendations

Based on the findings this study gives the following recommendation;

The management of insurance firms in Kenya should ensure that they have the necessary technological infrastructure to support their operations. This includes robust hardware, software systems, and network capabilities to handle the demands of a modern insurance business. The infrastructure needs to be reliable, easy to use, compatible as well as inspire confidence to users.

In addition, the management should continuously conduct market research to stay updated on industry trends, competitors threats, customers/suppliers preferences, and emerging opportunities. This information will guide in making strategic decisions and help the organization remain responsive to changing market trends.

Further, the management should foster a culture of open communication between top management and employees. They need to ensure regular employees trainings that allow employees to upgrade their skills. They should also develop a clear vision and strategy that is communicated and supported by the top management.

The study also recommends that the management should allocate financial resources strategically, focusing on areas that directly contribute to business growth, such as marketing,

technology upgrades, and talent acquisition. In addition, the management should ensure efficient use of financial, human and technology resources by closely monitoring expenses, avoiding unnecessary costs, and seeking opportunities for cost-saving measures.

Suggestions for Further Studies

The aim of this research was to examine the impact of information systems on the performance of the insurance sector in Nairobi County. The study was limited to the insurance industry in Nairobi County, thus its findings cannot be generalized to the performance of firms in other places. Consequently, the report suggests conducting additional research on the impact of information systems on business performance across various regions in Kenya.

Moreover, the research revealed that the performance of insurance companies in Nairobi County could only be explained by 84.8% of the independent variables (technological, environmental, organizational, and resource factors). Thus, research on additional variables influencing the performance of insurance companies in Nairobi County is recommended by this study.

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