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ROLE OF INFORMATION TECHNOLOGY ON PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

SMEs are important in creating employment opportunities and adding to the GDP in most of the countries across the globe. However, the merit on SMEs is still limited because many of these SMEs have been performing poorly with many of them incurring losses and the high closure rate with over 60% of them failing within 3 years of inception. On the other hand, all the research done across the globe has indicated that information technology plays a crucial part in how well businesses succeed more so in the 21st century through sharing of information, innovation, integration of business processes and better business processes. However, it is evident that the actual usage of IT in SMEs is lacking and far below the desired level, especially in the developing countries like Kenya. As much as there is awareness of IT among the SMEs in Kenya, it is sad that none or very few of the SMEs have implemented it as a tool in their operations. Therefore, the purpose of this study was to determine how IT affected the performance of SMEs in Kenya. To accomplish this primary goal, the following particular goals were created: how Kenyan SMEs' performance is affected by IT costs, how IT training affects their performance. When it comes to the selection of participants, the study employed the descriptive survey sampling technique. The target demographic consists of the 98,598 registered SMEs in Nairobi County. The sampling method involved the use of the sampling formula which yielded a sample of 398 SMEs which were administered questionnaires that were self-completed by the managers/owners or their representatives. In data collection, the study used structured questionnaires that were distributed using the drop-and-pick technique. In this study, mixed method analysis was used where analysis of quantitative data was conducted with the use the SPSS program and is displayed in frequency tables, bar graphs, and pie charts as standard deviation, mean, frequencies, and percentages. The qualitative data on the other hand was sorted out through content analysis. In the analysis, the explanations were provided to supplement the quantitative data. The results from the research therefore showed that the influence of the IT cost was positive and had a significant relationship with SME performance. The research also revealed that the IT training variable bore a positive and significant relationship with the performance of the SMEs. The results showed that poor management of information technology was one of the causes that led to poor performance of the SMEs in Kenya. Therefore, from the research conclusions and recommendations the management of the SMEs should encourage IT training, IT investment, for the enhancement of their competitiveness and efficiency.

Key Words: Information Technology, Performance, Small and Medium Enterprises, IT costs, IT training

Background of the Study

The transformative power of Information Technology (IT) has become a cornerstone for enhancing organizational performance. IT systems allow businesses to enhance decision-making and streamline processes (Ganbold et al., 2021). According to Chege & Wang (2020), adoption of IT also helps in improving efficiency and reducing operational costs. In SMEs, IT enables the managers to respond swiftly to market demands while maintaining competitive advantage by facilitating data-driven strategies and enhancing customer experiences (Brandy, 2023). Therefore, the effective deployment and utilization of IT supports routine functions and drives strategic goals. As a result, it helps in achieving both short and long-term performance goals (Ganbold et al., 2021). As the business environment continues to evolve in the twenty-first century, it will be of vital significance for the SMEs to integrate IT for the creation of a supply chain of products and for the formation of international network.

IT has become a vital tool in the global market as the importance of its role cannot be underemphasized. Across the world, IT has taken its place as an indispensable catalyst for development, change and advancement (Nguyen et al., 2020). In different countries, IT has transformed businesses by improving communication, adopting complex procedures, and providing connectivity like never before (Sigov et al., 2022). In developed countries, IT is a lever of growth enabling firms to trade, tap markets, manage supply chains, and integrate with partners in different geographic locations (Kallal et al., 2021). In the global developing world, IT becomes a tool for development and a means of closing the digital divide, enabling online and e-learning delivery of education, enhancing health care solutions among others (Chege & Wang, 2020). As explained by Chohan and Hu (2022), at the global level, governments have identified IT as crucial in the contemporary realm of functioning, where they dedicate ample capital toward strengthening digital infrastructure with the aim of raising service delivery quality, implementing robust measures against cyber incidents, as well as fostering digital access for all citizens. This global emphasis shows the importance of IT in creating today's societies and solving contemporary problems.

On a global scale, the impacts of IT go beyond the economic aspect to include quality life, organizational effectiveness, as well as societal welfare (Alhassan & Adam, 2021). IT gives individuals and organizations means and ways by which they can absorb timely information, which promotes decision-making that is flexible and innovative (Groenewald et al., 2024). Companies use IT to support such goals as customer intimacy, process reengineering, and reduced costs. In terms of social impact, people have benefited from better education through the use of IT and have shifted the dynamics of the healthcare industry through better diagnosis, treatment, and prognosis of diseases (Li & Carayon, 2021). Also, IT promotes the environmental sustainability, pushing green technologies, smart cities, energy and other structures on the worldwide level (Ahad et al., 2020). Information technology being adopted across all industries makes it an essential component for advancement in the society in the twenty first century.

IT is established as a key enabler of change and development in the African continent and as a response to historical disadvantageous circumstances (Van Zanden, 2023). Through the implementation of ICT, the rural and urban areas are bridging the gaps needed for economic convergence and opportunity for everyone (Nchake & Shuaibu, 2022). The use of mobile devices has benefited millions of people in terms of financial, healthcare and education services. Hassan (2020) revealed that mega regional integration schemes like the African Continental Free Trade Area (AfCFTA) particularly depend on information technology to boost trade, digital payments, and cross-border B2C e-commerce among member countries. In addition, Atiase et al. (2020) point out that IT contributes to the enhancing technological enterprise in Africa, with technology incubation hubs and start-ups seen in Nigeria, South Africa, and Kenya.

The effective application of IT has had a positive effect across the various fields influencing the future development of Africa. In agriculture, Information Technology (IT) solutions such as precision farming, digital weather forecasting, and e-extension services enable farmers to produce more considering the effects of climate change (Nchake & Shuaibu, 2022). In the context of health care, Telemedicine and mHealth platforms deal with issues of accessibility to services by providing services to areas that are hard to reach (Ayo-Farai et al., 2023). Achieng and Malatji (2022) have also noted that IT is also transforming SMEs because there are applications that can offer services to millions of people irrespective of their location and financial status. Expanded access to technology based financial services has an effect on living standards by providing people and firms entry to the formal economy. Altogether, these developments exemplify how IT is not merely an instrument of modernization but also a requirement for Africa's capacity to attain sustainable development goals.

In Kenya today, IT has become an essential component of development and innovation within the country. Owing to the technological advancement in digital payment services, the country has earned its reputation as a regional hub for technological industries (Aurazo & Gasmi, 2024). It can therefore be seen that it is central to Kenya's Vision 2030 strategy as it supports focus areas such as education, health, and industrialization (Meru & Kinoti, 2022). The advancement in mobile technology in the country has helped in enhancing both the urban and rural populace since they access services like banking, buying and selling, and governance through the eCitizen (Chege et al., 2019). Thus, Kenyan IT-enabled economy not only generates employment opportunity, but also promotes entrepreneurship and facilitates FDI (Aurazo & Gasmi, 2024). That has placed the nation as one of the most promising in the drive for digital transformation in East Africa.

There is also evidence on the impact of information technology in Kenya across various sectors as it enhances the quality of the lives of its people. Mobile Money platforms such as M-Pesa has caused a paradigm shift in undertaking financial transactions a key financial resources relief to SMEs (Tengeh & Gahapa, 2020). Also, IT is playing a important part in supporting the environment by offering smart farming and renewable energy and optimizing resource usage. According to Chege et al. (2019), firms with high IT alignment realized better performance compared to firms with low IT alignment in the Kenyan context. Hence, adoption of IT is beneficial in enhancing the efficiency of companies across the globe, suggesting that it is high time to determine how IT affects Nairobi SMEs.

Statement of the Problem

In most countries, SMEs have a great role in economic growth and development. In Kenya, almost 30% of the employment generated each year come from SMEs while the same sector contributes to almost 40% of the nation's annual GDP (Wakiaga, 2019). In addition, SMEs account for 90% of the nation's workforce and 98% of all enterprises in the nation. Nevertheless, in spite of the merits associated with these enterprises, they have been performing below the mark with more than 46.3% of the SMEs closing down their doors within their first five years of conception (KIPPRA, 2023). According to CBK (2021), over 20% of small businesses in Kenya closed down while others recorded losses and drop in their profit margin throughout the COVID-19 outbreak. That showed that the most important sector in the country's economy was at high risk than ever. Inadequate finances, technical knowledge, lack of entrepreneurial mindset and competition have been identified as the main causes of underperformance among SMEs in Kenya (Oketch & Okeyo, 2024; Kiiru et al., 2023).

The impact of IT on SMEs' performance has been explored by several studies. Zahra et al. (2019) examined how information technology affected SMEs' performance in Pakistan. Based on the results, information technology causes a rise in organizational performance. Additionally, Chege et al. (2019) investigated how IT might increase the performance of

Kenyan SMEs and discovered that firms that adopt technology advances improve on their performances. Igwe et al. (2020) examined the technology adoption and performance of manufacturing SMEs in Nigeria. The research conclusions demonstrated that IT benefits SMEs in enhancing performance.

Few attempts have been made to understand the connection between SMEs' performance and IT. Moreover, there has been a minimal discussion on how IT affects SMEs' performance in Kenya and generally, Nairobi. However, there is no prior research that has examined the impact of IT in relation to SMEs' performance in Nairobi County. Perhaps some of the factors hindering the better performance of SMEs in Nairobi County may be attributed to IT costs, absence of IT training, and IT cost. Thus, the research sought to evaluate how IT affects Kenya's SMEs' performance.

Objectives of the Study

General Objective

The general objective of this study was to examine the role of information technology on performance of small and medium enterprises in Nairobi City County, Kenya.

The research objectives of this study were as follows:

1. To evaluate the impact of IT cost on SMEs performance in Kenya.
2. To determine the extent to which IT training impact performance of SMEs in Kenya.

LITERATURE REVIEW

Theoretical Review

Transaction Cost Theory

Transaction Cost Theory focuses on the cost of transacting in the market (Cuypers et al., 2021). According to the theory of transaction costs, Ketokivi & Mahoney (2020) note that firms confront a set of boundaries where firms choose the governance structure best suited to minimize the costs of fulfilling business activities. Additionally, two behavioral assumptions form the foundation of the theory. The assumptions include opportunism and bounded rationality. Hasanah (2024) also shows that asset specificity, task frequency and internal and external uncertainty affects the selection of the governance framework and the transaction expenses.

Schmidt and Wagner (2019) state that firms use the market when operating in a certain international market has minimal transaction costs. In other words, when the firm adopts the transaction cost perspective, the entry mode that requires the lowest amount of resource commitment is the preferred mode of entry, such as exporting. Hennart (2022) adds that when the demand for control is greater, businesses must use an entrance strategy that requires a greater investment of resources, such as opening a subsidiary overseas when the transaction costs of doing business there are higher. Thus, by utilizing the transaction cost theory, it is possible to analyze the interaction between firms providing a service and the customer process, taking into account both advantages and disadvantages for the firm (David et al., 2022).

The transaction cost theory gives a perspective of IT's essential role in reducing the transaction cost in a business because the company's main goal is to realize gains that are way beyond the cost incurred in a particular process. The theory also explains the need to invest in IT through training, acquiring IT resources as well as making it the order of the day in the firm’s daily operations. This, therefore, affirmed the verdict by the study to adopt the transaction cost theory to instigate the first aim which was intended to study the influence of IT cost on SMEs' performance in Kenya.

Concerns-Based Adoption Model (CBAM)

CBAM was first established at the Research and Development Center for Teacher Education in Austin, Texas, in the 1970s (Rogers, 2021). The theory was built on the works of the research done by Fuller in 1969 that focused on the stages of concern that teachers go through with regards to their professional growth and competencies (Magallanes et al., 2022).

The CBAM model has been used much more often in recent years to study computer use in schools (Pamuk, 2022). Instead of focusing on the availability of new technologies, the goal was to address issues like the efficacy of directed technological interventions. When implementing new technologies, it is important to consider the particular concerns of the teachers who are being instructed and obliged to make the appropriate adjustments. The CBAM model states that change is experienced by people who endeavor to change behaviors in some manner (Olson et al., 2020). Therefore, instead of looking at change in the proportion of passing rates or any other late outcomes that could stem from a technological intervention, it targets the people important in technology adoption. Concerning other assumptions of the CBAM model, change is perceived to be a process that is initiated by people and it is a personal process. As defined by Luitel et al. (2020), emotional and social development define progressive change in feelings and skills through the support of the interventions that can be targeted at the people, inventions, and settings.

There are two main aspects of CBAM. As pointed out by Al Masarweh (2019), the first Stages of Concern (SoC) refers to the concern-related feelings in relation to innovation. The second one is the Levels of Use (LoU) of the subject that describes the acts of the people during their engagement with the change process.

The CBAM model postulates that there is a series of well-defined stages of concern through which adopters of innovations go over time (Shin & Park, 2023). Initially, adopters progress to the stage where they experience self-centered issues represented by the stages of awareness, information, and personalization and then progress to the next stage of possessing task-concerns, which focus on the efficient implementation and utilization of the innovation, then to the highest level of concern where the adopters focus on the consequences of the innovation to students and the ways of possibly collaborating with other teachers to address challenges of implementing and even customizing the innovation. Moreover, the CBAM theory highlights the need to add new knowledge on the use of new systems and passing this knowledge to everyone in the organization thus promoting its effectiveness. This explains the resolution by the researcher to adopt the theory to give more significance to the second aim of the research, which was to examine how IT training impacted Kenyan SMEs' performance.

Conceptual Framework

According to Casula et al. (2021), a conceptual framework is a theoretical model of the concepts being investigated and the connections between them. A conceptual framework is meant to give a direction to the research by which the connection between the study variables is stipulated. Through the conceptual framework, answering of the research questions is made easier and a researcher can easily explain which phenomenon causes a change to the other (Van der Waldt, 2020). Figure 2.1 below illustrates the diagrammatic representation of this research's conceptual framework.

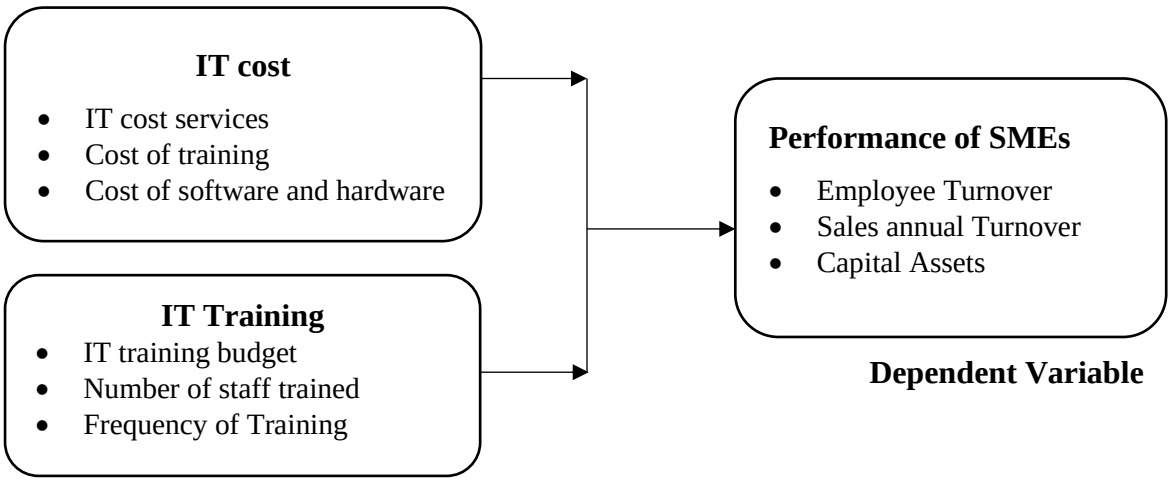

Figure 2. 1: Conceptual Framework

IT cost

Cost is an aspect that stands out in every motive of the organization's decisions making. The value required to be raised in terms of cash; time or any other valuable resources by the organization with an aim of making a difference in its performance cycle can be referred to as the cost of the said investment (Venkataraman & Pinto, 2023). According to Dixit et al. (2021), the cost of purchasing and maintaining ICT equipment determines the adoption of information technology. Since various businesses face different challenges, they employ a variety of approaches when implementing, investing in, and utilizing IT. For instance, some may concentrate on Customer Relationship Management (CRM) systems, others implement costly Enterprise Resources Planning (ERP) systems, and still others may have other specialties. However, a company should consider the efficacy and efficiency of the implemented IT systems regardless of the kind of systems used, as they have a substantial impact on the variation in the company's performance and productivity. Unfortunately, just a few studies, like Lin et al. (2020), have examined the connection between business performance and IT investment from the perspective of the efficacy and efficiency of IT investment. The direct correlation between IT investment and business performance, whether substantial or not, was explained by several studies that looked beyond the IT that the firms had invested in.

IT Training

There are many aspects that determine the usefulness of IT in an organization including the availability of IT inputs (hardware and software) as well as the organization management's motive to adopt the IT. However, one aspect that goes unnoticed despite its huge impact on the effectiveness of IT is the training on IT. When a business implements a new technology, the employees stand to be the main pillars to see the IT implemented and fully embraced in the organization's operations. On this note, therefore, ensuring that the employees and other stakeholders in an organization are trained on the use of the IT enhances the uptake of the IT in the organizational environment. Neirotti & Pesce (2019) found that the quick advancement of information technology and other technologies and its influence on the competitive landscape makes information and technology resource management become critical to the accomplishment of the strategic aims and goals by training the workers to be the drivers of the agenda of the operations of the firm.

Performance of SMEs

Some of the distinguishing features of SMEs include: personalized management regime with little decentralization of authority; extreme limitations as regards to management resources, manpower and funds; dependence on a few clients and restricted markets; organizations being comparatively flat, fluid and having an ad-hoc culture of operations. In analyzing the performance of the SMEs, SMEs are considered different both in structure and philosophy from large firms. The resource constraint which characterise the SMEs are a significance pointer to the importance of quality and time as keys towards maintaining low waste levels and high productivity performance. For SMEs to remain competitive, there is need to retain these small number of customers while developing the ability to adapt quickly to changes in the market.

Demeke and Tao (2020) notes that there are four broad categories of performance measurement in organizations. The goals strategy, stakeholder strategy, system resource strategy, and competitive value strategy are the four methods used to implement strategies. The system resource method examines an organization's ability to get its resources, whereas the goal approach concentrates on how an organization performs to reach its goals. The competitive value approach and the stakeholder approach evaluate an organization's performance with respect to outside parties, such as suppliers, rivals, and customers. Out of the four method, goal approach has been identified as the most popular one for its simplicity, easy to understand and is internally oriented. For the evaluation process, information is readily availed to the owner-managers. the goal method is helpful for SMEs when goals are being set from within by only concentrating on the interest of the owners- managers abilities to achieve and interests.

Empirical Review

IT cost

Hua et al. (2020) examined how the moderating effects of the operator type apply to the connection between IT expenses and performance of hotels. This research also built on previous research by developing an empirical model and using a proposed hypothesis incorporating heteroscedasticity and autocorrelation issues. The research findings also showed a noteworthy interaction impact exists between operational performance and IT expenditures with operator type acting as a suitable mediator. The findings indicated that franchised hotels used IT expenses more successfully than hotels that are individually owned. This research implies that IT cost effectiveness varies depending on the business model, indicating that franchised businesses might have better IT investment strategies that enhance their performance compared to independent businesses.

Hua et al. (2021) studied the link between IT expenditure growth rate and revenue risk performance in the context of the US hotel chain settings. The analysis employs primary data for 1,471 hotel properties using CBRE to get 10,297 observations from 2011 to 2017. Econometric tests confirmed that the connection between the rate of change in IT expenses and the performance was positive. The findings suggest that while rapid IT investments may enhance business performance, they can also introduce instability and financial uncertainty. This implies that businesses should carefully balance the pace of IT spending to maximize benefits while mitigating potential risks associated with rapid technological shifts.

IT Training

Nicolás-Agustín et al. (2024) aimed to investigate how employee ICT training affects organizational results, with the link being moderated by digital transformation. A questionnaire was sent to Chief Executives of 184 firms from Spain, and PLS was employed to evaluate the gathered data. The results showed that the connection between ICT training and digital transformation is partially mediated by organizational commitment and human capital. Further, research conducted demonstrated that ICT training has a beneficial association with the

company's performance. These findings imply that IT training enhances employees' skills and commitment, which in turn facilitates digital transformation, ultimately leading to improved organizational performance. Therefore, companies should invest more in ICT training to boost innovation and commitment among employees.

Soi et al. (2024) examined the association between information technology skills and the performance of Tea Producer companies in Kenya. This research used a survey that is cross-sectional in nature, and data was gathered from top managers comprising 121 leaders of 29 tea producer companies affiliated with the East Africa Tea Trade Association (EATTA). A self-administered questionnaire was used to collect data. In its analysis, the study determined that IT proficiency affects Tea producer companies' performance. Specifically, cross-training, fostering innovation, and providing employment opportunities were identified as key factors enhancing performance. The findings imply that IT training programs should to be put into action to provide workers with the necessary abilities, fostering innovation and improving overall firm performance.

Pratiwi (2019) investigated ICT impact on performance of SMEs in Indonesia. The data was obtained from 41 SMEs that had received ICT training and socialization in East Java. The findings indicated that ICT capital positively influenced process and product innovation, which subsequently led to improved firm performance. Additionally, ICT training acted as a vital part in fostering innovation. The implications of the study suggest that IT training enhances employees' ability to innovate, thereby improving overall business operations and competitiveness. SMEs should prioritize ICT training as a means of driving business growth and efficiency.

RESEARCH METHODOLOGY

Allibang (2020) defined research design as an outline that is employed to offer remedies to issues that are unique to the field of research. Descriptive survey research was used in the present research to evaluate the impact of IT on SMEs' performance in Nairobi, Kenya. The research used positivism research philosophy because the data collected were quantitative and accurate in nature and could therefore be easily compared and as a result generate credible evidence from the responses received from the administration of questionnaires (Park et al., 2020). The Ministry of Trade and Industrialization reports that 644 SMEs are involved in manufacturing, 69067 in trading, 2201 in agriculture,26686 in service industries. This brings the total to 98598 Nairobi County's SMEs. Thus, 98598 SMEs in Nairobi County participated in the survey. The main emphasis was Nairobi County because of the rural and urban influence that are found in this area, and the fact that it hosts numerous SMEs across various fields. The county also had many SMEs and many others are upcoming.

Table 1: Target Population

Category	Population	Percentage
Manufacturing	644	1%
Trade	69,067	70%
Agricultural	2,201	2%
Services	26,686	27%
Total	**98,598**	**100%**

The research applied stratified sampling. The sample was selected proportionately from various cadres of SMEs from each category. In proportionate sampling, each stratum's size sampled was in proportion to the population size. The sample fraction was the same for every stratum. Following the calculation of the sample size of each category proportionately, the research employed random sampling design in sampling the participants.

To obtain a sample size that is representative, Slovin's Formula was used as shown as below (Anugraheni et al., 2023). Therefore, the size of the sample was 384 SMEs. Table 2 shows the sample size from each category of the SMEs.

Table 2: Sample Size

Category	Population	Sample Size
Manufacturing	644	3
Trade	69,067	269
Agricultural	2,201	9
Services	26686	104
Total	**98598**	**384**

According to Karunarathna et al. (2024), an ideal instrument produces relevant, accurate, neutral, subtle and efficient measures. A semi-structured questionnaire was employed to collect data. It included both closed-ended and open-ended inquiries. Aung et al. (2021) define a semi-structured questionnaire as a type of technique where questions are prepared before the study is conducted. According to Aithal and Aithal (2020), questionnaires are tools that can help in gathering crucial information about a population of interest.

The quantitative studies conducted were completed and keyed into SPSS where the descriptive statistics analysis was performed. Multiple regressions and ANOVA analysis were utilized for inferential statistics to ascertain whether the set of characteristics suggested collectively predict or impact the performance of SMEs in Nairobi County, Kenya. The analysis was done using SPSS Version 20 software. The research employed a multivariate regression analysis. This research found regression method useful due to its potential to confirm the way in which the independent and dependent variables are connected.

RESEARCH FINDINGS AND DISCUSSION

Among the questionnaires administered, only 331 were properly finished and sent back out of the 384 questionnaires. This indicates that 86.2% of respondents participated in the research. Wu et al. (2022) state that 50% is a sufficient response rate and anything higher than 70% should be acceptable. In light of this argument, it is appropriate to say that the responses were sufficient for analysis and were acceptable.

Descriptive Analysis of the Study Variables

The research intended to establish whether information technology had an impact on the performance of SMEs in Nairobi County, Kenya. To facilitate this, the independent variables that served as the research guidelines were operationalized from the research objectives. The parameters used include;, IT Training, IT cost. The results are thus presented systematically in relation to these independent variables.

IT cost

Information Technology (IT) is important in promoting organizational performance in the contemporary business setting. The cost of acquiring and installing IT is, therefore, an aspect that cannot be overlooked when it comes to execution and adoption of IT in the business operations. On this basis, the IT cost constituted the first aim of the study that intended to ascertaining the effect of the IT cost on SMEs performance in Nairobi County. The respondents, views based on the specific questions as per the measures of the variable were sought. The measures adopted for the variable included; costs of IT services, training expenses, as well as hardware and software costs.

Extent to which IT Cost affect IT adoption in SMEs

Opinions provided by the respondents on the level at which IT cost influenced IT adoption in the respective SMEs were sought. In light of the results shown in table 3, 38% of the participants were of the view that IT cost services had extensively impacted the adoption of IT while 29% replied moderate and the remaining 6% were uncertain. The mean was at 1.39 and standard deviation at 0.94. On the cost of training, 46% of those surveyed agreed that it affected IT adoption to a high extent, 32% showed a moderate extent, and 11% indicated that they were not sure whereas 3% and 8 percent chose low extent and no extent, respectively. The standard deviation was 0.93 and the mean was 1.26. When questioned about the general cost impact of software and hardware on IT adoption in the respective enterprises, 61% out of total respondents expressed the sense that it had high extent impact. 18% out of the total respondents said it was of moderate extent impact, and 8% had no idea of its extent of impact. 10% and 3% out of the total participants said that it was of low impact and no impact respectively. The data's standard deviation was 0.62 and its mean was 0.97. This was similar to Dixit et al. (2021) who found that the IT cost influences the IT adoption. Dixit et al. (2021) state that the expense of ICT equipment and maintaining ICT equipment are sometimes so high such that the firm management may feel insecure to invest a huge amount of fund to procuring them thus affecting the entire process of IT adoption.

Table 3: Extent IT Costs Affect IT Adoption

Description	High extent	Moderate extent	Not sure	Low extent	No extent	Mean	Std. Dev.
IT cost services	38%	29%	6%	17%	10%	1.39	0.94
Cost of Training	46%	32%	11%	3%	8%	1.26	0.93
Cost of software & hardware	61%	18%	8%	10%	3%	0.97	0.62

Effectiveness of meeting IT Costs

The respondents' views on their ability to meet the IT costs in their respective enterprises were sought in the research. Additionally, responders were asked to rate the degree of effectiveness in the ability to meet its IT costs in their enterprises and the results are shown in Table 4.

Table 4: Effectiveness of Meeting IT Costs

Response	Frequency	Percent
Very effective	69	20.8%
Moderate effective	178	53.8%
Not Sure	4	1.3%
Less effective	56	16.9%
Not effective	24	7.2%
Total	**331**	**100%**

According to the findings, 69 (20.8%) of all respondents stated that their SMEs were very effective in meeting IT costs, 178 (53.8%) indicated moderate effectiveness, 56(16.9%) and 24(7.2%) of those surveyed said they were less effective and not effective in meeting IT cost in their enterprises respectively. According to Hua et al. (2021), the effectiveness of meeting IT input costs has a significant effect on the organization's performance and its operations. The study shows that rapid IT investment enhances business performance. This is to say that the more effective a firm is in meeting the IT costs the high the chances of reaping the best out of IT implementation.

IT Investment Cost in last 5 Years

The research aims at establishing the investment made by the SMEs into IT throughout the course of five years preceding the period of this research. The subjects were asked to fill in the total sum they spent on IT from 2020, to 2024. Table 5 displayed the results.

Table 5:IT Investment Cost In Last 5 Years

Year	2024	2023	2022	2021	2020
	Mean (Kshs)	Mean (Kshs)	Mean (Kshs)	Mean (Kshs)	Mean (Kshs)
IT Cost	200,907	183,046	202,411	160,100	214,005

The findings revealed that in the year 2020, the mean cost for the IT among the SMEs was Kenya Shillings 214,005, in the year 2021 the amount reduced to Kshs. 160,100, in the year 2022 the amount increased to Kshs. 202,411 which again dropped in the year 2023 to Kshs. 183,046 and increased to 200,907 in the year 2024. The trend in the IT cost shows that in some years, the SMEs invested much than other years whereby the costs would increase and fall in the next year only to rise in the following year. As indicated by Hua et al. (2021), rapid investment in IT improves business performance. Therefore, SMEs will invest as much in IT and after they observe the results of the previous investment. That helps in determining the amount they are to invest in other years.

Statements on IT Cost and Performance of SMEs

The responders were asked questions to understand what they knew of the impact of IT cost on SMEs performance. The response was assessed using a five-point Likert scale. The scale used ranged from not at all as represented by 1 to very important as represented by 5. The statistical results in terms of mean and standard deviations are presented in table 6.

Table 6: Statements on IT Cost and Performance of SMES

Statements	Mean	Std. Deviation
The high purchase price of IT equipment affects the performance of SMEs	3.95	0.534
Financial support influences IT adoption small and medium enterprises	4.43	0.711
Installation IT cost equipment affect the performance of SMEs	4.01	0.687
Maintenance fee of IT equipment affect the performance of SMEs	3.95	0.534

According to the results, most respondents gave the responses that financial support influences IT adoption SMEs and installation IT cost equipment affect the performance of SMEs as important with 4.43 and 4.01 mean scores, respectively. The participants moderately agreed that "High purchase price of IT equipment impact the performance of SMEs; and maintenance fee of IT equipment impact the performance of SMEs" with the mean response score of 3.95 for both statements. Thus, the survey discovered that the majority of participants concurred with the idea that the IT cost influences SMEs performance in Nairobi County. The results align with those of Hua et al. (2020) and Hua et al. (2021) where the authors proved that IT cost drives business success. The more a company invests in IT, the higher the chances of success.

Inferential Analysis on IT cost

Inferential analysis of the model was conducted to realize an enhanced understanding of the direction, strength and the existence of the connection between IT cost and SMEs performance in Nairobi County. This was accomplished utilizing the ANOVA and regression coefficients, as demonstrated in the analyses. This applied the model of the variable, $Y = \beta 0 + \beta 1X1 + \varepsilon$. As evident in table 7, the findings on model summary indicate the model provided an R-value of

0.774 and the R square of 0.599. This demonstrated the SMEs performance in Nairobi County is significantly correlated with their IT costs.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.774[a]	.599	.598	.93693

The outcomes of the ANOVA test are displayed in Table 8. Based on the findings shown in the results section, the model possesses a P-value of 0.000, which is below the 0.05 P-value. The results indicated the model is significant.

Table 8: Anova (IT Cost)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	431.540	1	431.540	491.591	.000[b]
	Residual	288.811	329	.878		
	Total	720.350	330			

The regression coefficients are shown in Table 8. Now, the updated model turns into, $Y = 0.808 + 0.777X_1 + 0$. The coefficients depIT that a unit increase in the IT cost can influence up to 77.7% change in SMEs' performance. In the probability test, the P-value is 0.000, indicating a substantial correlation between IT cost and SMEs performance.

Table 9:Regression Coefficients (IT Cost)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.808	.130		6.191	.000
	IT cost	.777	.035	.774	22.172	.000

IT Training

To enhance the usability and effectiveness of IT, employee training and other stakeholders on the utilization of IT is essential among the SMEs. Through training, the parties get more competent on the utilization of the technology in the businesses activities thus reaping the best out of the same. IT Training was the second study goal. The goal was to determine the connection between IT training and performance of SMEs in Nairobi County. The results of IT training were based on the budget committed on training and number of people trained in utilization of IT.

Frequency of IT training

To achieve the objective, the respondents were asked how often was IT training conducted in the enterprise. The respondents were further given a set of choices that looked at how often they had provided the training with choices being weekly, monthly, bi-annually and annually. The findings are as presented in figure 1 below.

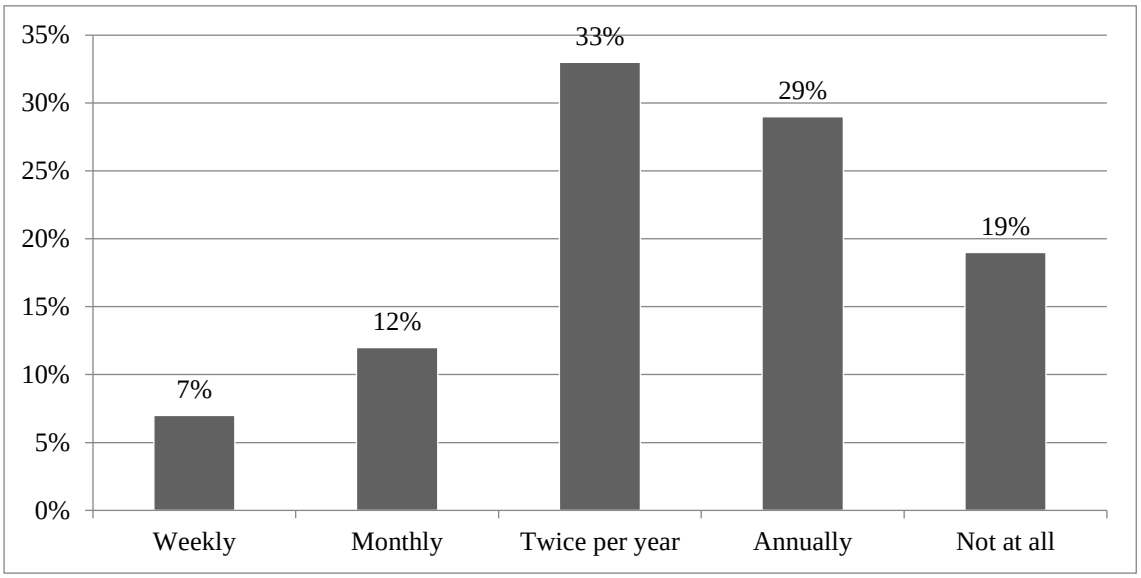

Figure 1: Frequency of IT training

The findings depict that 7% of the respondents trained on IT weekly, 12% trained monthly, 33% trained twice per week, 29% indicated that they trained annually whereas 19% of the total participants said they didn't receive any training at all. The findings imply that as much as IT training is done by the SMEs, there is still a lot to be done to enhance IT training among the SMEs where 19% of the respondents did not train at all. The outcomes are comparable with those by Nicolás-Agustín et al. (2024) who noted that SMEs that reaped the best out of IT focused on training among the SMEs because it improved commitment and employee skills.

Adequacy of IT training Budget

The respondents' views on the adequacy of the budget that they allocate for IT training programs were sought. Participants were asked to state the level of adequacy they thought the budget was as per the 5 levels offered. The results are as shown in figure 2.

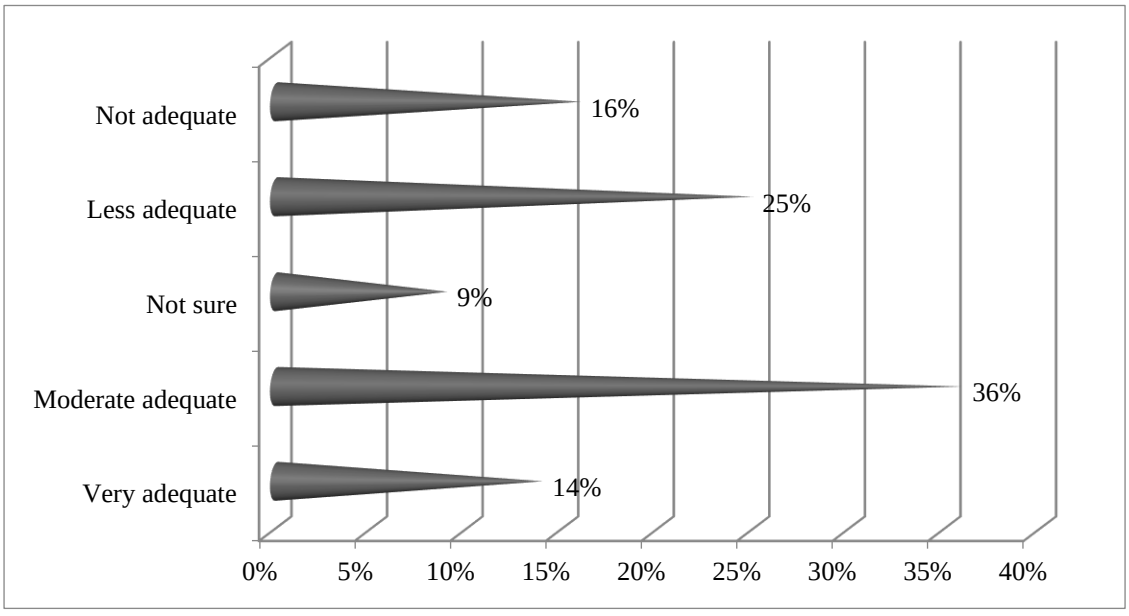

Figure 2: Adequacy of IT training Budget

The study showed that 16% of the participants stated inadequacy with the IT training budget while 25% of the total participants felt that the budget was less than adequate. 9% stated that they were not sure while 36% indicated moderated adequacy with the budget on IT training. Finally, 14% consider the budget to be very adequate. The findings imply that many SMEs did

not have an adequate budget for IT training which again poses a threat to the success of the training programs. Therefore, allocating enough budgets to IT training programs is the only way that the firm can have effective training programs.

IT Training and SMEs Performance

This study aimed at establishing the respondent's attitudes toward the association between IT training and SME performance. The respondents were given questions to complete which aimed to ascertain the level of influence that IT training had on SME performance in Nairobi County. The replies are shown in Table 10.

Table 10: IT Training Effect on SMEs Performance

Response	Frequency	Percent
Great Extent	228	68.9%
Moderate extent	84	25.4%
Little extent	11	3.3%
Very little extent	8	2.4%
Total	**331**	**100%**

The research established that most of those surveyed affirmed that training has a strong impact on performance of SMEs as shown by 228 (68.9%) responses. 84 (25.4%) said that it has a moderate impact on SMEs' performance while 11 (3.3%) and 8 (2.4%) said that training has little and very little influence on SMEs' performance respectively. The results are comparable to those by Soi et al. (2024) who found that one aspect of ensuring that businesses are ready for IT changes is through training of their employees on the use of IT because it improved their performance.

Level of Agreement on Statements on IT training and performance of SMEs

The participants were also asked how much they perceive that the training roles affect how well SMEs perform. A five-point Likert scale was employed in the response set. It varied from 1, which meant not at all, to 5, which represented very important. The results are presented in table 11 in terms of means and standard deviations.

Table 11:: Statements on Training Roles on Growth of SMEs

Statements	Mean	Std. Deviation
Provision of links with regard to Investors and customers	3.79	0.750
Provision of resource coordination skills	3.95	0.531
Business Plan development support services	4.03	0.700
Provision of strategic Management training	3.91	0.621

The responders' mean score was 4.03 sowing that they perceived business plan development as important in supporting services. However, most of those surveyed moderately concurred with the statements provision of resource coordination abilities, offering training in strategic management, and establishing connections with investors and clients, with mean scores of 3.95, 3.91, and 3.79, respectively. Consequently, the majority of the respondents agreed that training roles had an impact on SMEs growth in Nairobi County. The findings draw a wide level of relationship with those by Nicolás-Agustín et al. (2024)**,** Soi et al. (2024) and Pratiwi (2019) who established that the performance of a business is determined by the ability of the firm to be well equipped with the IT skills which in this case require more training for a day-to-day update.

Inferential Analysis of IT training

The research undertook an inferential analysis of the connection between IT training and SMEs' performance in a bid to have a deeper revelation of the relationship and lay out

more prudence conclusion and recommendation. It was done using ANOVA and the coefficients of regression as shown. The model representing this variable was $Y = \beta_0 + \beta_2 X_2 + \varepsilon$.

A summary of the model as depicted in table 12 shows that R= 0.769; $R^2 = 0.591$. This shows that a positive connection exists between SMEs' performance in Nairobi County and IT training.

Table 12: Model Summary (IT Training)

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.769[a]	.591	.590	.94612

Table 13 also indicated the ANOVA as well as the P-value for the variable which was 0.000. The computed P-value is below the conventional level of 0.05 signifying that IT training has a connection to SMEs performance in Nairobi County.

Table 13: Anova Results (IT Training)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	425.851	1	425.851	475.738	.000[b]
	Residual	294.500	329	.895		
	Total	720.350	330			

Table 14 revealed the performance of SMEs and IT training were positively and significantly correlated. From the coefficients, the new model for IT training becomes $Y = 0.922 + 0.784X_2 + 0$. This, therefore, means that a unit shift in IT training will result in a shift in SMEs' performance by 78.4%.

Table 14: Regression Coefficients (IT Training)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.922	.128		7.222	.000
	IT training	.784	.036	.769	21.811	.000

Performance of SMEs

The percentage change in the workers, turnover, and capital over the course of five years was used to evaluate the performance of SMEs. Naradda et al. (2020) stated that SMEs assist in job creation, socio-economic development. They also hep in building flexibility and resilience needed for an internationally competitive economy showing that their performance is significant.

Employees Turnover

The results showed that over the course of five years, the majority of SMEs had seen growth in their workforce by more than 150. However, 10% of those surveyed reported that their workforce had grown by a margin of 151-200. A further 18% of those surveyed reported a 201-250 rise, while 16% reported hiring more than 300 new staff members. These results suggest that the total number of workers in most of SMEs more than doubled from the number at the start of their operations.

Table 15: Increase in the Number of Employees

Range	Percent
50 and below	31.6%
51 - 100	5.2%
101 - 150	8.4%
151 - 200	10%
201 - 250	18.8%
251 - 300	9.2%
Over 300	16.8%
Total	**100%**

Annual Turnover

In terms of gross turnover, 42.8% of SMEs reported a 500% growth in yearly turnover. A further 27.6% reported a 301%–400% rise, while 21.6% reported a 401%–500% increase in turnover. Gross turnover is important since it is one of the factors that, either alone or in conjunction with other factors, are used to identify SMEs in a variety of scenarios. For instance, according to the World Bank, SMEs have up to 300 workers, $15 million in revenue, and $15 million in fixed assets. In addition, the European Union's definition stipulates: "Micro, small and medium enterprises are those that employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million and/or an annual balance sheet not exceeding 43 million Euros". Therefore, SMEs are defined as enterprises with 10–250 people, yearly balances of EUR 10 million, and turnovers above EUR 10 million (Pankotay, 2022).

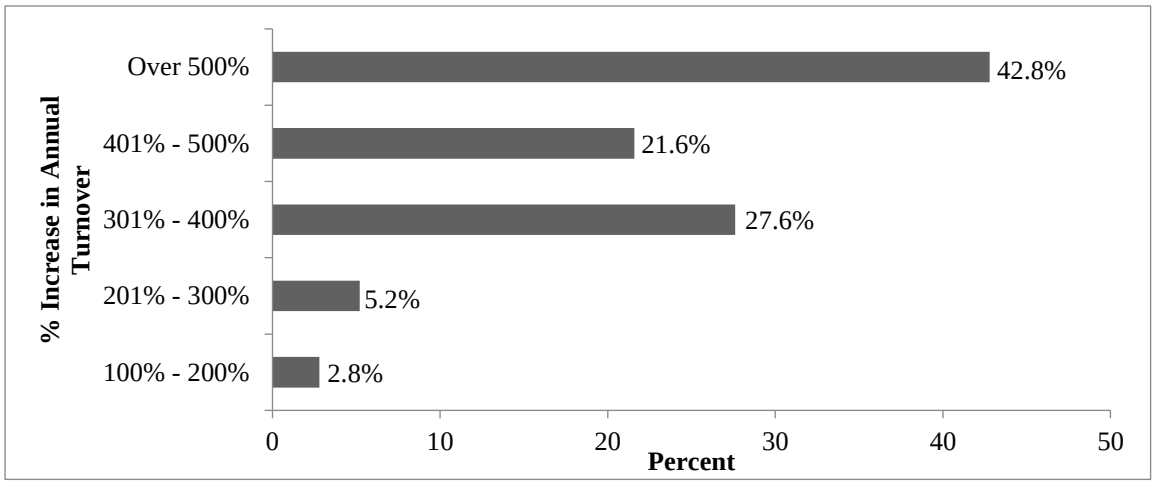

Figure 3:Increase in annual turnover

Increase in Capital Assets

In terms of capital assets, the results showed that 18.8% of SMEs reported a rise between 301% and 400%, while 40.4% reported an increase of more than 400%. Of these, just 19.6% had seen a 100% or less rise in their capital assets. This suggests that the SMEs' capital assets have increased dramatically. Yadav et al. (2022) argued that there is an influence between profitability and size where a company's profitability is negatively impacted by its size relative to its total assets. Based on the results, profitability increases with the firm size. With time, the profitability gains reduce as the size increases showing that large size leads to lower profitability. Larger firms would find it challenging to manage their organizational effectiveness in overcoming the issues within a bureaucratic structure of managing.

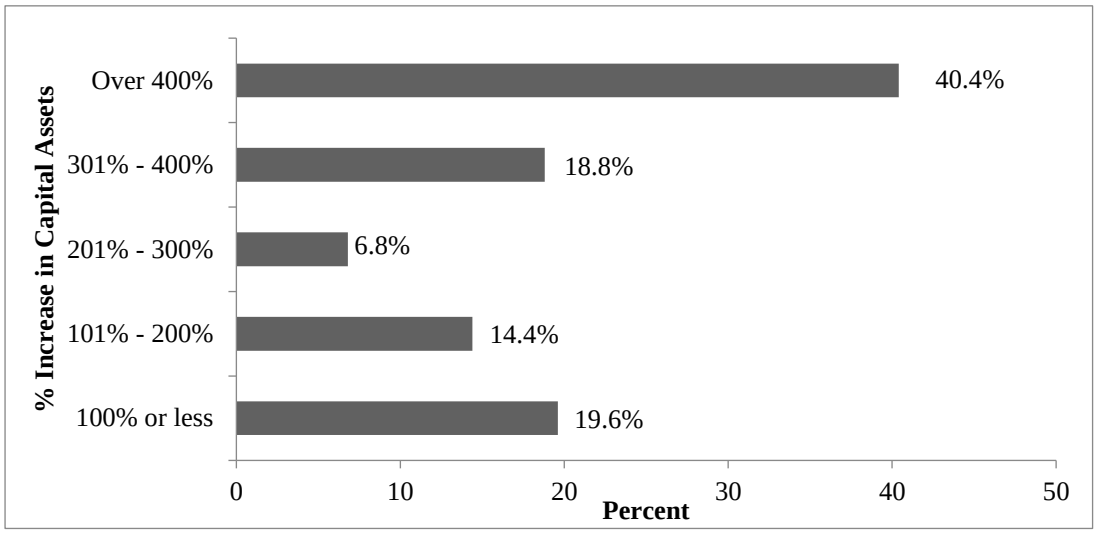

Figure 4: Increase in capital assets

Conclusion of the Study

The main objective of the research was to ascertain the impact of information Technology on the SMEs' performance within Nairobi County. The research concluded that on the first objective, the impact of IT-related costs on performance of SMEs, most of the SMEs in Nairobi County has not adopted IT in their businesses as a result of the high IT cost materials which include hardware, software, and maintenance services. The analysis came to the conclusion that the SMEs through the managers concurred that the IT cost was a key influence in the SMEs performance while they did not prioritize the investment in the area thus making it ineffective.

Regarding how IT training affects SMEs' performance, the research concluded that the provision of training among the employees and other stakeholders in the SMEs was a key aspect in promoting firm performance. Through IT training, many SMEs are able to benefit from the IT skills among the employees as well as have a better information flow on IT platforms. The survey also found that a large number of SMEs did not offer IT training frequently to the employee; which is proof that the aspect is not given the maximum attention it requires.

Recommendations of the Study

IT Cost

The study recommends that SMEs should prioritize strategic investment in IT infrastructure to strengthen their overall performance. This includes acquiring quality hardware and up-to-date software solutions that streamline business processes. To enhance value, SMEs should also focus on cost-effective budgeting that ensures sustainability in IT spending, avoiding underinvestment that may hinder competitiveness or overinvestment that strains operational budgets. Establishing a dedicated IT budget that accommodates both acquisition and maintenance costs is essential. Managers are encouraged to explore affordable and scalable technologies such as cloud computing and open-source platforms to reduce costs while ensuring functionality.

IT Training

Findings indicate that IT training significantly influences SME performance. Therefore, frequent and targeted employee training programs should be institutionalized to ensure that staff stay current with emerging technologies and best practices. SMEs are advised to allocate adequate budgets specifically for IT training and capacity development. This should cover not just technical skills but also practical training on cybersecurity, data handling, and productivity

tools. Collaboration with training institutions, online learning platforms, or government-sponsored digital literacy initiatives can also enhance employee competence at a lower cost. A continuous learning culture must be fostered within the enterprise to keep pace with technological evolution.

Recommendations for Further Studies

This research was carried out among SMEs in Nairobi County only. There should therefore be another study on the other areas with SMEs to establish IT's effect on performance. There should also be a similar study focusing on other firms other than the SMEs since IT does affect other organizations as well. This study concentrated on how IT affects SMEs' performance. There should be another study to address the additional elements influencing performance of SMEs despite performance challenges. The study's primary IT priority areas were IT costs, and IT training. There should, therefore, be a similar study to focus on other IT aspects affect playing a role in the performance of IT apart from the ones covered by this study.

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