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ICT ADOPTION AND PROCUREMENT PERFORMANCE OF LARGE MANUFACTURING FIRMS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

There has been a problem in the procurement performance of manufacturing firms in Kenya. A report by KNBS, Economic Survey (2021) indicates that the contribution of the manufacturing firms to the Gross Domestic Product (GDP) reduced from 9.3% in 2016 to 7.6% in 2020. The general objective of the study is to examine the effect of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya. Specifically, the study sought to assess effect of perceived cost of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya, and to establish effect of ICT technical capacity on procurement performance of large manufacturing firms in Nairobi City County, Kenya. This study used a descriptive research design. The study targeted 630 management employees working in 105 large manufacturing firms. The study's sample size was reached at using Krejcie and Morgan sample size determination formula. Stratified random sampling technique was used to select a sample of 239 respondents from the target population. The study's primary data was obtained using structured questionnaires. The Statistical Package for Social Sciences (SPSS) version 25 software was used to analyze the data. Qualitative data was analysed using content analysis and presented in prose form. Quantitative data was analysed using descriptive and inferential analysis. Descriptive statistics such as frequency, percentages, and means were used. Pearson correlation coefficient was used for testing strength and direction between the independent and the dependent variables. A multiple regression model was used to test the significance of the influence of the independent variables on the dependent variable. The findings were presented in Tables and figures. The study concludes that perceived cost of ICT adoption has a positive and significant effect on procurement performance of large manufacturing firms in Nairobi City County, Kenya. The study also concludes that ICT technical capacity has a positive and significant effect on procurement performance of large manufacturing firms in Nairobi City County, Kenya. Based on the findings, implementing intuitive and easy-to-use procurement tools can enhance user adoption and efficiency, leading to improved overall procurement performance. In addition, this study recommends that manufacturing large firms should conduct a thorough cost-benefit analysis before adopting and implementing Information and Communication Technology (ICT) solutions.

Key Words: ICT adoption, Procurement Performance, Large Manufacturing Firms, Perceived Cost of ICT Adoption, ICT Technical Capacity

Background of the Study

Without exception, businesses all over the world now rely heavily on information and communication technology (ICT) to facilitate the distribution of their products and services (Ndou, 2004). Effective performance in procurement and supply chain management is anchored by improved Information and Communication Technology (ICT). The rise in the demand for effective and efficient procurement performance towards the strategic performance of organisations cannot be underrated. A recent research conducted by the Forrester Research came to the conclusion that manufacturers continue to depend on the use of ICT for the increased performance on procurement processes in the manufacture sector. They posited that IT improves the supply chain agility, reduced cycle time, achieve higher efficiency and deliver products timely and effectively (Dehgani and Navimpour, 2019). This does not mean to say that the automatic investment in Information Technology in procurement will increase or yield organisational performance (Maraguinic and Granic, 2015). A properly developed IT system does not only increase robust Procurement systems but also allows the organisation to keep track with its customers, suppliers, debtors, and market demands (Wamba et al, 2017).

Procurement performance has been considered by many writers as an ongoing and a never ending process. Procurement is considered the nerve centre of all modern organisations whether public or private and also needs to be accompanied by a tight and robust system to ensure performance (Wanyonti & Muturi, 2015). The realisation of the success that comes with ICT powered procurement has open way for developed countries using metricises to indicate how technology has impacted procurement expenditures and performances. Countries such as the United States of America, the United Kingdom, Canada among others are using technology and ICT to tap into and measure procurement performances not only on industries but also healthcare service delivery, crime household income among others (Phillips, 2020). When information and communication technology (ICT) is incorporated into the procurement processes in an industrial setting, it enables the monitoring of results, comparison to benchmarks and best practices, evaluation of the efficacy and efficiency of the processes, control of variables, and straightforward alterations to the processes, should they be necessary (Kerzner and Kerzner, 2017).

ICT adoption refers to the process by which individuals, organizations, or societies integrate and incorporate Information and Communication Technologies (ICT) into their daily operations, activities, and systems. This encompasses the utilization of various digital tools, technologies, and platforms to enhance communication, information management, decision-making, and overall efficiency in different domains such as business, education, healthcare, and government (Abednego, 2023). ICT adoption involves not only the acquisition of technological tools but also the integration of these tools into existing processes and workflows. It includes the implementation of hardware, software, networks, and other digital resources to facilitate the collection, processing, storage, and dissemination of information. The aim of ICT adoption is to leverage technology to improve productivity, innovation, and communication, leading to enhanced performance and competitiveness in various sectors (Wanjiru, & Abdalla, 2018). This study sought to establish the influence of ICT adoption on procurement performance.

Statement of the Problem

There has been a problem in the procurement performance of manufacturing firms in Kenya. A report by KNBS, Economic Survey (2021) indicates that the contribution of the manufacturing firms to the Gross Domestic Product (GDP) reduced from 9.3% in 2016 to 7.6% in 2020. On average, manufacturing has been growing at a slower rate than the economy, which expanded by

5.6% in 2015 (KNBS, 2019). According to Aosa (2019), manufacturing industry is an important sector in Kenya as it makes a substantial contribution to the country's economic development. The industry is one of the key economic pillars in the vision 2030 geared to make the nation a middle level income country by the year 2030.

Anzetse, (2020) indicated that despite the core role that the manufacturing sector plays in the economic prosperity of the country, evidence shows that the industry is awash with challenges ranging from legal to monetary . Besides, studies have shown that the manufacturing experiences challenges in terms of procurement processes that in turn affects procurement performance (Osoro, 2021). Interest among industry stakeholders and researchers ought to focus more on this industry that is vital to the country's economy, with a view to discerning factors that are deterring its growth. The present study, therefore, examined factors affecting procurement performance (viewed as an antecedent to sector growth)in manufacturing firms, and in particular Nzoia Sugar Company Limited. Research has shown that ICT adoption influence procurement performance.

Various studies have been conducted on ICT adoption and procurement performance. For instance; In Zimbabwe, Mabhodha and Choga (2021) conducted a study on the Impact of Information Communication Technology (ICT) on Procurement Processes: Case of Zimbabwean Urban Councils. Cheptora, Osoro and Musau (2018) conducted a study on the Impact of Information and Communication Technology on Procurement Performance in Manufacturing Firms in Kenya. Wanjiru and Abdalla (2018) conducted a study on the effects of information communication technology adoption on procurement process in Kenya's Oil Industry. Nevertheless, none of these studies focused on procurement performance of large manufacturing firms in Nairobi City County, Kenya. To fill the highlighted gaps, the current study sought to examine the effect of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya.

Objectives of the study

i To assess effect of perceived cost of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya.
ii To establish effect of ICT technical capacity on procurement performance of large manufacturing firms in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Framework

Unified Theory of Acceptance and Use of Technology

Venkatesh, *et al* (2003), developed the Unified Theory of Acceptance and Use of Technology (UTAUT) Theory by putting together eight technology acceptance models which include Theory of Planned Behavior, Socio-Cognitive Theory Diffusion of Innovations, Theory of Reasoned Action, Motivation Model, Technology Acceptance Model and Model of Personal Computer (PC). This theory tries to explain user objectives in terms of technology and their behavior. Baihaqi (2016) adopted this theory in a research he carried out on adoption of information and communication technology (ICT) in value chain firms in Kenya. Chen *et al.* (2016) also adopted this theory in a study on Influence of information sharing system on employee retention in multinational corporations in Nairobi County.

UTAUT identifies four key constructs which include expected effort, facilitating conditions, social influence and expected performance that are key factor of technology acceptance and use behavior.

Gender, age, experience, and voluntariness constructs are postulated to enhance the relationship between use and user acceptance (Kamotho, 2014). Study by Oteki (2019) show UTAUT as a useful instrument in elucidation of use and innovations acceptance among various cultures, programing it as a strong theory in comparison to other technology acceptance theories. According to Ingavo and Moronge (2019) the theory provides managers with a framework to measure the likelihoods of success as a result use of technology and to understand drivers of approval of technology thus design mediations against possible resistance. UTAUT theory is powerful and flexible to enable studying the adoption of any new technology, in addition, to being viable after extension as needed robust and good in prediction for usage behaviors and applicable to evaluate an individual's perception of technology usage. Unified Theory of Acceptance and Use of Technology was used to assess effect of perceived cost of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya.

Human Capital Theory

The origin of human capital goes back to emergence of classical economics in (1776) and thereafter developed a scientific theory. After the manifestation of that concept as a theory, Schultz (1961) recognized the human capital as one of the important factors of national economic growth in the modern economy (Dae-bong, 2019). The theory is rooted from the field of macroeconomic development theory Schultz (1993). Becker's (1993) classic book, Human Capital: A Theoretical and Empirical Analysis with special reference to education, illustrated this domain. Becker argues that there are different kinds of capitals that include schooling, computer training course and expenditures on medical care (Marimuthu et al., 2019). The theory argues that a person's formal education determines his or her earning power.

The idea of human capital originates from the observation that schooling develops certain qualities in people and that these qualities enhance economic productivity and economic growth (Severine and Lila, 2019). Gary Becker's classic work, human capital (1964), elaborates on the notion of human capital in the context of neoclassical economics. It registers that investment in human could be viewed as similar to investment in other means of production, like factories or mines. In developing Becker's work further, another economist, Theodore Schultz, set out to map how rates of return from education could be calculated in countries with different levels of income, different attitudes to forgoing earnings to develop human capital (Severine and Lila, 2019). Human capital theory holds that it is the key competences, skills, knowledge and abilities of the workforce that contributes to organizations competitive advantage. It focuses attention on resourcing, human resource development, and reward strategies and practices.

According to Human Capital Theory, education is an investment because it is believed that it could potentially bestow private and social benefits (Odhong et al., 2018). According to Armstrong (2018) cited in Odhong & Were (2018), Human capital theory helps to determine the impact of people on the business and their contribution to shareholder value. It demonstrates the HR practices that produce value for money in terms, for example, of return on investment. According to Dae-bong (2019), Human capital theorists believe that education and earning power are correlated, which means, theoretically, that the more education one has, the more one can earn, and that the skills, knowledge and abilities that education provides can be transferred into the work in terms of productivity. Human capital theory as one of the main underpinning theories in this study as it is related to human capital, in this study the theory supports the human capital development variable. This study used Human Capital Theory to establish effect of ICT technical capacity on procurement performance of large manufacturing firms in Nairobi City County, Kenya.

Conceptual Framework

A conceptual framework is a research tool that is used to communicate as well as developing a clear understanding of the topic under study (Maaka, 2016). It shows the expected relationship between the dependent and the independent variables. In this study, the independent variables are perceived cost of ICT adoption and ICT technical capacity while the dependent variable is procurement performance of large manufacturing firms in Nairobi City County, Kenya.

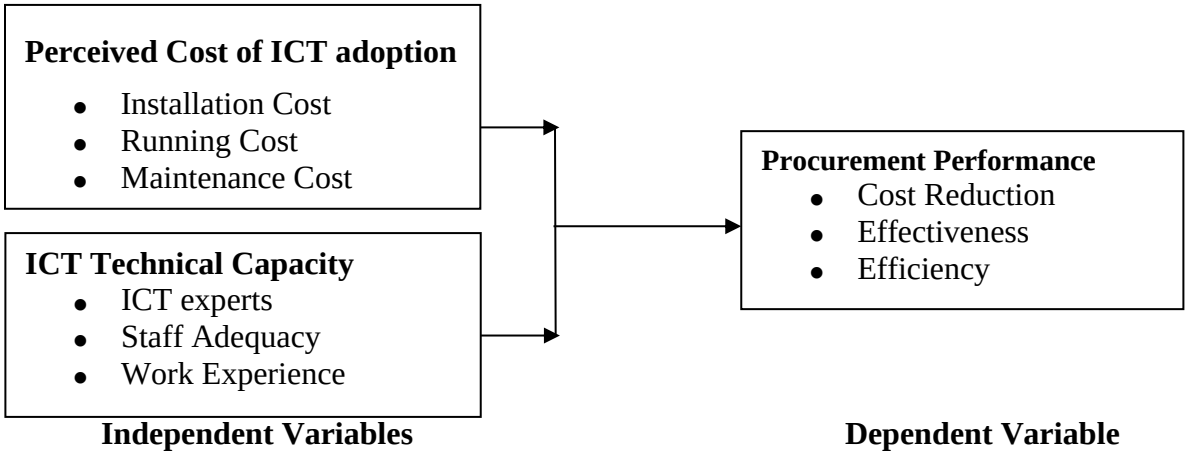

Figure 1: Conceptual Framework

Perceived Cost of ICT Adoption

Perceived Cost of ICT Adoption is a multifaceted concept encompassing the subjective evaluation of financial, time, and effort-related expenses associated with the integration of Information and Communication Technologies (ICT). Users and organizations assess various elements within this framework. Financial costs form a significant component, covering expenses related to hardware, software, licenses, maintenance, upgrades, and support services. Users weigh these against the perceived benefits, determining if the investment aligns with the expected value. Beyond finances, the concept extends to the Time and Effort required for learning, training, and adapting to new technologies. Users evaluate the potential disruption and effort the adoption process may introduce into their existing workflows.

Opportunity costs play a role as well, with users considering alternative uses of time, resources, or investments and weighing potential benefits foregone by choosing a particular ICT solution. Additionally, the perceived cost is influenced by the Risks and Uncertainties associated with the technology. Concerns about disruptions, data security, and reliability contribute to the overall perceived cost.

ICT Technical Capacity

The availability of skilled ICT experts is a fundamental component of ICT technical capacity within an organization. Having individuals with specialized knowledge in information and communication technologies is crucial for effective planning, implementation, and maintenance of ICT systems. ICT experts contribute to the development and execution of technology strategies, ensuring that the organization leverages the latest advancements to meet its objectives. Their expertise extends to areas such as network administration, software development, cybersecurity, and system integration. The presence of ICT experts not only facilitates the smooth operation of

existing systems but also positions the organization to adopt and adapt to emerging technologies, enhancing overall technical capacity.

Staff adequacy refers to having a sufficient number of personnel with the necessary skills and competencies to handle the organization's ICT needs. It involves a holistic assessment of the workforce, considering factors such as diversity of skills, specialization, and coverage of essential roles. Adequate staffing ensures that day-to-day ICT operations are managed efficiently, reducing the risk of bottlenecks or burnout among the team. It also allows for flexibility in addressing multiple projects or responding to increased workloads. Staff adequacy is critical for maintaining a robust ICT infrastructure, minimizing downtime, and ensuring that the organization's technological initiatives progress smoothly.

The work experience of the ICT team is a valuable component of technical capacity. Staff members with substantial work experience bring a depth of knowledge and insights gained from tackling various challenges and projects. Experience contributes to efficient problem-solving, decision-making, and project management within the ICT domain. It enhances the team's ability to anticipate issues, implement best practices, and optimize existing systems. Additionally, a seasoned workforce is often better equipped to handle complex tasks, collaborate effectively, and mentor newer team members. Work experience, combined with ongoing professional development, contributes to the overall resilience and effectiveness of the ICT team.

Empirical Review

Perceived Cost of ICT Adoption and Procurement Performance

Chairoel, Widyarto and Pujani (2018) researched on ICT adoption in affecting organizational performance among Indonesian SMEs. The prior studies believed the Internal and external factors influencing ICT adoption. This study found that the characteristic of technology, organization, and managerial are included as internal factors in adopting ICT. In the meantime, environment factors also are included as the external factor. Thus, the impact of ICT adoption would gave contributions on the efficiency and effectiveness of the organization as reflected in the organization performance. Hence, the organization performance could be measured based on the performance of business processes (operational performance) and financial performance (final performance). Reducing cost, increasing productivity related to operational performance, and profit margin, market share related to final performance. In brief, this study presents the conceptual framework of ICT adoption among Indonesian SMEs. Reviewing numerous prior studies to develop the research framework of this study is undertaken

Chege (2019) researched on the effects of information communication technology adoption on financial performance of financial institutions in Kenya. This study adopted a descriptive research design and the population of study consisted of all the 258 financial institutions in Kenya as at 2015. Simple random sampling technique was applied to select a sample size of 78 financial institutions. The study applied primary data using questionnaires and secondary data collected from the respective institution’ financial statements and summaries at the Central bank of Kenya. The study concludes that majority of the financial institutions in Kenya have invested their resources in new products and technology innovations such as mobile banking, electronic funds transfer, internet banking and automated teller machines. These aspects of ICT have helped the institutions in carrying out business activities more effectively and efficiently and through information technology has emerged as a strategic resource for achieving higher efficiency, control of operations and reduction of cost by replacing paper based and labour intensive methods with automated processes thus leading to higher productivity and profitabilit

Chairoel, Widyarto and Pujani (2018) researched on ICT adoption in affecting organizational performance among Indonesian SMEs. The prior studies believed the Internal and external factors influencing ICT adoption. This study found that the characteristic of technology, organization, and managerial are included as internal factors in adopting ICT. In the meantime, environment factors also are included as the external factor. Thus, the impact of ICT adoption would gave contributions on the efficiency and effectiveness of the organization as reflected in the organization performance. Hence, the organization performance could be measured based on the performance of business processes (operational performance) and financial performance (final performance). Reducing cost, increasing productivity related to operational performance, and profit margin, market share related to final performance. In brief, this study presents the conceptual framework of ICT adoption among Indonesian SMEs.

Otieno (2019) researched on the factors influencing ICT adoption and usage by small and medium sized enterprises: the case of Nairobi based SMEs. The researcher used descriptive survey to ensure that the research problem was well constructed and understood. The study employed the use of questionnaires to extract pertinent data from participants of the study. The study focused on 250 participants and adopted Random, Convenience and Purposive sampling to establish the sample size that data was collected from. The study found that perceived usefulness of ICT by companies had a positive effect on its adoption and use by SMEs. SMEs were more likely to adopt ICT solutions when they could easily quantify their benefits to their companies' bottom line, improve productivity and lower their operation cost.

ICT Technical Capacity and Procurement Performance

Nyambane, Nzuki and Korir (2020) researched on the impact of ICT capacity on organizational performance of public secondary schools in Kisii County, Kenya. As a result the government over the years has made concerted efforts in funding for ICT integration projects in public schools with aim of building the necessary capacity for successful implementation of the technology. Although progress has been made in equipping public schools with ICT infrastructure, public secondary schools in Kisii County are still faced with operational inefficiencies, traditional teaching and learning methods and declining academic outcomes. This can be attributed to lack of institutional capacity for change and individual ICT capacity to use the technology which is necessary for successful implementation of ICT integration in schools.

Nyambane and Nzuki (2019) researched on the influence of ICT capacity on effective utilization of ICT to improve organizational performance of learning institutions: a literature review. The mere focus of most studies on availability of technology and what students learn through the technology has left a gap in understanding on the capacity requirements that will ensure effective utilization of the technology in order to improve the quality of educational processes in learning institutions. ICT capacity has been of particular focus by scholars in understanding the influence of teacher characteristics and capabilities on effective utilization of ICT to realize its full potential in improving efficiency and effectiveness of management, teaching and learning processes in learning institutions. This review summarizes the relevant research on the influence of ICT capacity on effective utilization of ICT to improve organizational performance of learning institutions. Specifically, the review summarizes the relevant research on teachers' characteristics and ICT capacity and its effect on organizational performance in learning institutions

Kimani (2018) researched on the impact of information technology on organizational performance: case of population services Kenya. The population for this study comprised of the entire PS Kenya staff which was 438. The questionnaire was administered electronically for data collection, out of

which 311 respondents responded to the study resulting in a response rate of 71 percent which was considered as a sufficient representation of the organisation. The study findings revealed that majority of the respondents had various IT company devices at their disposal to enable them perform their duties. The study findings also revealed that there was a positive relationship between the level of IT use and organisational performance at Population Services Kenya. The study results indicated that IT use explains 82.4% of organisational performance at PS Kenya.

Abdullahi, Shehu and Usman (2019) researched on the impact of information communication technology on organizational productivity in the Nigeria banking industry: empirical evidence. This study was aimed to determine the impact of information communication technology on organizational productivity in the Nigeria banking industry. Questionnaire was employed as a method of data collection of the study, while multiple regression analysis was used to test the hypotheses under study. The result of the study indicates that hardware component, software component and network have significant and positive impact on organizational productivity in the Nigeria banking industry

A study by Ayatse (2019) investigated the impact of information communication technology (ICT) on corporate performance. The result of the study show that ICT has positively contributed to cooperated performance. Pirzada and Ahmed (2018) study the effect of new technology on firm business objective. The result of the study indicate that new technology have a strong relationship with firm business objective. Hawajreh and Sharabati (2020) investigated the impact of information technology on knowledge management practice in Jordan. The result of the study shows that there is positive and significant relationship between information technology and knowledge management practice. (Onu et al., 2019) examined the effect of information communication technology investment on organizational productivity and growth of small and medium scale enterprises in developing countries. The result of the study shows that positive and significant effect exists between independent variable and dependent variable of the study.

RESEARCH METHODOLOGY

This study used a descriptive research design. The unit of analysis is what is being targeted in the research. The study's target population includes the senior managers in large manufacturing firms in Nairobi County Kenya. According to KAM (2018), the total number of large manufacturing firms is 105. This study therefore targeted senior management employees (1 top management employee, 2 middle level management employees and 3 lower management employees) in all the 105 firms. The total target population was therefore 630 employees. The study's sample size was reached at using Krejcie and Morgan sample size determination formula (Russell, 2013). Using this formula a representative sample of 239 was obtained. Respondents were chosen with the help of stratified random sampling technique. The study then used simple random sampling to select respondents from each group.

Primary data was used in this study. The study's primary data was obtained using semi-structured questionnaires. Quantitative and qualitative data were generated from the closed-ended and open-ended questions, respectively. Qualitative data was analysed on thematic basis and the findings provided in a narrative form. Inferential and descriptive statistics were employed for analysis of quantitative data with the assistance of Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics such as frequency distribution, mean (measure of dispersion), standard deviation, and percentages were used. Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

From the 239 questionnaires 226 were completely filled and returned hence a response rate of 94.56%. The response rate was considered as suitable for making inferences from the data collected. As indicated by Metsamuuronen (2017), a response rate that is above fifty percent is considered adequate for data analysis and reporting while a response rate that is above 70% is classified as excellent. Hence, the response rate of this study was within the acceptable limits.

Descriptive Statistics Analysis

Perceived Cost of ICT Adoption and Procurement Performance

The first specific objective of the study was to assess effect of perceived cost of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya. The respondents were requested to indicate their level of agreement on the statements relating to perceived cost of ICT adoption and procurement performance of large manufacturing firms in Nairobi City County, Kenya. The results were as shown in Table 1.

From the results, the respondents agreed that the initial investment required for adopting new ICT tools is perceived as reasonable. This is supported by a mean of 4.084 (std. dv = 0.997). In addition, as shown by a mean of 3.917 (std. dv = 0.831), the respondents agreed that the costs associated with ICT training and skill development are justified by the benefits gained. Further, the respondents agreed that the financial resources allocated to ICT infrastructure development are considered adequate. This is shown by a mean of 3.858 (std. dv = 0.563). The respondents also agreed that the perceived cost of integrating new ICT systems aligns with the expected return on investment. This is shown by a mean of 3.831 (std. dv = 0.851). With a mean of 3.751 (std. dv = 0.935), the respondents agreed that the organization is willing to invest in ICT adoption, considering the long-term benefits. From the results, the respondents agreed that the expenses related to software licensing and updates are perceived as acceptable. This is supported by a mean of 3.741 (std. dv = 0.897). In addition, as shown by a mean of 3.735 (std. dv = 0.763), the respondents agreed that employees believe that the costs associated with ICT adoption are transparently communicated. The respondents agreed that the organization is committed to managing and minimizing hidden costs associated with ICT implementation. This is supported by a mean of 3.721 (std. dv = 0.922).

Table 1: Perceived Cost of ICT Adoption and Procurement Performance

	Mean	**Std. Dev.**
The initial investment required for adopting new ICT tools is perceived as reasonable.	4.084	0.997
The costs associated with ICT training and skill development are justified by the benefits gained.	3.917	0.831
The financial resources allocated to ICT infrastructure development are considered adequate.	3.858	0.563
The perceived cost of integrating new ICT systems aligns with the expected return on investment.	3.831	0.851
The organization is willing to invest in ICT adoption, considering the long-term benefits.	3.751	0.935
The expenses related to software licensing and updates are perceived as acceptable.	3.741	0.897
Employees believe that the costs associated with ICT adoption are transparently communicated.	3.735	0.763
The organization is committed to managing and minimizing hidden costs associated with ICT implementation.	3.721	0.922
Aggregate	**3.816**	**0.818**

ICT Technical Capacity and Procurement Performance

The second specific objective of the study was to establish effect of ICT technical capacity on procurement performance of large manufacturing firms in Nairobi City County, Kenya. The respondents were requested to indicate their level of agreement on various statements relating to ICT technical capacity and procurement performance of large manufacturing firms in Nairobi City County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 2.

From the results, the respondents agreed that the organization has sufficient ICT experts to effectively manage and support procurement technologies. This is supported by a mean of 3.943 (std. dv = 0.981). In addition, as shown by a mean of 3.936 (std. dv = 0.850), the respondents agreed that the ICT team possesses the necessary skills to address the technical challenges associated with procurement systems. Further, the respondents agreed that their organization invests adequately in ongoing training to enhance the technical capabilities of the ICT team handling procurement. This is shown by a mean of 3.931 (std. dv = 0.914).

The respondents also agreed that the ICT infrastructure in their organization is well-equipped to handle the procurement process efficiently. This is shown by a mean of 3.896 (std. dv = 0.947). With a mean of 3.889 (std. dv = 0.856), the respondents agreed that the organization has a diverse ICT team with expertise in areas relevant to procurement, such as cybersecurity and system integration. From the results, the respondents agreed that staff adequacy within the ICT department ensures that procurement technology issues are promptly addressed. This is supported by a mean of 3.854 (std. dv = 0.721). In addition, as shown by a mean of 3.789 (std. dv = 0.943), the respondents agreed that the experience of their ICT team positively influences the successful implementation of procurement technologies. The respondents agreed that the ICT team demonstrates adaptability and readiness to integrate emerging technologies within procurement processes. This is supported by a mean of 3.752 (std. dv = 0.862).

Table 2: ICT Technical Capacity and Procurement Performance

	Mean	Std. Deviation
The organization has sufficient ICT experts to effectively manage and support procurement technologies.	3.943	0.981
The ICT team possesses the necessary skills to address the technical challenges associated with procurement systems.	3.936	0.850
Our organization invests adequately in ongoing training to enhance the technical capabilities of the ICT team handling procurement.	3.931	0.914
The ICT infrastructure in our organization is well-equipped to handle the procurement process efficiently.	3.896	0.947
The organization has a diverse ICT team with expertise in areas relevant to procurement, such as cybersecurity and system integration.	3.889	0.856
Staff adequacy within the ICT department ensures that procurement technology issues are promptly addressed.	3.854	0.721
The experience of our ICT team positively influences the successful implementation of procurement technologies.	3.789	0.943
The ICT team demonstrates adaptability and readiness to integrate emerging technologies within procurement processes.	3.752	0.862
Aggregate	**3.838**	**0.873**

Procurement Performance of Large Manufacturing Firms

The respondents were requested to indicate their level of agreement on various statements relating to procurement performance of large manufacturing firms. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 3.

From the results, the respondents agreed that the procurement process in their manufacturing firm is strategically aligned with overall business objectives. This is supported by a mean of 3.996 (std. dv = 0.865). In addition, as shown by a mean of 3.949 (std. dv = 0.945), the respondents agreed that the procurement team consistently achieves cost savings and financial efficiency in sourcing materials and services. The respondents also agreed that procurement decisions contribute significantly to the overall competitiveness of their manufacturing operations. This is shown by a mean of 3.938 (std. dv = 0.611). With a mean of 3.891 (std. dv = 0.908), the respondents agreed that the procurement team effectively negotiates favorable terms with suppliers to enhance overall performance.

The respondents agreed that their procurement practices are efficient and contribute to the timely delivery of raw materials and components. This is supported by a mean of 3.886 (std. dv = 0.876). In addition, as shown by a mean of 3.854 (std. dv = 0.843), the respondents agreed that the procurement department actively engages in vendor management to optimize supplier relationships. The respondents also agreed that procurement decisions adhere to ethical standards and regulatory compliance within the manufacturing sector. This is shown by a mean of 3.812 (std. dv = 0.954). With a mean of 3.786 (std. dv = 0.743), the respondents agreed that procurement process fosters collaboration between different departments, enhancing overall operational efficiency.

Table 4. 1: Procurement Performance of Large Manufacturing Firms

	Mean	**Std. Deviation**
The procurement process in our manufacturing firm is strategically aligned with overall business objectives.	3.996	0.865
Our procurement team consistently achieves cost savings and financial efficiency in sourcing materials and services.	3.949	0.945
Procurement decisions contribute significantly to the overall competitiveness of our manufacturing operations.	3.938	0.611
The procurement team effectively negotiates favorable terms with suppliers to enhance overall performance.	3.891	0.908
Our procurement practices are efficient and contribute to the timely delivery of raw materials and components.	3.886	0.876
The procurement department actively engages in vendor management to optimize supplier relationships.	3.854	0.843
Procurement decisions adhere to ethical standards and regulatory compliance within the manufacturing sector.	3.812	0.954
The procurement process fosters collaboration between different departments, enhancing overall operational efficiency.	3.786	0.743
Aggregate	**3.852**	**0.841**

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables and the dependent variable (procurement performance of large manufacturing firms in Nairobi City County, Kenya) dependent variable. Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the value of the correlation coefficients. The current study employed Taylor (2018) correlation coefficient ratings where by 0.80 to 1.00 depicts a very strong relationship, 0.60 to 0.79 depicts strong, 0.40 to 0.59 depicts moderate, 0.20 to 0.39 depicts weak.

Table 4: Correlation Coefficients

		Procurement Performance	Perceived Cost of ICT Adoption	ICT Technical Capacity
Procurement Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	226		
Perceived Cost of ICT Adoption	Pearson Correlation	.842**	1	
	Sig. (2-tailed)	.002		
	N	226	226	
ICT Technical Capacity	Pearson Correlation	.910**	.179	1
	Sig. (2-tailed)	.000	.081	
	N	226	226	226

Moreover, the results revealed that there is a very strong relationship between perceived cost of ICT adoption and procurement performance of large manufacturing firms in Nairobi City County, Kenya (r = 0.842, p value =0.002). The relationship was significant since the p value 0.002 was less than 0.05 (significant level). The findings conform to the findings of Medlin and Green Jr. (2019) that there is a very strong relationship between perceived cost of ICT adoption and procurement performance.

The results also revealed that there was a very strong relationship between ICT technical capacity and procurement performance of large manufacturing firms in Nairobi City County, Kenya (r = 0.910, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Raghupathy (2017) who revealed that there is a very strong relationship between ICT technical capacity and procurement performance

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (perceived cost of ICT adoption and ICT technical capacity) and the dependent variable (procurement performance of large manufacturing firms in Nairobi City County, Kenya)

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.934	.872	.873	.10120

a. Predictors: (Constant), perceived cost of ICT adoption, and ICT technical capacity

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent

variables and the dependent variable was 0.872. This implied that 87.2% of the variation in the dependent variable (procurement performance of large manufacturing firms) could be explained by independent variables (perceived cost of ICT adoption, and ICT technical capacity).

Table 6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.027	4	2.007	67.58	.000[b]
	Residual	6.568	221	.0297		
	Total	14.595	225			

a. Dependent Variable: Procurement performance of large manufacturing firms
b. Predictors: (Constant), perceived cost of ICT adoption, and ICT technical capacity

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 67.58 while the F critical was 2.412. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of perceived cost of ICT adoption, and ICT technical capacity on Procurement performance of large manufacturing firms.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	0.205	0.038		5.395	0.000
	Perceived cost of ICT adoption	0.486	0.107	0.487	4.542	0.001
	ICT technical capacity	0.430	0.091	0.431	4.725	0.000

a Dependent Variable: Procurement performance of large manufacturing firms

The regression model was as follows:

$Y = 0.205 + 0.486X_1 + 0.430X_2$

The results also revealed that perceived cost of ICT adoption has significant effect on procurement performance of large manufacturing firms, β1=0.486, p value= 0.001). The relationship was considered significant since the p value 0.001 was less than the significant level of 0.05. The findings conform to the findings of Medlin and Green Jr. (2019) that there is a very strong relationship between perceived cost of ICT adoption and procurement performance

In addition, the results revealed that ICT technical capacity has significant effect on procurement performance of large manufacturing firms β1=0.430, p value= 0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings are in line with the results of Raghupathy (2017) who revealed that there is a very strong relationship between ICT technical capacity and procurement performance.

Conclusions

In addition, the study concludes that perceived cost of ICT adoption has a positive and significant effect on procurement performance of large manufacturing firms in Nairobi City County, Kenya. Findings revealed that installation Cost, running Cost and maintenance Cost influences procurement performance of large manufacturing firms in Nairobi City County, Kenya.

The study also concludes that ICT technical capacity has a positive and significant effect on procurement performance of large manufacturing firms in Nairobi City County, Kenya. Findings revealed that ICT experts, staff Adequacy and work Experience influences procurement performance of large manufacturing firms in Nairobi City County, Kenya.

Recommendations

In addition, this study recommends that manufacturing large firms should conduct a thorough cost-benefit analysis before adopting and implementing Information and Communication Technology (ICT) solutions. This analysis should consider both short-term and long-term costs associated with ICT adoption, including acquisition, implementation, training, and maintenance. Additionally, it is crucial to explore potential cost-saving measures and efficiency gains that the ICT adoption could bring to the procurement process. This recommendation encourages organizations to make informed decisions about ICT investments, ensuring that the perceived costs align with the expected benefits and positive impacts on procurement performance.

The study also recommends that manufacturing large firms should implement regular training sessions focused on enhancing the technical skills of the procurement team. This may include training on the latest ICT tools and platforms relevant to procurement processes, data analysis, and system optimization.

Suggestions for Further Studies

This study focused on examining the effect of ICT adoption on procurement performance of large manufacturing firms in Nairobi City County, Kenya. Having been limited to large manufacturing firms, the findings of this study cannot be generalized to procurement performance of firms in other sectors. The study therefore suggests further studies on the effect of ICT adoption on procurement performance of firms in other sectors.

Further, the study found that the independent variables could only explain 87.2% of procurement performance of large manufacturing firms in Nairobi City County, Kenya. This study therefore suggests research on other factors affecting procurement performance of large manufacturing firms in Nairobi City County, Kenya

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