



PROCUREMENT TRANSFORMATION PROCESS AND PERFORMANCE OF LARGE MANUFACTURING FIRMS IN NAIROBI COUNTY KENYA

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ABSTRACT

The general objective of the study was to establish the influence of procurement transformation process on performance of large manufacturing firms in Nairobi County Kenya. Specifically, the study sought to determine the influence of technological transformation on performance of large manufacturing firms in Nairobi County Kenya and to establish the influence of process optimization on performance of large manufacturing firms in Nairobi County Kenya. The study was anchored on Unified Theory of Acceptance and Use of Technology and systems theory. This study used descriptive research design. The target population for this study was the large manufacturing companies in Nairobi, Kenya. As of December (2020), there were 1012 large manufacturing companies in Nairobi (KAM, 2020). Specifically, the study targeted the heads of procurement in these firms. The study's sample size was reached at using Krejcie and Morgan sample size determination formula. Using the formula, the sample size for the study was 278 respondents. This research used a questionnaire to collect primary data. The study also conducted pilot test to test the validity and the reliability of the data collection instrument. The data collection instrument generated both qualitative and quantitative data. The study used both descriptive and inferential statistics for data analysis with the aid of Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics such as mean, standard deviation, frequency and percentages were used in this study. In relation to inferential statistics, the study used correlation analysis. This was used to establish the relationship between the independent and the dependent variables. Data was then presented in a tables, bar charts and pie charts. The study concludes that technological transformation has a positive and significant effect on performance of large manufacturing firms in Nairobi County Kenya. The study also concludes that process optimization has a positive and significant effect on performance of large manufacturing firms in Nairobi County Kenya. From the findings, this study recommends that the management of manufacturing firms should embrace technologies such as Internet of Things (IoT), Artificial Intelligence (AI), robotics, and advanced data analytics to optimize manufacturing processes, improve efficiency, and enhance decision-making capabilities.

Key Words: Procurement Transformation Process, Technological Transformation, Process Optimization, Performance, Large Manufacturing Firms

Background of the Study

The manufacturing industry is a critical component of the global economy, encompassing a diverse range of sectors that produce goods ranging from automobiles and electronics to food and pharmaceuticals. The global manufacturing landscape has experienced significant transformations over the years, shaped by technological advancements, globalization, and changing consumer demands. The Kenyan government, through her socio-economic development agendas such as the Vision 2030 and the Big4 agenda expect the manufacturing industry to contribute, for example, at least 20 percent of GDP to realize the goals of the Vision 2030 and at least 15 percent to realize the Big4 agenda (Kepher, Shalle, & Oduma, 2015). The sector, however, has stagnated at a 10 percent average contribution to the GDP, which is far less expected performance level (Kioko, & Were, 2018). This study therefore fronts procurement transformation process as a potential solution to the performance issue.

Procurement transformation refers to a specific type of organizational change management which focuses on strategies to enable major and long-term improvements to procurement and supply management processes, activities and relationships (Day and Atkinson, 2018). Procurement transformation process has seen a lot of growth leading to the formation of procurement related bodies such as the Kenya Institute of Supplies Management and the Chartered Institute of Purchasing and Supply. There has been increased pressure for the merging of procurement procedures and objectives with the organization's goals. The supply chain has been directly linked to the overall company performance and this has therefore made procurement practices vital to company success. Procurement practices positively impact an organization's financial performance, the success of a new product depends on procurement and supplier involvement. Most organizations use a substantial amount of their income in procurement and therefore recognize the importance of strategic procurement practices (Carr & Pearson, 2016). Directors and heads of procurement department greatly influence supplier evaluations and the drafting of specifications to ensure the organization gets the best value for its money.

Procurement transformation process greatly impacts how an organization achieves its objectives. According to Leenders *et al* (2018), purchasing adds value to the organization. Procurement practice is an area that can be improved to further contribute to organizational performance. Organizations tend to choose procurement procedures that are familiar to them; they should instead choose the ones most suited and most beneficial to their organizations success. Narasimhan and Kim (2016), states that there has been increased pressure for purchasing integration. Purchasing integration links purchasing practices to organizational performance (Gattorna, 2016). The direct link of operational efficiency and supply chain to organizational performance therefore means that the adoption of procurement practices is crucial to organizational success. Consolidation of the entire procurement process leading to the implementation of procurement practices such as, green purchasing, just in time delivery (JIT), total quality management (TQM) and e-procurement is necessary so as to boost the overall organizational performance.

Performance is generally an achievement of a given pre-set goals through the undertaking certain tasks within established by an individual or an institution (Richard *et al.*, 2019). Firm performance, therefore, comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives). Burja, (2019) argues that organizational performance comprises three explicit areas of firm outcomes: financial performance (profits, return on assets, return on investment, etc.); product market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value-added, etc.). According to Wanjiku and Mwangangi (2019) organization performance can be measured through profitability, customer satisfaction and market share. This study seeks to establish the influence of procurement transformation process on performance of large manufacturing firms in Nairobi County Kenya.

Statement of the Problem

Kenya's share of manufacturing exports to the global market is about 0.02 per cent. While this compares favourably with neighbouring Uganda and Tanzania at 0.016 per cent and 0.019 per cent respectively, it is unimpressive when compared with South Africa, Singapore, China and Malaysia. For example, South Africa's global share of manufacturing exports is about 0.3 %, while that of Singapore and Malaysia are 2.4% and 1.3%, respectively. According to a recent Kenya economic report, low value addition and high costs of production impede competitiveness of Kenya's manufactured products in the global market (IEA, 2016). Factors like a high taxation rate at 17.5% and high power tariff between 15-21 shillings resulted in manufacturing contributing 7.2% to Kenya's GDP in the 2019/2020 financial year.

Despite importance of the manufacturing industry in Kenya, it has been experiencing a lot of turbulence in the recent past including a drop in the GDP, an increasing imbalance of trade and the exiting of large multinationals (Magutu, Aduda & Nyaoga, 2017). In addition to that, manufacturing companies in Kenya have been experiencing fluctuations in profitability in their production (KAM Directory, 2019). The manufacturing sector recorded a significant drop in growth from 4.7% to 1.6% and 2.7% to 0.2% respectively according to the World Bank economic update 2018. Further to this, there was a declining growth of agricultural real value-added from 5.2% in 2016 to 1.6% in 2017 (World Bank economic update, 2018). According to Kenya National Bureau of Statistics (KNBS) Economic Survey report of 2022, there has been a tremendous increase in the quantity of manufactured and processed food products by 3.1 per cent in the year 2021 compared to a growth of 5.6 per cent in 2020. Research has shown that procurement transformation process influence organization performance.

Various studies have been conducted on procurement transformation process and organization performance. For instance; Wanjiku and Mwangangi, (2019) conducted a study on the influence of procurement best practices on the performance of food and beverage manufacturing firms in Kenya, Nabiliki, Wanyoike, and Mbeche, (2018) focused on the influence of supplier development practices on procurement performance in food and beverage manufacturing firms in Nakuru East Sub - County, Kenya and Kioko, and Were, (2018) conducted a study on the factors affecting efficiency of the procurement function at the public institutions in Kenya. Nevertheless, none of these studies focused on procurement transformation process and performance of large manufacturing firms in Nairobi County Kenya. To fill the highlighted gaps, the current study sought to establish the influence of procurement transformation process on performance of large manufacturing firms in Nairobi County Kenya.

Specific Objectives

The study was guided by the following specific objectives;

- i. To determine the influence of technological transformation on performance of large manufacturing firms in Nairobi County Kenya.
- ii. To establish the influence of process optimization on performance of large manufacturing firms in Nairobi County Kenya.

LITERATURE REVIEW

Theoretical Review

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. Therefore it is suitable in studying the development of new technologies in food and beverage industry. Therefore, Unified Theory of Acceptance and Use of Technology will be used to assess the influence of technological transformation on performance of large manufacturing firms in Nairobi County Kenya.

Systems Theory

Systems theory was founded by the biologist Ludwig von Bertalanffy in the year 1972. Systems theory is an interdisciplinary approach that views complex phenomena as interconnected systems, consisting of components or elements that interact with each other to form a unified whole (Mwale, 2016). It provides a framework for understanding the behavior, structure, and dynamics of systems, ranging from natural ecosystems to organizations and social systems. A system is a set of interrelated components or elements that work together to achieve a common purpose. These components can be physical entities, processes, or abstract concepts. Systems can be further divided into subsystems, which are smaller systems within the larger system. Each subsystem contributes to the overall functioning and behavior of the entire system (Gadwe & Sangode, 2019).

Systems theory emphasizes the importance of interactions and relationships between the components of a system (Sukatia, 2016). The behavior and characteristics of a system are not solely determined by the individual components but also by the relationships and interactions among them. Changes in one component or subsystem can have ripple effects on other components or subsystems within the system. Systems theory recognizes that systems exhibit emergent properties that cannot be explained by studying the individual components in isolation. These emergent properties arise from the interactions and relationships between the components, giving the system unique characteristics and behaviors. Systems theory also emphasizes the holistic perspective, viewing the system as more than the sum of its parts. Systems theory often focuses on open systems, which interact with their environment and exchange inputs, outputs, and information with it. Open systems are influenced by external factors and adapt to changes in their environment. They maintain a dynamic equilibrium through continuous interaction and feedback with their surroundings (Bosire, 2018). This study will use Systems Theory to assess the influence of process optimization on performance of large manufacturing firms in Nairobi County Kenya.

Conceptual Framework

Conceptual framework is a tool used by a researcher to develop awareness and understanding of the situation under scrutiny and to communicate (Kombo & Tromp, 2016). It can also be defined as a concise explanation of an occurrence accompanied by a visual or graphic representation of major variables of the study (Mugenda, 2018). Figure 2.1 below shows the relationship between the study variables. The independent variables are technological transformation, and process optimization.

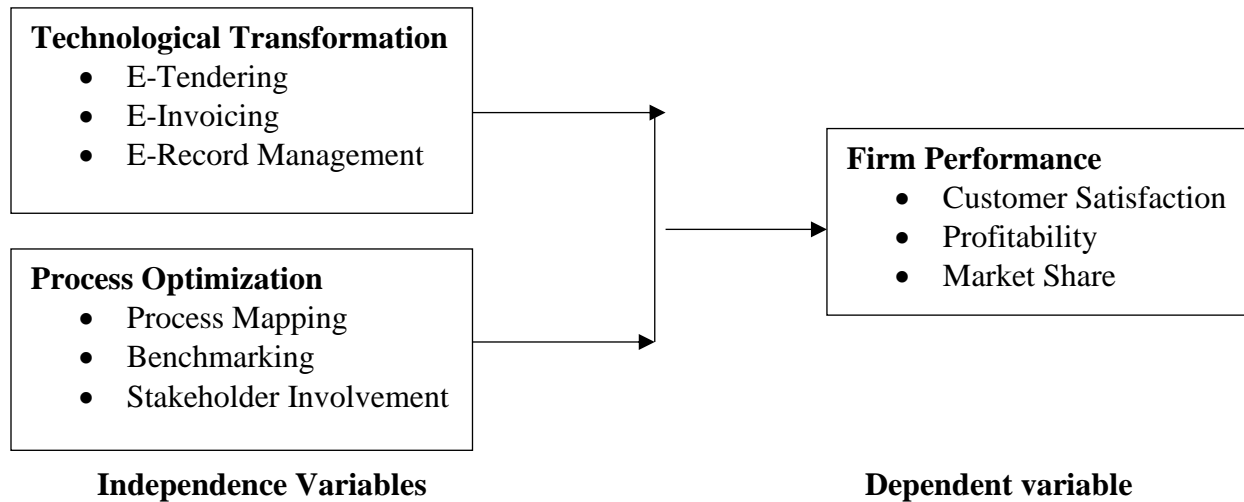


Figure 1: Conceptual Framework

Technological Transformation

Technological transformation, encompassing e-tendering, e-invoicing, and e-record management, represents a paradigm shift in how organizations conduct and manage various aspects of their operations. These digital tools leverage technology to streamline processes, enhance efficiency, reduce manual interventions, and contribute to overall organizational effectiveness (García-Sánchez *et al*, 2018).

E-tendering, or electronic tendering, involves the use of digital platforms and technologies to facilitate the procurement process. It replaces traditional paper-based tendering systems with online platforms that automate and streamline the entire tender lifecycle. Organizations can create, publish, and manage tender documents electronically, allowing suppliers to submit their bids digitally. E-tendering systems enhance transparency, reduce paperwork, and promote fair competition. Additionally, they improve accessibility for suppliers, leading to a broader pool of potential bidders. The efficiency gained from e-tendering contributes to faster decision-making, cost savings, and increased accountability in the procurement process (Chouaibi, *et al*, 2022).

E-invoicing refers to the electronic generation, delivery, and processing of invoices between trading partners. It replaces traditional paper-based invoicing with digital formats, facilitating seamless and automated financial transactions. E-invoicing systems enable organizations to generate invoices electronically, send them securely to clients or customers, and receive payments more efficiently. This reduces errors associated with manual data entry, accelerates payment cycles, and enhances overall cash flow management. The integration of e-invoicing systems with other financial and accounting platforms further streamlines record-keeping and financial reporting (Adeyeyetolulope, 2016).

E-record management involves the digital storage, organization, and retrieval of documents and records within an organization. This digital approach replaces traditional paper-based record-keeping systems with electronic databases and document management systems. E-record

management not only saves physical space but also improves accessibility, searchability, and security of records. It enables organizations to comply with regulatory requirements more efficiently and enhances collaboration among team members by providing centralized access to shared documents. Moreover, e-record management systems contribute to disaster recovery efforts, as digital records are less susceptible to damage or loss compared to physical documents (Cheruiyot, 2016).

Process Optimization

Process optimization is a strategic approach aimed at improving efficiency, reducing waste, and enhancing overall performance within an organization. Key components of process optimization include process mapping, benchmarking, and stakeholder involvement, each playing a crucial role in identifying, analyzing, and improving organizational processes (Kusumaningram, Haryono & Handari, (2020). Process mapping involves visually representing the steps, activities, and interactions involved in a specific business process. Through techniques such as flowcharts or diagrams, organizations can gain a clear and detailed understanding of how a process unfolds from start to finish. Process mapping is instrumental in identifying bottlenecks, redundancies, and areas for improvement within a workflow. It facilitates communication and collaboration among team members by providing a visual representation that helps them understand the entire process, enabling more effective problem-solving and decision-making (Keoye, 2016).

Benchmarking involves comparing an organization's processes, practices, and performance metrics against those of industry leaders or competitors. This comparative analysis helps organizations identify best practices, set performance standards, and establish goals for improvement. Benchmarking can be external, where organizations compare themselves to industry peers, or internal, where different departments or units within the organization benchmark against each other. By learning from the successes and innovations of others, organizations can identify areas for improvement and implement changes to enhance their overall performance and competitiveness. Stakeholder involvement in process optimization is essential for understanding the diverse perspectives and requirements of individuals and groups affected by a particular process. Stakeholders may include employees, customers, suppliers, and other relevant parties. Involving stakeholders in the optimization process ensures that their insights, concerns, and feedback are considered. This collaborative approach fosters a sense of ownership and commitment among stakeholders, making it more likely that the optimized process will align with organizational goals and meet the needs of those involved. Stakeholder involvement is not only critical during the initial analysis but also throughout the implementation and continuous improvement phases (Luna-Arocas, 2023).

Empirical Review

Technological transformation and organizational performance

García-Sánchez *et al* (2018) investigated the influence of technological assets on organizational performance through absorptive capacity, organizational innovation and internal labor flexibility. The purpose of the research is to analyze whether technological assets influence absorptive capacity (potential and realized absorptive capacity) and how absorptive capacity influences internal labor flexibility, organizational innovation and performance. Data was gathered by personal interview using a structured questionnaire. The results showed that support for technology and improvement of technological skills and technological distinctive competencies promote improvement in organizational performance through their positive influence on the processes of potential and realized absorption capacity.

Chouaibi, *et al* (2022) investigated the risky impact of digital transformation on organizational performance – evidence from Tunisia. The aim of this study is to analyze the impact of digital

transformation on organizational performance, emphasizing the related risks. The specific focus of the investigation is Tunisia as an example of an emerging economy. The outcomes showed growing interest in digital transformation, which can help enterprises achieve higher performance, mostly at the organizational level; they also provide, at the same time, a global overview of the potential related risks.

Adeyeyetolulope,(2016) carried out a study on the impact of technological innovation on organizational performance. This study investigated the impact of technological innovation on organizational performance. The objectives of the study were to determine relationship between strategic planning and marketing planning capabilities on organizational performance in the manufacturing industry. The study employed survey research. Primary data was used with questionnaire as research instrument. The subjects were 137 employees of Nestle Foods Nigeria Plc. The findings from the study revealed that strategic planning and marketing capability independently and jointly influence organizational performance. Also, there is positive interaction between performance variables (resources availability, staff quality, productivity, sales revenue, financial strength, public image and good will.

Cheruiyot, (2016) investigated the effect of technology adoption on organizational performance of dairy societies in Uasin-Gishu County, Kenya. The study specifically determined the effect of financial information system technologies adoption on organization performance of dairy societies, established the effect of information communication technologies adoption on organization performance of dairy societies, ascertained the effect of human resource information system on organization performance of dairy societies and determined the effect of product processing technologies on organization performance of dairy societies. The primary data for the study was obtained using questionnaires. The findings of the study indicated that financial information system technologies adoption, information communication technology adoption and product processing technologies adoption had significant and positive effect on performance of dairy societies.

Process optimization and organizational performance

Kusumaningram, Haryono and Handari, (2020) conducted research on employee performance optimization through transformational leadership, procedural justice, and training: the role of self-efficacy. This study aims to analyze the effect of transformational leadership (TL), procedural justice (PJ), and training (T) on employee performance (EP) mediated by self-efficacy (SE). The object of this research is Rumah Sakit Umum Daerah (RSUD) M.Th. Djaman, a hospital in Sanggau Regency, while the subjects are the institution's staff. Data are obtained from a sample of 120 through questionnaires. The results of the analysis showed that only training has a significant effect on self-efficacy, and self-efficacy has a significant effect on employee performance

Peng, *et al* (2023) researched on the impact of digitalization on process optimization and decision-making towards sustainability: the moderating role of environmental regulation. This study examined how digitalization has affected process optimization and decision-making towards sustainability, focusing on Pakistan's manufacturing sector. The study also examined the moderating role of environmental regulations between digitalization and sustainable practices. Data collection was done via questionnaires. The findings showed digitalization's positive and significant influence on process optimization and decision-making.

Shazia (2024) studied the role of business process optimization in an organization. The primary objectives of process optimization are productivity, efficiency maximization, and cost minimization. By examining current procedures, identifying areas for development, and implementing plans to expedite and enhance these procedures, organizations can increase

productivity, lower costs, and boost customer satisfaction. Findings reveal that organizations can increase productivity by streamlining and optimizing their operations.

Mwangi (2019) investigated the influence of supply chain optimization on the performance of manufacturing firms in Kenya. The purpose of the study was to assess the influence of supply chain optimization on the performance of manufacturing firms in Kenya. The specific objectives of the study were to establish the influence of inventory control, supplier management, procurement cost optimization, supply chain automation on performance of manufacturing firms in Kenya. The study further explored the moderating effect of staff competence on the relationship between supply chain optimization and performance of manufacturing firms in Kenya. The 499 supply chain managers in manufacturing firms were the population for this study. This study relied on both primary and secondary data sources. Secondary data was collected for performance of the selected manufacturing firms for the period of between 2012 and 2016. This study utilized a questionnaire on the other hand to collect primary data. The findings revealed that supply chain optimization used in this study were significant predictors of performance of manufacturing firms in Kenya.

RESEARCH METHODOLOGY

This study used descriptive research design which involved gathering of data that describes events then organizing, tabulating depicting and describing the data. The target population for this study was the large manufacturing companies in Nairobi, Kenya. As of December (2020), there were 1012 large manufacturing companies in Nairobi (KAM, 2020). Specifically, the study targeted the heads of procurement in these firms. The study's sample size was reached at using Krejcie and Morgan sample size determination formula (Russell, 2013). Therefore, using the formula, the sample size for the study was 278 respondents. The respondents were chosen with the help of simple random sampling technique. This research used a questionnaire to collect primary data. Structured and open questions were used to collect primary data from the field. The pilot study was carried out on 28 respondents who are sufficient based on Glesne (2015) who stated that 10% of the population is adequate to constitute the pilot test size. This study gathered both quantitative and qualitative data. Qualitative data analyzed by use of content analysis. Quantitative data was coded then analyzed using Statistical Package for Social Sciences (SPSS) computer software version 28. Descriptive statistics were used to analyze the data in frequency distributions and percentages which were presented in tables and figures. The study also adopted multiple regression analysis to test the relationships between the variables.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The researcher sampled 278 respondents who were each administered with the questionnaires. From the 278 questionnaires 261 were completely filled and returned hence a response rate of 93.9%. The response rate was considered as suitable for making inferences from the data collected. As indicated by Metsamuuronen (2018), 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 for drawing conclusions and making recommendations.

Descriptive Statistics Analysis

Technological Transformation and Performance of Large Manufacturing Firms

The first specific objective of the study was to determine the influence of technological transformation on performance of large manufacturing firms in Nairobi County Kenya. The respondents were requested to indicate their level of agreement on the statements relating to

technological transformation and performance of large manufacturing firms in Nairobi County Kenya. The results were as shown in Table 1

From the results, the respondents agreed that the adoption of new technologies has a significant impact on our organization's overall performance. 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 organization actively invests in technological transformation initiatives to improve operational efficiency and effectiveness. Further, the respondents agreed that technological advancements play a crucial role in enhancing the organization's competitive advantage and market position. This is shown by a mean of 3.858 (std. dv = 0.563). The respondents also agreed that the organization regularly assesses the alignment between technological capabilities and organizational performance objectives. 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 integration of emerging technologies has led to measurable improvements in the organization's productivity and profitability.

From the results, the respondents agreed that the organization recognizes the importance of staying agile and adaptable in the face of technological changes to maintain performance excellence. This is supported by a mean of 3.731 (std. dv = 0.821). In addition, as shown by a mean of 3.698 (std. dv = 0.786), the respondents agreed that technological innovation is considered a strategic imperative for driving sustainable growth and performance improvement within the organization

Table 1: Technological Transformation

	Mean	Std. Deviation
The adoption of new technologies has a significant impact on our organization's overall performance.	4.084	0.997
The organization actively invests in technological transformation initiatives to improve operational efficiency and effectiveness.	3.917	0.831
Technological advancements play a crucial role in enhancing the organization's competitive advantage and market position.	3.858	0.563
The organization regularly assesses the alignment between technological capabilities and organizational performance objectives.	3.831	0.851
The integration of emerging technologies has led to measurable improvements in the organization's productivity and profitability.	3.751	0.935
The organization recognizes the importance of staying agile and adaptable in the face of technological changes to maintain performance excellence.	3.731	0.821
Technological innovation is considered a strategic imperative for driving sustainable growth and performance improvement within the organization	3.698	0.786
Aggregate	3.836	0.818

Process Optimization and Performance of Large Manufacturing Firms

The second specific objective of the study was to establish the influence of process optimization on performance of large manufacturing firms in Nairobi County Kenya. The respondents were requested to indicate their level of agreement on various statements relating to process optimization and performance of large manufacturing firms in Nairobi 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 continuous process optimization is essential for improving the organization's overall performance. This is supported by a mean of 3.943 (std. dv =

0.981). In addition, as shown by a mean of 3.866 (std. dv = 0.850), the respondents agreed that the organization actively seeks opportunities to streamline and optimize processes to enhance efficiency and effectiveness. Further, the respondents agreed that there is a direct correlation between the effectiveness of process optimization initiatives and the organization's success in achieving its strategic objectives. This is shown by a mean of 3.831 (std. dv = 0.914).

The respondents also agreed that employees who participate in process optimization efforts demonstrate higher levels of productivity and satisfaction, positively impacting organizational performance. This is shown by a mean of 3.816 (std. dv = 0.947). With a mean of 3.789 (std. dv = 0.856), the respondents agreed that the organization regularly evaluates the impact of process optimization initiatives on key performance indicators such as cost reduction, cycle time, and customer satisfaction.

From the results, the respondents agreed that process optimization is viewed as a strategic imperative within the organization, essential for maintaining competitiveness and agility in a dynamic market environment. This is supported by a mean of 3.764 (std. dv = 0.785). In addition, as shown by a mean of 3.733 (std. dv = 0.786), the respondents agreed that the organization involves employees at all levels in identifying and implementing process improvements to ensure alignment with organizational goals and objectives.

Table 2: Process Optimization

	Mean	Std. Deviation
Continuous process optimization is essential for improving the organization's overall performance.	3.943	0.981
The organization actively seeks opportunities to streamline and optimize processes to enhance efficiency and effectiveness.	3.866	0.850
There is a direct correlation between the effectiveness of process optimization initiatives and the organization's success in achieving its strategic objectives.	3.831	0.914
Employees who participate in process optimization efforts demonstrate higher levels of productivity and satisfaction, positively impacting organizational performance.	3.816	0.947
The organization regularly evaluates the impact of process optimization initiatives on key performance indicators such as cost reduction, cycle time, and customer satisfaction.	3.789	0.856
Process optimization is viewed as a strategic imperative within the organization, essential for maintaining competitiveness and agility in a dynamic market environment.	3.764	0.785
The organization involves employees at all levels in identifying and implementing process improvements to ensure alignment with organizational goals and objectives	3.733	0.786
Aggregate	3.788	0.873

Organizational Performance

The respondents were requested to indicate their level of agreement on various statements relating to performance of large manufacturing firms in Nairobi 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 3.

From the results, the respondents agreed that performance of their organization has been improving over the years. This is supported by a mean of 3.896 (std. dv = 0.865). In addition, as shown by a mean of 3.819 (std. dv = 0.945), the respondents agreed that the organization is in a position to

cater for its bills as they become due. The respondents also agreed that the organization has grown in terms of market share. This is shown by a mean of 3.798 (std. dv = 0.611). With a mean of 3.731 (std. dv = 0.908), the respondents agreed that they are satisfied with the level of profitability of their organization.

From the results, the respondents agreed that there are few customer complaints concerning the quality of their goods and services. This is supported by a mean of 3.721 (std. dv = 0.782). In addition, as shown by a mean of 3.706 (std. dv = 0.897), the respondents agreed that they are satisfied with the general performance of their organization

Table 3: Organizational Performance

	Mean	Std. Deviation
Performance of our organization has been improving over the years	3.896	0.865
Our organization is in a position to cater for its bills as they become due	3.819	0.945
Our organization has grown in terms of market share	3.798	0.611
Am satisfied with the level of profitability of our organization	3.731	0.908
There are few customer complaints concerning the quality of our goods and services	3.721	0.782
Am satisfied with the general performance of our organization	3.706	0.897
Aggregate	3.772	0.841

Inferential Statistics

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (technological transformation, process optimization) and the dependent variable (performance of large manufacturing firms in Nairobi 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

		Organization Performance	Technological Transformation	Process Optimization
Organization Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	261		
Technological Transformation	Pearson Correlation	.842**	1	
	Sig. (2-tailed)	.002		
	N	261	261	
Process Optimization	Pearson Correlation	.910**	.179	1
	Sig. (2-tailed)	.000	.081	
	N	261	261	261

The results revealed that there is a very strong relationship between technological transformation and performance of large manufacturing firms in Nairobi 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 technological transformation and organization performance.

The results also revealed that there was a very strong relationship between process optimization and performance of large manufacturing firms in Nairobi 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 process optimization and organization performance

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (technological transformation, process optimization) and the dependent variable (performance of large manufacturing firms in Nairobi 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), technological transformation, process optimization

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 (performance of large manufacturing firms in Nairobi County Kenya) could be explained by independent variables (technological transformation, process optimization).

Table 6: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	8.027	4	2.007	77.19	.000 ^b
Residual	6.568	256	.026		
Total	14.595	260			

a. Dependent Variable: Performance of large manufacturing firms

b. Predictors: (Constant), technological transformation, process optimization

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 77.19 while the F critical was 2.407. 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 technological transformation and process optimization on performance of large manufacturing firms in Nairobi County Kenya.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Beta		
1 (Constant)	0.205		5.395	0.000
Technological Transformation	0.486	0.487	4.542	0.001
Process Optimization	0.430	0.431	4.725	0.000

a Dependent Variable: Performance of large manufacturing firms

The regression model was as follows:

$$Y = 0.205 + 0.486X_1 + 0.430X_2 + \varepsilon$$

The results also revealed that technological transformation has significant effect on performance of large manufacturing firms in Nairobi County Kenya, $\beta_1=0.486$, 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 technological transformation and organization performance

In addition, the results revealed that process optimization has significant effect on performance of large manufacturing firms in Nairobi County Kenya $\beta_1=0.430$, 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 process optimization and organization performance.

Conclusions

In addition, the study concludes that technological transformation has a positive and significant effect on performance of large manufacturing firms in Nairobi County Kenya. Findings revealed that e-Tendering, e-Invoicing and e-Record Management influences performance of large manufacturing firms in Nairobi County Kenya

The study also concludes that process optimization has a positive and significant effect on performance of large manufacturing firms in Nairobi County Kenya. Findings revealed that process mapping, benchmarking and stakeholder involvement influences performance of large manufacturing firms in Nairobi County Kenya.

Recommendations

In addition, the management of manufacturing firms should embrace technologies such as Internet of Things (IoT), Artificial Intelligence (AI), robotics, and advanced data analytics to optimize manufacturing processes, improve efficiency, and enhance decision-making capabilities. Implementing these technologies can lead to increased productivity, reduced costs, and improved quality control.

The study also recommends that the management of manufacturing firms should invest in automation technologies to automate repetitive tasks, increase throughput, and enhance operational efficiency. This includes implementing robotics, automated material handling systems, and computerized process control systems to optimize production processes and minimize human error.

Suggestions for Further Studies

The study found that the independent variables (technological transformation and process optimization) could only explain 87.2% of performance of large manufacturing firms in Nairobi County Kenya. This study therefore suggests research on other factors affecting performance of large manufacturing firms in Nairobi County Kenya

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