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Abstract

The manufacturing sector is a critical contributor to Kenya's economic development, yet faces significant performance challenges with growth rates consistently lagging behind the broader economy. This study examined the influence of process innovation strategy on performance of large manufacturing firms in Kenya, utilizing Organizational Control Theory as the theoretical foundation. A descriptive survey and correlational research design was employed, targeting 50 large manufacturing firms listed by the Kenya Association of Manufacturers, with a sample of 109 management level employees selected through stratified random sampling. Primary data was collected using structured questionnaires, achieving a 90% response rate with 98 usable responses. Data analysis employed descriptive statistics, Pearson correlation analysis, and simple linear regression using SPSS version 23. The findings revealed that process innovation strategy has a significant positive influence on firm performance ($\beta = 0.315$, $p < 0.05$), with the model explaining 56.5% of the variance in organizational performance ($R^2 = 0.565$). The standardized beta coefficient of 0.752 indicated a strong positive relationship between process innovation strategy and performance, while correlation analysis confirmed a significant association ($r = .752$, $p = 0.020$). The study concluded that manufacturing firms implementing continuous process improvements, system upgrades, and production technique changes achieve superior performance outcomes compared to those maintaining traditional operational approaches. The research recommends that management prioritize systematic process innovation initiatives, government develop supportive innovation policies, and academic institutions incorporate process innovation modules in business curricula to enhance manufacturing sector competitiveness and contribute to Kenya's economic development objectives.

Keywords: *Process innovation strategy, organizational performance, manufacturing firms, Kenya, operational efficiency*

1.1 Introduction

Manufacturing serves as a cornerstone of global economic development, contributing significantly to national output, exports, and employment creation across both developed and emerging economies. Process innovation strategy has emerged as a critical determinant of organizational success in the contemporary manufacturing landscape, encompassing the implementation of new or significantly improved production and delivery methods designed to enhance operational efficiency and competitive positioning (Gunday, Ulusoy, Kilic, & Alpkın, 2020). This strategic approach involves the adoption of novel equipment, methodologies, and software systems that fundamentally transform how organizations execute their core operations, ranging from incremental improvements to radical overhauls of existing processes (Suroso & Azis, 2022). The primary objectives of process innovation include reducing production and delivery costs, developing enhanced products and services, and achieving superior quality standards that meet evolving customer expectations while enabling firms to address internal operational challenges through knowledge-based solutions (Hervas-Oliver, Sempere-Ripoll, & Boronat-Moll, 2022).

From a global perspective, process innovation has proven to be a fundamental driver of manufacturing competitiveness and economic growth across developed nations. Germany, which maintains the fourth largest GDP globally, has demonstrated the critical importance of process innovation through its leadership in industrial innovation, directing 2.9% of its GDP towards research and development—the highest percentage among European nations (World Bank, 2022). In 2022, German companies and individuals filed 47,353 patent applications, representing 43.6% of all patent applications across Europe, demonstrating the country's commitment to continuous process improvement and technological advancement. Turkish manufacturing firms have similarly leveraged process innovation procedures to enhance their financial performance, with innovation strategies driving improvements in customer performance, internal business processes, and organizational learning capabilities (Karabulut, 2022). Vietnamese manufacturing companies have also demonstrated that process and product innovations significantly benefit firm performance in terms of market share, indicating that investment in innovative activities requires time to generate positive changes in profitability while building customer loyalty (Canh & Liem, 2020).

At the regional level, African manufacturing sectors have increasingly recognized the importance of process innovation as a catalyst for economic transformation and competitive advantage. In Rwanda, empirical evidence reveals that product innovation is directly linked to process innovation, with firms engaging in process innovation more likely to introduce new or improved products to the market, though international quality-recognition remains primarily linked to technology licensing from foreign firms rather than internal innovation capabilities (Ndemezo & Kayitana, 2023). Ghanaian manufacturing firms have demonstrated that innovation dimensions, particularly organizational, product, and process innovations, maintain direct and positive relationships with firm performance, contributing to enhanced team spirits, risk-taking capabilities, productivity improvements, and competitive advantage creation (YuSheng & Ibrahim, 2020). In Nigeria, research within the cable and wire manufacturing sub-sector has revealed that linkage and collaboration are more critical than firm-related variables in promoting innovation strategies, while poor physical and engineering infrastructure constitutes significant constraints to innovation rates in the engineering and agro-allied manufacturing sectors (Egbetokun & Siyanbola, 2020).

1.2 Statement of the Problem

The manufacturing sector in Kenya faces significant performance challenges that threaten its contribution to national economic development, with growth rates consistently lagging behind the broader economy and failing to meet governmental aspirations for industrial transformation. Despite being a critical contributor to Kenya's economic growth, providing substantial employment opportunities and contributing 10.3% to the national GDP, the manufacturing sector's growth has been slower compared to the broader economy, with manufacturing growing by only 3.5% in 2022 while the economy expanded by 5.6% in the same year (KNBS, 2021). This decelerating growth suggests a phenomenon of premature deindustrialization in Kenya, where the sector is losing its share of national GDP despite governmental efforts through Vision 2030 and the Big Four Agenda to boost manufacturing's contribution to 15% by 2030. While Kenya maintains the largest and most sophisticated manufacturing sector in East Africa, it lags behind regional counterparts like Tanzania, Uganda, and Rwanda, which have demonstrated higher growth rates in manufacturing exports, indicating systemic challenges in competitiveness and operational efficiency (DOI, 2021). The stagnation is further compounded by global competitive pressures, particularly from China's rapidly automating manufacturing processes, increasing production costs, access to affordable credit challenges, and an oversupply of manufactured goods globally that has led to slower growth in consumer markets (Berg, 2022). Despite the recognized importance of innovation in improving manufacturing sector performance, there are significant conceptual and contextual gaps in existing literature, with most studies on innovation capabilities focusing on sectors such as banking and ICT rather than manufacturing firms, leaving a critical knowledge void regarding how process innovation strategies specifically impact the performance of large manufacturing firms in Kenya's unique economic and operational context.

1.3 Objectives of the Study

To evaluate the influence of process innovation strategy on performance of large manufacturing firms in Kenya.

1.4 Research Hypotheses

H₀ Process innovation strategy does not have a significant influence on performance of large manufacturing firms in Kenya.

2.1 Literature Review

2.1.1 Theoretical Review

Organizational Control Theory

The theory was proposed by Sullivan (1998). The theory argues that organization strategic innovation involves learning and knowledge accumulation of a trial-and-error process, rooted in experimentation that is individual and collective (Cardinal, Sitkin, & Long, 2020). The capacity of an organization to identify new knowledge and to capture it is considered collective learning. It states that the nature of the innovation process will push firms to either adapt strategies to establish and develop a process or rather adapt alternative strategies that ensure a firm's survival without the uncertainty attached to the innovation process.

This theory adopts an evolutionary approach to the analysis of innovative processes. Successful innovation can build in firms retained capabilities that will allow the firm to survive in the future without innovating (Liu, Bormann & Gao, 2022). The Organizational Control Theory shows the complexity of firms, their environments and the innovation process. For this reason, in such a perspective where uncertainty reigns, the decision-making process is not a linear, synchronic process but instead decision-making is more of an art of muddling through where

every knowledge holder has to contribute especially in firms pursuing innovation strategies (Bitar, 2021).

Theory informs the process innovation which entails procedures within the organization. The processes involved in manufacturing procedures have an impact on innovations touching on its processes. Their capacity, potential and ability to identify and execute new innovation is well anchored on its processes. Organizations should invest on knowledge capacity to hasten their innovations on processes. This theory explains the influence of process innovation strategy on performance of large manufacturing firms in Kenya.

2.1.2 Empirical Review

Kenfac and Yang (2022) examined the effect of process innovation and performance. The study connected process development in the waste administration division which had the objective to inspect the impacts of process development in waste collection forms on districts' exhibitions in Sweden by the utilization of grounded theory technique, it was found that, the utilization of process innovation positively affects the regions budgetary and client's performance. Additionally, the significance of process development as a well-ordered process and not an abrupt change was found to be critical for a successful process innovation. Applying corporate social obligation as a self-direction instrument inside an organization, which add to environmental sustainability for organization; also showed positive relation with municipalities' performance.

In another study by Agyei-Mensah (2023) titled the impact of innovative capabilities on the way the banking sector performs and whose objective was examine innovation capabilities of UT Bank, assessing customers' perception of UT Bank's innovative capabilities and examining the relationship between innovative capability and performance of UT Bank Ghana, revealed that, there was moderate relationship between the performance of the institution and Product innovation, marketing innovation and process innovation. It was further revealed that innovation of the organization and collaborations were weakly related with the performance of the organization. It is therefore suggested that banks become more proactive in developing products and services that create value for customers. Banks must also empower their frontline executives to become more customer oriented as that presents an opportunity to get customer inputs toward innovative decision making.

A study by Nyamoita (2022) determined the impact of process development in service organizations in Kenya. The study established a positive relationship of 0.013 between sale of power, a proportion of the prepaid process innovation and money related execution pointer of profit for resources. Customer and sales (kWh) per representative, with 0.727 and 0.599 significance individually did not influence the monetary execution. The asset structure fundamentally influenced the money related execution negatively. Debt proportion did not significantly affect money related execution of KPLC. The study prescribed that there was requirement for government to encourage innovation among the service organizations which was turn anticipated that would enhance income gathering, enhance utility charging and exactness, decrease pointless expenses and be increasingly focused in the market.

2.2 Conceptual Framework

Conceptual framework helps the reader to quickly see proposed relationships between the variables in the study and shows the interaction of variables diagrammatically (Kothari, 2022). The variables together with their indicators/measures are shown on Figure 1.

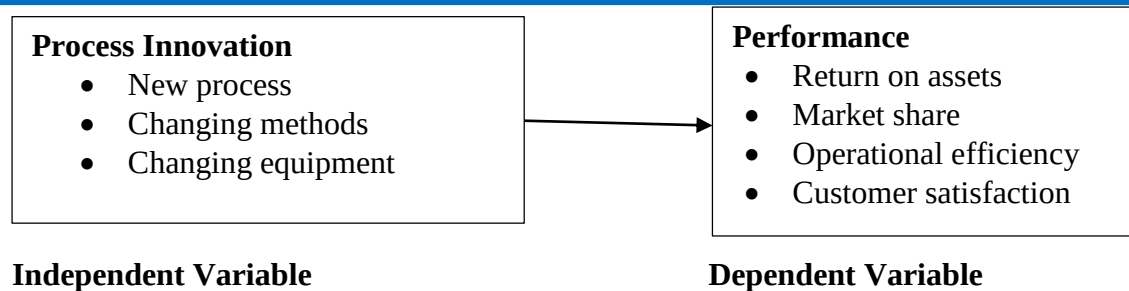


Figure 1: Conceptual Framework

Process innovation refers to the process where new or improved forms of delivery or production are adopted. The main intention of process innovation is to lower the cost of production or delivery or developed new and improved products and therefore increasing quality (Gunday, Ulusoy, Kilic, & Alpkan, 2020). Process innovation aims to improve effectiveness and efficiency of production, improving or changing the performance of an organization. Forms of delivery and production processes are significantly improved during process innovation; this includes changing equipment, methods and software (Suroso & Azis, 2022). There are three various categories of process innovation and they are; service, incremental and radical process innovation (Aziz, Abidin, & Kadir, 2022).

Because of the increasing need for synchronization between companies, for example, marketing and manufacturing departments so that the organization can only produce what the client needs, process innovations offer the solution (Davenport, 1993). Development of process innovation strategies is done based on knowledge of the organization and therefore they act as solutions to the internal challenges faced by the organization (Hervas-Oliver, Sempere-Ripoll, & Boronat-Moll, 2022). Measuring of performance for process innovation is done using the production process details and they include cost reduction indicators, flexibility and empowerment. A company that implements the strategy of process innovation is considered to depend on acquisition of knowledge from external sources with the aim of solving its internal challenges and this is very different from innovation strategies of legacy research and development product (Hervas-Oliver *et al.*, 2022).

The continuous commitment in presentation of new products and services, updating of the current frameworks and presentation of new virtual products for business tasks extraordinarily influences the capacity of the organization to perform (Lilly & Juma, 2022). This empowers its item/service quality upgrades, specialized determination making new and altogether better client esteem along these lines which affects innovation and organizational performance. Therefore, the new market for procurement of new products and services relates with the performance of the organization due to how these markets make the space for development and taking care of more client requests in the market. The study used delivery and production of services and goods in establishing the relationship between innovation of processes and performance of an organization.

3.1 Research Methodology

This study adopted a descriptive survey and correlational research design to examine the relationship between process innovation strategy and performance of large manufacturing firms in Kenya, employing a positivism philosophical approach that emphasizes structured methodology for hypothesis testing and data collection based on observed social entities (Saunders, Lewis & Thornhill, 2021). The target population comprised 50 large manufacturing firms in Kenya as listed by the Kenya Association of Manufacturers (KAM, 2024), with the unit of observation being management level employees including senior managers, middle

level managers, and supervisors from each firm, totaling 150 respondents from which a sample size of 109 respondents was determined using Yamane (1967) formula and selected through stratified random sampling technique to ensure proportional representation across different management levels.

Primary data was collected using structured questionnaires administered through the drop and pick up later technique. Data analysis was conducted using SPSS version 23, employing descriptive statistics to analyze numerical data from closed-ended questions, Pearson correlation analysis to determine the strength and direction of relationships between variables, and simple linear regression analysis to establish the causal relationship between process innovation strategy and organizational performance, with all statistical tests conducted at a 95% confidence level ($p \leq 0.05$) to determine statistical significance.

4.1 Findings and Discussion

The researcher administered 109 questionnaires to management level employees across large manufacturing firms in Kenya, achieving a response rate of 90% with 98 questionnaires correctly filled and returned. This response rate exceeded the threshold recommended by Lynn, Roel, Johanna and Martin (2020), who contend that when 50% of sampled target population participate in a study, it represents satisfactory representation, and surpassed Kothari's (2022) guideline that a response rate of 70% is appropriate for data analysis. The high response rate of 90% demonstrates strong engagement from manufacturing sector management and provides a robust foundation for reliable data analysis and generalization of findings to the target population of large manufacturing firms in Kenya.

4.2 Demographic Statistics

The demographic characteristics of the 98 respondents revealed a predominantly male workforce (62.2%) compared to females (37.8%), with the majority aged between 30-39 years (41.8%) and 40-49 years (31.6%), indicating a mature and experienced management cadre in Kenya's large manufacturing firms. Educational qualifications were notably high, with 42.9% holding bachelor's degrees and 26.5% possessing master's degrees, while organizational positions were fairly distributed among middle level managers (38.8%), senior managers (32.7%), and supervisors (28.5%). Work experience demonstrated significant organizational tenure, with 45.9% of respondents having 5-10 years of experience and 30.6% possessing over 11 years of experience within their respective organizations. This demographic profile suggests a well-educated, experienced, and professionally mature workforce managing large manufacturing firms in Kenya, providing credible perspectives on process innovation strategies and organizational performance given their substantial industry knowledge and operational experience.

4.3 Descriptive Statistics

4.3.1 Descriptive Statistics for Process Innovation Strategy

The objective was to evaluate the influence of process innovation strategy on performance of large manufacturing firms in Kenya. Each statement in the table is assessed based on the responses ranging from "Strongly Disagree" to "Strongly Agree," with the mean and standard deviation (S.D) providing a quantitative measure of central tendency and dispersion, respectively. The results for process innovation strategy are as depicted in table 1.

Table 1: Descriptive Statistics for Process Innovation Strategy

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	S.D
Our organization has continuously implemented new and improved process of production	0.0%	1.1%	2.2%	27.3%	69.4%	4.6	0.5
In our organization new process have created the room for meeting more customer demands	4.4%	2.6%	21.8%	36.2%	35.1%	3.9	1.0
In our organization new process innovation includes the radical improvement of new services and items	1.9%	3.0%	6.8%	30.5%	57.9%	4.3	0.8
Our organization has incorporated noteworthy upgrades in systems, strategies and programming in our process	2.6%	3.0%	11.2%	61.8%	21.3%	3.9	0.8
Our organization has applied corporate social responsibility as a self-regulation mechanism as part of process innovation	1.9%	7.1%	25.1%	46.8%	19.1%	3.7	0.9
Our organization is improving the existing process, which has enhanced product quality and organization competitiveness	4.9%	5.7%	46.0%	30.0%	13.3%	3.4	0.9
In our organization change in techniques has presented an opportunity to get customer inputs toward innovative decision making	1.8%	6.3%	8.9%	55.7%	27.3%	4.0	0.8
In our organization there has been changes in the techniques of production which has enhanced the performance	1.1%	1.8%	7.4%	56.8%	32.8%	4.1	0.7
Government has fostered change in technique among the manufacturing companies	0.4%	0.7%	7.4%	57.0%	34.4%	4.2	0.6
Average						4.0	0.7

The first statement, focusing on the continuous implementation of new and improved production processes, shows a high level of agreement among respondents, with a mean of 4.6 and a low standard deviation of 0.5. This indicates a strong consensus about the active engagement in process innovation within organizations. The second statement, which addresses the creation of opportunities to meet more customer demands through new processes, has a mean of 3.9 and a higher standard deviation of 1.0. This suggests a moderately positive perception but with greater variability in responses, reflecting differing views on the effectiveness of these innovations in meeting customer demands.

Further, the radical improvement of services and items as part of process innovation is also viewed positively, as reflected by a mean of 4.3 and a standard deviation of 0.8. This points to a strong agreement on the significance of transformative changes in processes. The incorporation of significant upgrades in systems, strategies, and software, and the application of corporate social responsibility as part of process innovation, both have means below 4 (3.9 and 3.7, respectively), with standard deviations around 0.8-0.9. These figures indicate a positive but more varied perception among respondents regarding these aspects of process innovation.

Moreover, improvements in existing processes enhancing product quality and competitiveness have a mean of 3.4, the lowest among the statements, accompanied by a standard deviation of 0.9. This could imply a more cautious or varied viewpoint on the effectiveness of process improvements in driving competitiveness. The role of customer inputs in innovative decision-making and the impact of changes in production techniques on performance are both viewed

positively, with means of 4.0 and 4.1 and standard deviations of 0.8 and 0.7, respectively, suggesting a general consensus on their importance.

The influence of government in fostering change in technique among manufacturing companies is also acknowledged positively, as indicated by a mean of 4.2 and a low standard deviation of 0.6, reflecting a strong and consistent belief in the role of government policies and support in facilitating process innovation.

The overall average mean of 4.0 with a standard deviation of 0.7 across all statements signifies a strong, positive perception of process innovation strategies in the large manufacturing firms in Kenya. This average indicates a general consensus among respondents on the effectiveness and importance of these strategies in enhancing organizational performance. The relatively low standard deviation suggests that this perception is consistent across different firms and respondents, reinforcing the significance of process innovation as a key driver in the performance and competitive advantage of these manufacturing firms.

4.3.2 Descriptive Analysis of Performance

The dependent variable was performance of large manufacturing firms in Kenya. The results for performance are as depicted in Table 2.

Table 2: Descriptive Statistics for Performance

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean	S.D
Our organization has experienced an increased corporate profitability over the last five years	0.7%	0.7%	13.3%	59.8%	25.5%	3.9	0.7
In our organization, there has been improvement in return on assets over the last five years	0.4%	1.5%	9.6%	65.4%	23.2%	4.1	0.6
In our organization, return on assets is used to show prior achievements that are used as a basis for future high performance	0.4%	1.1%	10.7%	63.6%	24.3%	4.0	0.6
Our organization has experienced an increased market share over the last five years	0.0%	1.8%	9.6%	64.7%	23.9%	4.2	0.6
Our organization has experienced an increased customer base over the last five years	0.4%	1.1%	14.3%	58.6%	25.6%	4.1	0.7
Our organization has experienced improved customer service delivery over the last five years	0.4%	1.1%	16.3%	64.1%	18.1%	4.0	0.7
Our products consistently meet customer expectations in terms of quality and reliability	0.3%	1.3%	12.5%	62.8%	23.1%	4.3	0.6
Our firm actively seeks and incorporates customer feedback	0.5%	1.0%	13.0%	61.7%	23.8%	4.4	0.7

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean	S.D
to improve our products and services							
Average	0.4%	1.2%	12.4%	62.8%	23.2%	4.1	0.67

Firstly, the statement regarding increased corporate profitability over the last five years had a mean score of 3.9 with a standard deviation of 0.7. This indicates that respondents generally agreed that corporate profitability has increased, though there was some variability in their responses. Regarding improvement in return on assets over the last five years, the mean score was 4.1, with a standard deviation of 0.6. This suggests a strong agreement among respondents, with relatively low variability, indicating that the majority of respondents observed significant improvement in this area.

The use of return on assets to showcase prior achievements as a basis for future high performance also received a high mean score of 4.0 and a standard deviation of 0.6, reflecting a strong consensus among the respondents that this metric is crucial for setting future performance benchmarks. When it comes to increased market share over the last five years, the mean was 4.2 with a standard deviation of 0.6, highlighting a strong agreement that the organization has successfully captured a larger portion of the market, with consistent responses across the board.

The statement concerning an increased customer base over the last five years had a mean score of 4.1 and a standard deviation of 0.7, indicating that respondents largely agreed that customer numbers have grown, though there was slightly more variability in their responses. In terms of improved customer service delivery over the last five years, the mean was 4.0 with a standard deviation of 0.7, showing a general agreement among respondents, albeit with some differences in opinion.

The statement about consistently meeting customer expectations in terms of quality and reliability had a higher mean of 4.3 and a standard deviation of 0.6, suggesting that respondents strongly agree that the organization's products are reliable and of high quality, with minimal variability in their responses. Finally, the statement on actively seeking and incorporating customer feedback to improve products and services received the highest mean score of 4.4 with a standard deviation of 0.7. This indicates that respondents strongly agreed that their organization prioritizes customer feedback in enhancing their offerings, with slightly more variation in responses. On average, across all the statements, the mean score was 4.1 with a standard deviation of 0.67, indicating that respondents generally agreed with the positive trends in organizational performance, with moderate consistency in their responses.

4.4 Correlation Analysis

Correlation analysis helps assess the strength and direction of relationships between variables before conducting regression analysis. The correlation matrix is presented in Table 3.

Table 3: Correlation Coefficients Matrix

Variables	Performance	Process Innovation
Performance	1.000	
Process Innovation	.752** (p=0.020)	1.000

Process innovation strategy demonstrates a strong and statistically significant positive correlation with organizational performance ($r = .752, p = 0.020$), indicating that improvements in production processes, delivery methods, and operational techniques are closely associated with enhanced firm performance. This finding aligns with Hervas-Oliver, Sempere-Ripoll, and Boronat-Moll (2022), who argue that process innovation serves as a critical driver for organizational effectiveness by enabling cost reduction, quality improvements, and operational flexibility. The strong correlation suggests that manufacturing firms in Kenya that continuously implement new and improved production processes, incorporate technological upgrades in their systems, and foster changes in production techniques are more likely to achieve superior performance outcomes.

4.5 Regression Analysis

The simple linear regression analysis examining the relationship between process innovation strategy and firm performance is presented in Table 4. The model demonstrates a strong relationship with an R-squared value of 0.565, indicating that process innovation strategy accounts for 56.5% of the variance in firm performance. The adjusted R-squared value of 0.558 confirms the model's robustness when accounting for sample size and predictors.

Table 4: Regression Results for Process Innovation Strategy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.752	0.565	0.558	0.31245		
Source	Sum of Squares		df	Mean Square	F	Sig.
Regression	23.971		1	23.971	178.52	0.000
Residual	18.535		96	0.193		
Total	42.506		97			
Variables	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	t		Sig.
(Constant)	2.401	0.087		27.603		0.000
Process Innovation	0.315	0.024	0.752	13.367		0.000

The regression results reveal that process innovation strategy has a significant positive influence on firm performance ($\beta = 0.315, p = 0.000 < 0.05$). The F-statistic of 178.52 with a p-value less than 0.001 indicates that the model is statistically significant at the 0.05 level. The standardized beta coefficient of 0.752 suggests a strong positive relationship between process innovation strategy and performance. Furthermore, the t-value of 13.367 exceeds the critical value, confirming the statistical significance of the relationship. These findings provide strong evidence that process innovation strategy is a significant predictor of performance in large manufacturing firms in Kenya. The fitted model was;

$$\text{Organizational Performance} = 2.401 + 0.315 \times \text{Process Innovation Strategy}$$

The regression results reveal that process innovation strategy has a significant positive influence on firm performance ($\beta = 0.315, p = 0.000 < 0.05$), with the F-statistic of 178.52 and p-value less than 0.001 indicating statistical significance at the 0.05 level. The standardized beta coefficient of 0.752 suggests a strong positive relationship between process innovation strategy and performance, while the t-value of 13.367 exceeds the critical value, confirming the statistical significance of the relationship. These findings align with Hervas-Oliver, Sempere-Ripoll, and Boronat-Moll (2022), who argue that process innovation serves as a

critical driver for organizational effectiveness by enabling cost reduction, quality improvements, and operational flexibility. The results corroborate Gunday, Ulusoy, Kilic, and Alpkın's (2020) assertion that process innovation significantly impacts organizational performance through enhanced production efficiency and competitive positioning. Similarly, Kenfac and Yang (2022) demonstrated positive effects of process innovation on organizational financial and customer performance in Swedish municipalities, while Agyei-Mensah (2023) found moderate relationships between process innovation and institutional performance in the banking sector. The fitted model, $\text{Organizational Performance} = 2.401 + 0.315 \times \text{Process Innovation Strategy}$, provides strong evidence that process innovation strategy is a significant predictor of performance in large manufacturing firms in Kenya, supporting the theoretical foundation of Organizational Control Theory which emphasizes learning and knowledge accumulation through systematic process improvements (Cardinal, Sitkin, & Long, 2020).

5.1 Conclusions

Based on the findings, the study concluded that process innovation strategy positively affects performance of large manufacturing firms in Kenya. The average implementation of process innovation strategies has been strong as indicated in the descriptive results. Production processes have been continuously improved over the years, and enhanced forms of production methods, delivery systems, and operational techniques are being explored and implemented to meet the demands of competitive market environments. Process innovation strategy is very fundamental and responsible for operational efficiency and will determine organizational competitiveness. Process innovation strategy involves implementing new and improved production processes, incorporating significant upgrades in systems and software, and fostering changes in production techniques with the aim of reducing operational costs and enhancing quality. The outcome of continuous process improvement is more noteworthy consistency in product quality and progressively efficient operations. Implementing process innovation strategies is geared towards mitigating operational inefficiencies while improving on quality, flexibility, and overall organizational performance.

6.1 Recommendations

Based on the empirical findings demonstrating a significant positive relationship between process innovation strategy and organizational performance in large manufacturing firms in Kenya, several key recommendations emerge. Management should prioritize continuous implementation of new and improved production processes while conducting cost-benefit analyses to ensure optimal returns on process improvement investments, alongside systematic upgrades of operational systems and comprehensive employee training to facilitate successful adoption. Government policy makers should develop innovation-supportive policies including tax incentives for firms investing in process improvements and regulatory frameworks that facilitate technology adoption in the manufacturing sector. Academic institutions should incorporate process innovation modules in business curricula and establish research centers focused on manufacturing innovation to advance understanding of process improvement methodologies. Manufacturing firms should strategically leverage their organizational characteristics such as firm size, industry experience, and workforce capacity to amplify the effectiveness of process innovation strategies, recognizing that favorable firm attributes significantly enhance innovation-performance relationships and can be utilized to optimize innovation outcomes and achieve superior competitive positioning in the dynamic manufacturing environment.

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