Process Innovation as a Strategic Tool in Enhancing the Performance of Organizations: A Study of Manufacturing Firms in Nigeria

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Abstract

This study investigated how process innovation might be used as a strategic tool to improve organizational performance in the context of Nigerian manufacturing companies. The study employed a descriptive survey methodology and population of the study consisted 7.533 employees from specifically 3 chosen manufacturing companies in Nigeria: Lafarge Africa Plc, Flour Mill Nigeria PLC and PZ Cussons. The sample size for the study was estimated using Andrew Fisher's Formula to be 366 and the distributed questionnaire was designed on a five-point Likert scale. Out of the 366 questionnaires that were distributed, 340 were returned, giving the study a response rate of 93%. SPSS was used to examine the data that were obtained. The study found a substantial correlation between the two variables and it was determined that process innovation is important for improving organizational performance. As a result, it was therefore recommended that manufacturing companies should constantly innovate their processes to increase competitive advantage in the market.

Keywords: Manufacturing Firms, Innovation, Process Innovation, Business Performance, Competitive Advantage

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I. Introduction

Innovation is a crucial component of an organization's performance in this modern, demanding business environment. Businesses are becoming more aggressive, particularly when looking for innovative ways to ensure their profitability and secure a long-term competitive advantage (Namusonge, Muturi & Olaniran, 2016). According to Ebuzoeme, (2022); Faith and Simon (2023), process innovation is currently viewed as a method for giving organizations directions that will enable them to lower their cost of unit production and delivery while simultaneously improving the quality of their products and introducing new goods. The level of innovation and technological improvement in manufacturing industries has been theorized to be correlated with competitiveness. These businesses must coordinate their efforts in order to improve the effectiveness and standard of their operations (Alvarez, Bravo-Ortega & Zahler, 2015).

Process innovation is one of the key tools manufacturing companies may employ to boost their expansion into new markets and increase their market share in existing markets, giving the company a competitive edge over rival companies (Kiptoo & Koech, 2019). Since businesses operate in a setting with actual rivalry and technological changes that can quickly wear down the value provided to particular goods or services, Nnodim, Onuoha and Needorn, (2020) stressed the importance of innovation in their study. Process innovation aids in cost reduction for an organization and typically results in product innovation for the launch of new items in the market. Domnich (2022) argues that companies that tightly integrate process innovation are more likely to succeed, particularly when trying to increase performance.

Iherobiem (2023) asserts that process innovation greatly improves an organization's manufacturing and logistical processes, including the acquisition and upkeep of its auxiliary operations. This serves as a strategy that that enables an organization lower the total cost of production in its manufacturing processes. According to Nwankwo and Ezeibe (2021), businesses use such actions to meet client demands and compete in the marketplace. Additionally, according to Peter, Munga, and Nzili, (2021), it enables organizations to increase their productivity. Process innovation, according to Azar and Ciabuschi, (2017), enables the reengineering and enhancement of the capabilities of a company organization. According to Koyluoglu and Dogan (2021), adopting strategic plans that will support the implementation, development, and provision of process innovations is necessary for an organization to be relevant and competitive in the business environment.

Firms must ensure they stay in business in the fiercely competitive business environment, and to do this, they must be innovative. According to Ekeh, (2023), businesses should employ process innovation to increase efficiency in their daily operations and in the creation of products that cater to their target market. According to Drucker, (1985), one of the goals of process innovation is to draw in new clients while retaining current ones. According to Wambua and Stephen (2021), process innovation is the only way to enhance an organization's operations and provide it a sustained competitive edge. They also emphasized that even if innovation does not directly have a significant impact on an organization's business market, it can still help the organization generate dynamic capabilities that can be used to gain an early competitive advantage, particularly during market changes.

However, there have been a plethora of research done on the subject of strategic innovations and how they impact business performance. Studies like Ekeh, 2023; Namusonge, Muturi & Olaniran, 2016; Nwankwo & Ezeibe, 2021 have stressed that a failure to implement process innovation results in a significant loss in an organization's business operations. Changes in the business environment have had an impact on the modes of operation and performance levels of several manufacturing firms in Nigeria (Ebuzoeme, 2022). Namusonge, Muturi and Olaniran, (2016) asserted that manufacturing companies must now find ways to provide customers with high-quality goods at lower prices, and that the only way to do this is through process innovation. They also stressed the necessity for manufacturing companies to look for ways to upgrade their current products and offer new ones in a more lucrative way if they are to remain competitive and preserve their place in the market. This has put pressure on them to adopt process innovation as a tactic to improve their performance.

It is impossible to overstate the importance of process innovation because it may be said to be a tool for improving organizational performance and achieving a firm competitive advantage. Therefore, the purpose of this study was to assess the dimensions of process innovation and how they affect the performance of manufacturing companies in Nigeria.

Research Objectives

i. To establish the effect of product process innovation on performance of manufacturing firms in Nigeria

ii. To determine the effect of delivery process innovation on performance of manufacturing firms in Nigeria

iii. To examine the effect of support service innovation on performance of manufacturing firms in Nigeria

Research Hypotheses

$H0_1$: Product process innovation has no significant effect on performance of manufacturing firms in Nigeria

$H0_2$: Delivery process innovation has a significant effect on performance of manufacturing firms in Nigeria

$H0_3$: Support service innovation has a significant effect on performance of manufacturing firms in Nigeria

II. Literature Review

Process Innovation

Faith and Simon (2023) defined process innovation as the process of enhancing an organization's production and logistics methods in order to dramatically enhance all of its supporting activities, such as purchasing, accounting, computing, and maintenance. This definition matched that of Rogers (1962), who believed that process innovation encompassed any major enhancements made to the entire process of production and delivery, regardless of the tools, technologies or software utilized. They also underlined the need for businesses to innovate their business practices in order to increase their productivity across the board. The term "process innovation" typically refers to a completely new approach that has not yet been adopted or implemented by the company. The process may have been created by the business itself or with outside assistance (Namusonge, Muturi & Olaniran, 2016).

According to Alves, Galina and Dobelin (2018), "process innovation" refers to the adjustments made in an organization as a result of the adoption of new information and communication technologies. This comprises putting new approaches into practice or improving an existing technique in order to develop an organization's entire process. Process innovation is an integrated strategy employed by a business to improve the entire production process (Hari, Fredi & Eneng, 2020). According to Domnich (2022), process innovation is an organizational capacity that involves combining resources and manufacturing processes to develop new processes or enhance current ones.

Performance

Performance is a multifaceted concept that may be measured in many different ways, including by customer happiness, market share, brand reputation, workforce count, profitability and productivity. Additionally, as both financial and non-financial goals are taken into account when assessing an organization's performance, organizational performance can be seen from either perspective (Rajapathirana & Hui, 2018). The efficacy and efficiency of an organization in terms of production and the accomplishment of goals can also be related to how well a firm performs. According to Nwankwo and Ezeibe, (2021), performance is defined as the outcomes an organization achieves in relation to its aims and objectives. Performance was defined by Mugane and Ondigo, (2016) in terms of growth, success, survival, and competitiveness.

According to Azar and Ciabuschi (2017), an organization's performance refers to its ability to carry out its overall mission and vision through dedication, effective management and sound governance. According to El-Kassar and Singh (2019), performance refers to how an organization's profit, product quality and market share compare to those of similar businesses' prior years in the same industry. They went on to explain that performance is measured in relation to a specific standard, and that when that standard is satisfied, it is thought that the organization's performance has improved. Additionally, Peter, Munga and Nzili, (2021) stressed that performance is the accomplishment of a goal.

Dimensions of Process Innovation

There are three dimension of process innovation and they include the following: Production process innovation, delivery process innovation and support service process innovation (Namusonge, Muturi & Olaniran, 2016).

Production Process Innovation

Production process innovation, according to El-Kassar and Singh (2019), entails a constant re-invention of an organization's manufacturing process in terms of the production processes, technology and equipment. In their study, Hari, Fredi and Eneng (2020) noted that this process innovation dimension necessitates all required components for maintaining an effective output to be continuously monitored and evaluated. This will enable the company to reduce costs associated with the manufacturing process, increase production efficiency generally and manufacture more high-quality products more quickly, all of which will help it establish and maintain its competitive advantage. Rajapathirana and Hui (2018) noted in their study that the employment of more efficient techniques, technologies and materials allows an organization to cut costs while improving effectiveness and efficiency throughout the entire manufacturing process. According to Azar and Ciabuschi, (2017), this procedure enables an organization to acquire the best and most modern equipment to facilitate their entire production process, and by implementing this in the organization, it will result as an improvement in the organization's performance in terms of quality of its products and services.

Delivery Process Innovation

According to Mugane and Ondigo (2016), this process innovation entails the enhancement of all elements and supplies that support the complete supply chain process as well as the timely and effective delivery of goods and services. They added that in order for a business to execute its services with excellence, it must look for a strategy that would allow it to both meet and surpass its consumers' expectations. Delivery process innovation helps companies develop new market segments for their products and services as well as expand their existing market segments. Faith and Simon (2023) noted that this would help a company improve its performance because the innovation would meet customers' needs, which would increase their general level of satisfaction, encourage repeat business, increase customer loyalty, and, in the long run, guarantee an improvement in the performance of the company as a whole. According to Kiptoo and Koech (2019) research, implementing this innovation within a business will help it effectively differentiate its goods and services from those of competitors, which will enable it to gain a competitive edge.

Support Services Innovation

In their study, Hari, Fredi and Eneng (2020) emphasized that when a company provides excellent customer support, particularly after a particular conversation or deal is made, customers are more satisfied and perceive this as a high-quality service from the company. This will encourage them to continue or complete a conversation with the company, and there is a high likelihood that they will return after the first or subsequent purchases. When this happens, it is believed that a company can benefit from an innovative support system to increase sales and improve performance. Ebuzoeme (2022) argues that without an effective innovation strategy, a company is vulnerable to failure and has little choice but to be inventive in order to succeed. Support process innovation is a crucial component of process innovation that also affects an organization's performance and success.

III. Theoretical Framework

Diffusion of Innovation Theory

Everett Rogers put up the Diffusion of Innovation Theory in 1962. Rogers developed this idea as a way to show how new inventions and technology are being adopted and used by a specific social system or population. Diffusion, according to his book, is the process by which members of a certain system share innovations. In the opinion of Kindström and Kowalkowski, (2014), diffusion can be viewed as the communication and sharing of knowledge among members of a specific system. This results in the adoption of a specific new idea, process or product. According to Rogers (1962), corporations adopted this theory because they needed to get rid of misinformation, uncertainties and excessive costs while embracing innovations and innovative techniques to increase productivity.

In addition, Barrett, Davidson, Prabhu and Vargo (2015) explains that the theory is based on four fundamental concepts: Time, social systems, communication and innovation. Time is thought to be one of the most important factors since it affects how quickly and how thoroughly a business adopts innovations. This is the case because different social systems embrace innovations at different times and rates, leading to the designation of some as early adopters, early majorities, and others as late majorities or laggards. Azar and Ciabuschi, (2017) claimed that an organization's performance will depend on how much it embraces innovation. Innovation spreads in many different forms and across many various cultures as well as industries. These manifestations depend typically on the organizational decision-making process as well as the types of adopters (Alves, Galina & Dobelin, 2018). Manufacturing companies appear radical since they frequently depend on innovation to bring about the adjustments they need to make in order to perform significantly better.

Resource-Based View (RBV) Theory

Penrose created this theory to explain how an organization's internal resources contribute to the development of a long-lasting competitive edge in the marketplace. According to Penrose (1959), some participants in an industry are perceived to perform better than others in the same industry on a consistent basis due to well-organized and valuable resources, and this is a factor in an organization's competitiveness. Among other scholars, Peteraf & Bergen (2003) and Barney (1996) support Penrose's position. RBV, as defined by Barney (1996), refers to the variety in organizational ranks within an industry. According to the RBV, various authors have proposed that it is fair for an entity to claim a competitive advantage if it successfully and efficiently utilizes its resources.

The resource-based theory holds that although an organization is endowed with a variety of resources, not all of them significantly aid in achieving the firm's competitive advantage. It is expected that an organization examines its resources before designing any strategy (Eisenhardt & Martin, 2000). This is understandable because an organization's resources will ultimately determine the performance of the firm and the sustainability of a strategy. This theory can be used in this study to help manufacturing companies understand the value of their resources and talents, especially when implementing an innovative strategy. It reveals that in order to increase performance, this company must identify its resources and employ them effectively.

IV. Methodology

The study used a descriptive survey research design because it focuses more on the phenomenon under study in relation to the factors that may affect, cause or relate to the phenomenon. This design also gives the researcher more control over the study's subjects rather than making it challenging to meet the study's objective. The design was chosen because it made it easy to administer the research tool and allowed for the collection of data from a vast audience without the need for additional handling or manipulation (Saunders, Lewis & Thornhill, 2012). The population of the study consist of 7533 employees of some manufacturing firms in Nigeria where 1343 are Lafarge employees, 5150 are Flour Mill Nigeria PLC employees and 1040 are PZ Cussons employees. The study used questionnaire which was structured in form of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD). The sample of 366 employees was selected across the manufacturing companies and used in carrying out the study. This was based on Andrew Fisher's Formula for sampling. The Cronbach's Alpha method was used to analyze the questionnaire as well as Optimal Scaling/ Categorical regression method using Statistical Package for Social Sciences (SPSS).

V. Results and Discussion

Out of the 366 questionnaires that were distributed, 340 were returned, giving the study a response rate of 93%. The data collected were analyzed using the multiple regression analysis and at 5% level of significance.

$H0_1$: Product process innovation has no significant effect on performance of manufacturing firms in Nigeria

$H0_2$: Delivery process innovation has a significant effect on performance of manufacturing firms in Nigeria

$H0_3$: Support service innovation has a significant effect on performance of manufacturing firms in Nigeria

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.687[a]	.472	.467	.75679

Predictors: (Constant), Process Innovation

Source: Authors' computation (2023)

Table 1 shows that, there was a positive correlation between process innovation and organizational performance. The correlation was 68.7%, indicating that process innovation had strong association with organizational performance. More so, process innovation explained 47.2% of the total variations in the organizational performance among manufacturing firms in Nigeria. This result indicated that the job satisfaction model had moderate goodness of fit. The result was equally justifiable with the low value of standard error of estimate (0.76).

Table 2: Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	43.722	3	14.574	45.313	.000[b]
	Residual	178.752	336	.532		
	Total	222.474	339			

Dependent Variable: Organizational Performance
Predictors: (Constant), Product Process, Delivery Process, Support Service

Source: Authors' computation (2023)

Table 2 shows the overall significant of the organizational performance - process innovation model. The result of the F-statistic (45.313) was not significant at 5% level, indicating that the relationship between process innovation and organizational performance was significant. This means that process innovation had a significant influence on organizational performance among manufacturing firms in Nigeria.

Table 3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)					
	Product	4.629	.828		5.591	.000
	Process	.545	.045		.455	.001
	Delivery	.613	.067	.045	.995	.004
	Process			.032		
	Support Service	.602	.089	.050	.731	.000

Dependent Variable: Organizational Performance

Source: Authors' computation (2023)

Table 3 shows the result of the effect of process innovation on manufacturing firms in Nigeria. The table revealed that product process was statistically significant as it has an effect on organizational performance ($t = 0.455$; $p = 0.001 < 0.05$). This led to the acceptance of null hypothesis. The table also revealed that delivery process innovation was statistically significant as it has an effect on organizational performance ($t = 0.995$; $p = 0.004 < 0.05$). This resulted in the acceptance of null hypothesis and the table revealed that support service innovation was statistically significant as it has an effect on organizational performance ($t = 0.731$; $p = 0.000 < 0.05$). This led to the acceptance of null hypothesis.

VI. Findings

The study established that there exists a significant effect of process innovation on the performance of organization and this supports the findings of Ebuzoeme, (2022); Hari, Fredi and Eneng (2020) that process innovation strategies relate positively to the growth of organization in terms of revenue and profitability. The findings of several studies, including those by Koyluoglu and Dogan (2021), Nnodim, Onuoha, and Needorn (2020), which were of the opinion that process innovation would enable the development of a new product and give the organization an advantage over its rivals, provide additional support for this. According to Peter, Munga, and Nzili (2021), process innovation is crucial, particularly when changing an organization's structure because these changes are required to increase the organization's performance.

VII. Conclusion and Recommendations

Due to the changes in modern business economies, innovation is a strategy that is widely accepted in organizations. It was concluded from the study that in order for an organization to continuously improve its products and services, it must cultivate process innovation as part of its organizational strategy. The study found a link between process innovation and the performance of manufacturing firms, and it was concluded that in order for an organization to quickly identify opportunities and introduce products to the market, they must develop the process innovation structures that serve as a foundation for

meeting the demands of the business environment and satisfying customer needs.

Concerning recommendations, manufacturing companies should constantly innovate their processes to increase their competitive advantage in the market. Also, to ensure an improvement in operational efficiency, manufacturing companies should regularly assess and measure their services activities. Manufacturing companies should make sure that their process innovation projects include effective and efficient goal clarification that will aid in picturing a future layout as well. Moreover, in order to eliminate uncertainties in the process timelines, manufacturing companies should make sure that there is a clear link between the organization and the suppliers.

Finally, future research should identify the pertinent issues that were not covered in this study but are crucial, particularly when applying process innovation within an organization, and which will result in the creation of a sustainable competitive advantage. Additionally, because the study was focused on manufacturing firms, additional research on other industries is required to determine whether the outcome will be similar.

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