TECNOLOGICAL INNOVATION AND ORGANISATIONAL PERFORMANCE

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Abstract

This study investigated the impact of technological innovation on organizational performance. The objectives of the study were to determine the relationship between product innovation, process innovation and employee innovation on organization effectiveness at five selected banks in the banking industry. The study adopted descriptive survey research design. A structured questionnaire was chosen as the research instrument. A sample size of 124 was determined from a population of 180 employees of five selected banks using Taro Yaname formula. The data was analyzed using multiple regression analysis through Statistical Package for Social Sciences (SPSS) version 21 .The findings of the study revealed that process innovation(P=0.002) and product innovation (P=0.000)jointly and independently predict organization effectiveness with Pvalues less than 0.05 significant level.. The study therefore concluded that there is positive relationship between technological innovation and organization effectiveness. The study recommended amongst other things, that organizations should embrace innovations

Keywords: Organization effectiveness, Process innovation, Product innovation. Technological innovation,

Introduction

In recent times, the concept of technology has becomes a global phenomenon which permeates all industries of the world irrespective of the size of a firm or the nature of product in which it has invested its resources into. Daniel (2018). Organizations today are confronted with rapidly changing market condition indicated by high merger rate and competitions, as organization and societies sail into the twenty first century, there is a growing interest in the ways that technology affect business works environments and human behavior.The psychological and sociological factors involving the quantity of work and organizational environment impacts on the demands placed on workers and managers in the corporate world, and on individuals in various societies. Hence, technology is a factor to reckon with in every sense be it as relevance to individual effort or as a driver for organizational growth.

According to Damanpour and Evan, (2019), Technological innovation refers to the implementation of an idea for a new product or a new service or the introductions of the new elements in an organization production process or service operation. For example, in a recent research carried out by Singh, Mathieson and Mishra (2015) material technologies are used for technological issues in organizations. For instance, to develop an application, a firm can create generic and resources to proceed with the application.

In the modern business world, Technological innovation has become a central focus of top management in various organizations. For instance, in the turbulent markets, firms succeed because modern technology are used for products and services, coccia (2017). Again, today's environment is full of uncertainly, market challenges, changing workforce demographics, social and political pressures and not least of all technological advances making Organization to embark on logical changes, Scott, (2016).

In view of the forgoing, however, there is need for organizations to be innovative technologically to be competitive in the market and companies should train their employee for better efficiency and enhanced organizational performance (Adeyeye (2017). In a recent survey, many firms in Nigeria find it difficult to compete with their foreign counterparts, partly because of their inability to innovate. In today's world, technology develops rapidly; competition becomes global and more difficult, consumer's needs and expectations constantly increase and change, and product life cycles get shorter Jayani& Yan Hui, (2018)

Recent studies by Sullivan (2016), DeYoung, (2017), Hassan (2018), Pigni (2018), Kagan (2019), Arnaboldi (2019), Ciciretti (2019), Weigeltue (2020) showed that electronic banking applications required advanced technology

increasing the overall profitability of the banks in the U.S and European Countries. It is essentially obtained that internet banking has a significant positive contributions to development of competitions in the banking sector and banks performance. Therefore, internet banking applications make bank build the orientation of technological innovations up (Arnaboldi & Claeys, 2008, Ciciretti, 2019). It has been observed that technology based and in particular internet banking products reduce the operational risk of the banks (Hassan, 2017). Internets banking applications increase the asset quality of banks an therefore increases the operational profitability and ROE performance directly (Kagani,2015).

It is in view of this that research work attempts to examine the impact of technological innovation on organizational performance.

Statement of Problem

Organization's strategists constantly scan the environment for technological changes that may significantly affect their organization's operations, performance and survival. However , business performance of many organizations are still challenged with lack of innovation in their products and process due to low investment in technological innovation which has given rise to FINTEC companies also performaning the role of commercial banks because of high investment in advance technology . In view of this background, this study aimed to examine the impact of process and product innovations on organizational effectiveness in some selected banks in Yewa south local government area.

In order to achieve the objectives of the study identified, the following questions will be the research guide. Firstly To what extent does process innovation affect organization effectiveness? And secondly, what is the relationship between product innovation affect organization effectiveness?

Literature Review

Technological Innovation

There are numerous perspectives regarding the technological innovation among scholars and researchers. Organizations today act under severe pressures by other enterprises, which offer the same or similar products and services. Organizations are also under the pressure of the customers who expect more and more from the products they consume. These pressures cause organizations under the pressure of the customers who expect more and more from the products they consume.. It is thus becoming imperative in today's highly digital world for enterprises and organizations to use technological innovations in serving the needs and demands of their customers.

Omar Al-Halawani (2018) found the importance of innovation in technology to combat competitors. Survey Participants suggested banks were engaging in incremental and gradual innovations rather than radical changes.
Having identified technological innovation as a key indicator of bank efficiency. The rapid development of technological innovation has led to most banks requiring automated electronic systems to compete with other banks to offer better and faster services.

Process Innovation

A process innovation is the implementation of a new or significantly improved production or delivery method which includes significant changes in techniques, equipment and or software (e.g. installation of new or improved manufacturing technology, such as automation equipment or real-time sensors that can adjust processes, computer-aided product development). It can also be described as improving or changing current procedures and techniques used in the production of products. Adner & Levinthal, (2015) stated that Firms bring process innovation to produce innovative products and amendments are also brought in the processes to produce the new products. In addition, Entitle& Reza(2017) study revealed that bringing automation in the production methods has increased the efficiency and productivity of the organizations.

Process innovation has been one of the indispensable business strategies (Damanpour, 2016) that contribute to long-term success sustainability of a firm (kandampully, 2019).

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses which includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. A vast market has developed on

the internet, online purchasing and banking have been by products of this growth. Many businesses have been quick to recognize and exploit the niche.

The range product on-line is virtually in exhaustible and puts the internet at the top of the list of convenience good, alongside ready-made meals. In this rapidly evolving modern society of which we are all a part, convenience has become crucial to survive the ever increasing pace of life.

Organizations today act under severe pressures by other enterprises, which offer the same or similar products and services. Organizations are also under the pressure of the customers who expect more and more from the products they consume. These pressures cause organizations to continuously search for new product offerings and enhancing existing once (shqipe,Gadaf and Veland,2013).

Organization Effectiveness

A measure of performance of a company that may not only depends on the efficiency of the company itself but also on the market where it operates. In the financial sector, it is also known as financial stability or financial health. Performance encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.). Organization's performance comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives). Organization Effectiveness is used to determine the level an organization is achieving its objectives. According to (Ogunna, (2019), Organizational Effectiveness could be high when there is industrial peace and harmony, Organizational high productivity, Organizational high profitability, employee satisfaction, customer satisfaction/ high patronage and process innovation. This means that an organization that is achieving its objectives is performing positively.

Organizational Effectiveness is the process of making sure that firms' resources are being set (George, 2017). Abdel-Maksoud, Asada and Nakagawa (2018) defined it as one of the most imperative means in evaluating organizations, their activities and environments.

Becos and Cauvin (2015) viewed it as an actual output or results of an organization as measured against its intended outputs (or goals and objectives). When employees put in their best in doing their job that will result to high organizational effectiveness and therefore enhance organizational productivity.

This study hinged on the assumptions of Joseph Schumpeter that trade cycles came about as the result of innovation activity of the entrepreneurs in a competitive economy. According to Schumpeter an entrepreneur is one who perceives the opportunities to innovate, i.e. to carry out new combinations or enterprise.

Yahya, Marwan &Muna (2017), employed a sample size of 200 in a survey research to study Technology Orientation, Innovation and business performance and their findings revealed that technology orientation influenced innovation but didn't have a significant and direct influence on business performance.

Therefore, the study concludes that the performance of banks is influenced both by Technology Innovation Investment as well as Technology cost efficiency. However, it is worthy of note that the impact of Technology Innovation on effectiveness or performance of banks. (Adekunle Oluwole Binuyo and Rafiu Adewale Aregbeshola (2015).

Research Methodology

The research design used in this study is a descriptive survey. The population of the study comprises of the employees and management of five selected Banks in the Yewa south local government area. As at the point of conducting this research study, the usable/feasible population of each of the case study and their total population as obtained from the Human resource department of each of the Bank are given in the table below

The researcher determined the needed sample size from the study population by using Taro Yamane Statisticalformula for determining sample size from the total population of the staffs of the five selected Banks.

Whereby $\mathbf{n = \frac{N}{1 + N(e)^2}}$

Key Interpretations:
n = The desired sample size.
N = The size of the population of interest (in the research case study N = 180 staffs)
e = Limit of error tolerance which the researcher assumed to be 5.0% = 0.05 by way of substituting the figure (e = 0.05) into the formula, we therefore have:

$$\mathbf{n} = \frac{N}{1 + N(e)^2} = \frac{183}{1+180(0.05)^2}$$

$$= \frac{180}{1 + 180(0.0025)} = \frac{180}{1.45} = 124 \text{ sample size}$$

The researcher obtained a sample size of one hundred and eleven (124) from the population study of one hundred and fifty three (180).

The researcher specifically designed the close-ended researchquestionnaire with the aim of analyzing the impact of technological innovation on organization effectiveness at the five selected banks.

The validity of the constructs in the questionnaire tested for validity and content validity. The instrument was validated by effecting necessary correlations which examine the contents and ascertain clarification of ideas as well as appropriateness of its items.

The Cronbach Alpha Reliability Tested the reliability of the research instrument.

Method of Data Analysis

The data obtained from this research were analysed through the use of multiple regression analysis and correlation co-efficient. In the meantime, the Statistical Package for social science (SPSS) was used to test the set of hypotheses in order to affirm the influence of the predictor variable on the dependent variable in this study.

The model describing the relationship between technological innovation and organization effectiveness is given as:
(OE = β0+ β1PCI + β2PDI+ β3EMI+U

Where:
OE= Organizational Effectiveness
β0= Regression coefficient of the constant
PCI= Process innovation
PDI= Product innovation
EMI= Employee innovation

Note: organizational effectiveness measured organizational performance

U =Error term.

Data Presentation

The table below shows the distribution of the questionnaires administered in terms of the number completed and returned, those not returned at all, and those returned but not completed by the respondents

Reliability Statistics

Cronbach's Alpha	Valid number	No of Items
.865	114	22

Source: Researcher's Compilation from SPSS, 2022.

The Cronbach alpha reliability test shows the result of the reliability test of the responses of the respondents to the returned questionnaire, the result shows the Cronbach alpha value of 0.865 which indicates that the respondents responses is highly reliable.

Discussions of Result

Here, the data collected from the questionnaires distributed were analyzed. Selected questions that relates to the hypotheses in Section B were analyzed in order to validate the already stated hypothesis. Multiple Regression method was used in testing the validity of impact of technological innovation on organizations' effectiveness

Table 4.2.1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.758[a]	.575	.563	2.237

a. Predictors: (Constant), Employee innovation, Product innovation, Process innovation

Source: Researcher's Compilation from SPSS, 2022.

Table 4.2.1 shows the coefficient of determination that explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (Organization Effectiveness) that is explained by all the 3 independent variables (employee innovation, product innovation and process innovation)**.** The three independent variables that were studied, explain 57.7% of variance to investigate technological innovation and organization effectiveness as represented by the R Square. This consequently means that other factors not studied in this research contribute 42.5% of variance in the dependent variable. Therefore, further research should be conducted to investigate technological innovation and organization effectiveness.

Table 4.2.2

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	743.992	3	247.997	49.547	.000[b]
	Residual	550.578	110	5.005		
	Total	1294.570	113			

a. Dependent Variable: Organization Effectiveness

b. Predictors: (Constant), Employee innovation, Product innovation, Process innovation

Source: Researcher's Compilation from SPSS, 2022.

The F critical value at 5% level of significance was49.547, this shows that the overall model was significant. The significance (0.00) is less than 0.05, thus indicating that the predictor variables (employee innovation, product innovation and process innovation), explain the variation in the dependent variable (organization effectiveness). If the significance value of F was larger than 0.05 then the independent variables would not explain the variation in the dependent variable.

Table 4.2.3:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.682	1.018		5.513	.000
	Process innovation	.326	.104	.286	3.143	.002
	Product innovation	.395	.108	.295	3.661	.000
	Employee innovation	.403	.117	.299	3.432	.001

a. Dependent Variable: Organization Effectiveness

Source: Researcher's Compilation from SPSS, 2022.

The regression equation (OE = β0+ β1PCI + β2PDI+ β3EMI) was interpreted to mean
OE = 5.682 + .326PCI + .359PDI + .403EMI
OE = Organization Effectiveness
β0= Regression coefficient of the constant
PCI= Process innovation
PDI= Product innovation
EMI= Employee innovation

According to the equation, taking all factors constant at zero,organization effectiveness will be .000. The data findings also show that a unit increase in Process innovation will lead to 0.326 increase organization effectiveness; a unit increase product innovation will lead to .395 increase in organization effectiveness; a unit increase in employee innovation will lead to 0.403 increase organization effectiveness. This result shows that; process innovation contributes more to organization effectiveness than other variables. Consequently, it is observed that all the three independent variables are significant with their respective significant values at 0.002 for process innovation, 0.000 for product innovation, and 0.001 for employee innovation. This is an indication that all the variables are significant.

Interpretation of Results

The stated hypotheses were tested using multiple regression model with least square method.

Hypothesis I

H_{o1}: There is no significant relationship between process innovation and organization effectiveness.

The coefficient table shows that process innovation and organization effectiveness with significant value of 0.002 is statistically significant which denote that we reject null hypothesis and conclude that there is significant relationship between process innovation and organization effectiveness. In contrast to the above study, Yahya, Marwan & Muna, (2017) founded a negative relationship that exist between technological innovation and firms' performance. Therefore, this quantitative study has shown that process innovation have a direct impact on firms' performance.

Hypothesis II

H_{o2}: There is no significant relationship between product innovation and organization effectiveness.

The coefficient table shows that product innovation and organization effectiveness with significant value of 0.000 is statistically significant which denote that we reject null hypothesis and conclude that there is significant relationship between product innovation and organization effectiveness. This is in line with the study of "An Evaluation of the Effect of Technological Innovations on Corporate Performance" (Nwosu, Awurum&Okoli, 2017), which argued that Product innovation is one of the key factors that contribute to success of an organization that new product development and product innovation is an important strategy for increasing the market share and performance of business then asserted a positive relationship between product innovation and organization performance. In contract to ifeanyi (2015) contributed base on the statistical result of his study, that process innovation has significant positive effect on the performance of manufacturing firms; that product innovation has significant positive effect on the performance of manufacturing firms; that organizational structure has significant positive effect on the performance positively

Conclusion

The main objective of this study is to assess impact of Technological innovation on organization effectiveness in some selected banks in Yewa south Ilaro, Ogun State.

Specifically, the first hypotheses of this study state that Process innovation has no significant effect on organization effectiveness. The findings of the study revealed a probability value of 0.002 relationships between process innovation and organisation effectiveness. The study then concluded that there is strong positive significant relationship between process innovation and organisation effectiveness. Furthermore, the second hypotheses state that product innovation has no significant relationship on organization effectiveness. The findings of the study revealed a probability value of 0.000 relationship between product innovation and organisation effectiveness. The study then concluded that there is strong positive significant relationship between product innovation and organisation effectiveness. which argued that Product innovation is one of the key factors that contribute to success of an organization and that new product development and product innovation is an important strategy for increasing the

market share and performance of business then concluded a positive relationship between product innovation and organisation performance.

The study also concluded based on the results that out of the three components of technological innovation (process and product innovation) considered in this study, employee innovation contributes more to organisation effectiveness than other components.

The study finally concludes that technological innovation through its components (process innovation, product innovation and employee innovation) have a significant relationship with firms' effectiveness based on the study result that is in line with the conclusions of recent empirical studies (Adeyeye, 2017; Ifeanyi, 2015; Huseyin, Salih & Hulya 2016; Kathleen & Ralph, 2018; Muhammed & Morteza, 2016) on technological innovation and firms' effectiveness 's

Recommendations

Based on the discussions and the conclusion drawn so far, the study makes the following recommendations.
Banking firms should invest and pay adequate attention to product innovation as this will hamper their competitiveness but also survive market dynamism in the long run.

In addition, as a result of the findings, it is recommended that banking firms should train their employee so that they can master new innovation, so they can be productive, which will lead to better performance.
Furthermore, the study also recommends that Organizations should endeavor to adopt appropriate process and structure because appropriate process provides efficiency of operation and appropriate structure provides a solid foundation for company's Operation and technology.

Consequently, it is recommended that organisations should invest heavily on research and development exercises as it is a viable source of improving organisation innovation capability.

More importantly, the researcher recommends upcoming researchers to embark on research studies focusing on factors other than technological innovation, which may influence.

Finally, the study recommends that banking firms should give more serious attention to technological innovation as it plays a vital role in increasing and sustaining efficient organisation effectiveness.

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