

## The Effect of Product and Process Innovation Capabilities on the Competitiveness of Nigerian Quoted Banks

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**Abstract:** *The impact of globalization and rapid technological change has given rise to intense competition among firms, with firm survival and success increasingly depending on strategies adopted to increase firm competitiveness. Many organizations have used different approaches to achieve and sustain firm competitiveness, but we noticed that Nigerian banks are deeply involved in financial innovations, especially, in the years following the banking reforms that place in 2005. This study therefore examined the effect of product and process innovation capabilities on the competitiveness of Nigerian Quoted bank. The study used cross section survey method to administer structured questionnaires on 244 respondents, who are Regional managers, bank managers and operational managers of 16 Quoted Nigerian banks, operating in the six states of the South – South region of Nigeria. Based on the results of the Structural Equation Modeling (SEM) used to analyze the relationships and effects of product and process innovation capabilities on firm competitiveness, the study concluded that these two innovation capabilities had positive and significant effect on firm competitiveness. The study recommends that banks reconfigure and modify their innovative products and processes, and make them unique, more appealing, more accessible, and operationally more effective, than those of their competitors.*

**Key words:** *Product innovation capability, process innovation capability, competitiveness, Nigerian Banks.*

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### INTRODUCTION

The landscape of today's business environment is greatly altered by forces of globalization and rapid technological change. This has tended to make competition among firms very tough and fierce. Therefore, firm survival and sustainability would increasingly depend on strategies adopted to increase firm competitiveness. Highlighting this need, Drucker (1999) posits that it is imperative that organizations deal with challenges of competition, and make firm competitiveness a major strategic goal. Understanding competitiveness is therefore of major interest to academicians, practicing managers and policy makers. Consequently, this study is an attempt in this direction to explore how firms can achieve and sustain organizational competitiveness by developing requisite innovation capability.

Every competing company in an industry desires to be superior, when compared to her competitors, with many aspiring to dominate the market and become market leaders. Competitive firms are known to exhibit higher growth rates and higher market share (Selcuk, 2016). Competitive firms also enjoy low production costs, increasing profits and market share in the face of competition (Pedraza, 2014).

The big question now is “How is firm competitiveness built, maintained and sustained?” Many scholars believe that innovation plays a major role in building firm level competitiveness, as innovation enables firms to become competitive and gain competitive advantage. A look at the activities of Nigerian banks in the last decade, will show how they are massively investing in ICT-based financial innovations. These banks believe it is financial innovations that deliver their desired competitive edge (Chijioke, 2015). But, a contrary report by Long (2011), indicated that success rate of innovation activities is low. Another contrary report by Battor and Battor (2010) noted that, about 50 percent of new products that are introduced each year usually fail. Given these disturbing contrary reports, there was the urgent need to investigate and establish the effect of product and process innovation capabilities on organizational competitiveness.

## **LITERATURE REVIEW**

### **The Concept of Innovation**

In recent years, innovation has become a necessary requirement for firms’ competitiveness and success. Because of this importance, innovation has generated a lot of academic and research interest, resulting in our having many definitions of innovation. Some researchers have defined innovation in terms of newness; seeing innovation as the successful introduction of a new product, procedure, organizational structure or market (Schumpeter, 1934). Innovation has also been described in terms of creating new demand; thus Schumpeter (1934) believes that innovation enables the use of an invention to create a new commercial product or service. When new innovations are brought into the market, the existing markets are destroyed, and new ones created, which will also be destroyed by the introduction of newer products or services. Schumpeter calls this process creative destruction.

This study analyzed Innovation studies carried out by Damanpour (1996), Cumming (1998) and Higgins (1995) and observed that these authors defined innovation: (1) in terms of newness- the development, and adaptation of a new idea; (2) In terms of success- the first successful application of a product or process; (3) In terms of change- here Innovation is viewed in terms of change: either a firm responds to changes in the external environment or influences changes therein. But a more encompassing definition is given by Alder and Shenbar (1990) and cited by (Rahmani & Mousavi, 2011), which defines innovation as: (1) the ability to develop products to meet the needs of market, (2) the ability to use existing technology to develop products, (3) the ability to develop new products or update existing products to meet the needs of markets, and (4) the ability to acquire new technology to create new opportunities.

### **Firm Competitiveness**

A company is said to have continuous competitiveness or competitive advantage if it is able to produce better results than competitors; and successfully create specific and lasting differentiation factors (Porter, 1985), thus every company in an industry desires to be superior, when compared to their competitors.

Firm competitiveness can be determined through various ways. Profitability, Turnover, Market share and growth have been suggested by (Ramasamy, 1995; Lall, 2001). Pedraza (2014) believes that a firm’s capability in profitably sell marketable products. in the face of competition,

could represent competitiveness.

Porter (1987) views it in terms of a firm having competitive advantage- either cost advantage or differentiation advantage. Through cost advantage, firms deliver the same benefit at a lower cost, whereas with differentiation advantage, firms deliver unique products whose benefits exceed those of competitors. Some scholars have used financial performance to measure firm competitiveness (Panagiotis & Konstantinos, 2015). Financial indicators like Return on Sales (ROS); Return on Assets (ROA) and Turnover are commonly used. The non-financial indicators of competitiveness include market indicators like market share, market share growth, product range, and customer satisfaction.

Firm competitiveness has been linked with growth in productivity, thus having high productivity may indicate higher competitiveness (Momaya & Ambastha, 2004). Another measure of firms' competitiveness is the survival capacity of firms as Innovation is believed to enhance a firm's competitive position, whilst at the same time enhancing its potential to survive (Dosi, 1988).

In this study, two measures of firm competitiveness were used, namely Sales Growth and Product competitiveness. These are based on measurement scale developed by Yam, Lo, Tang, and Lau, (2010).

*Sales Growth:* Sales growth measures the annual growth rate of a firm, for the preceding three years. In fact, the sales growth rate is an indicator of both the sales of new and existing products, made from new and existing customers.

*Product Competitiveness:* This relates to the competitiveness of a firm's new products. Product competitiveness is a non-financial measure, thus a concept that encompasses many aspects, such as quality level, cost, market competitiveness and uniqueness of product (Yam *et al.*, 2010). Supriyadi (2014) observes that many companies engage in three aspects of innovation activities: they either invent, innovate or imitate. Through inventions they create or build a new product or process. Innovation enables firms to create a commercial product of the invention. Through Imitation, innovation activities of similar organizations are used or adapted.

### **The concept of Innovation Capability**

Innovation capability is simply a set of comprehensive characteristics of a company or organization which can be used to facilitate and support its innovation strategies. This set of characteristics consist of various competences and represent the asset, capital, and special human resources of the company, which are required in executing innovation activities (Lianto & Herlambang , 2018). The present study adapted the dimensions and measures of the two innovation capabilities from the study carried out by Calik, Calisir & Centinguc (2017). More discussions on these dimensions are presented below.

### **Product Innovation Capability**

This represents a firm's ability to create and deliver new goods or services to existing or new customers, or offering of existing goods or services to new customers (Day, 1994). To Schumpeter (1934), it represents the ability to introduce a new good, which has better quality, and one which consumers are unfamiliar with. The OECD (2005) defines product innovation in terms of new product introduction or significant improvement of existing products, in terms of technical specifications, convenience, materials used, and other functional characteristics.

Firms go into Product innovation to deal with challenges of competition, which arise from changes in customer tastes and preferences, variation in demand patterns and technological advancement.

There are two major ways to execute product innovation: radical and incremental innovation. Though radical innovation is more challenging, but it is more effective, while Incremental innovation is less demanding as it is focused on an existing market.

Some of the innovative products, which are ICT driven, being used in the banking industry include Automated Teller Machines (ATMs), telephone banking, MICR cheques, Electronic Card, Debit Card, Electronic Cash, Electronic Fund Transfer at Point of Sale, and many other electronic fund transfer technologies (Agboola , 2006) In the same vein, Irechukwu (2000) has also listed some of the banking services that have been revolutionized through the use of ICT-based innovations as including account opening, processing of transaction, and delivery of notices concerning credit cards and cheque books.

A related study by Ukpabio, Olaposi & Siyanbola(2016) indicates that the major hardware technologies acquired by Nigerian commercial banks include routers, computers, scanners, ATM, POS machines, telephone, master visa cards, and web cam. In terms of the Software technology acquisition, the study noted that surveyed banks were using: flexcube, finacle, eBBs, equinox, basis, phoenix and Globus /T24.

### **Process Innovation Capability**

This represents a firm's ability to coordinate and utilize resources, to increase efficiency and effectiveness of the firm's internal processes (Damanpour, 2010). Process innovation entails the introduction of new production method, approach or new technology, with the aim of improving production processes. Process innovation aims at waste reduction, and removal of non-value adding steps from the work flow. Process innovation capability aims at achieving lower costs and/or higher product quality (Afuah, 2003; Blaug, 1963), thus Process innovations may be invisible to the user unless it results in changes in the cost or quality of the product (Tushman & Anderson, 1986). Lager (2002) summarized the major objectives of process innovation as follows: To reduce production costs, ensure higher production yields, increase production volume, and ensure recovery of product.

Some empirical studies have confirmed the link between process innovation and organizational performance. A study by Varis & Littunen (2010) among some SMEs in Finland showed a positive correlation between process innovation and firm performance.

Ilo, Ani & Chioke (2014) observed that the introduction of computers into the banking sector has enabled banks to automate their accounting processes and back office functions. The study also indicated that the automation of front office functions had improved customer service, resulting in the reduction of processing time and improve their corporate performance.

### **Research Hypotheses**

H<sub>01</sub>- There is no significant relationship between a company's product innovation capability and organizational competitiveness

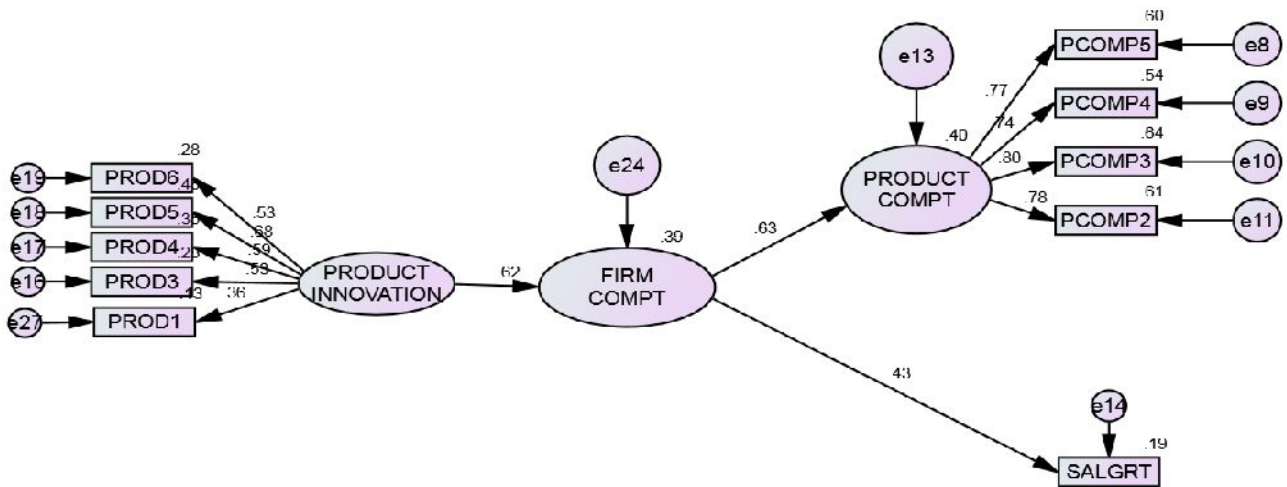
H<sub>02</sub>- There is no significant relationship between a company's process innovation capability and firm competitiveness.

**METHODOLOGY**

The study conducted a cross sectional survey on 244 respondents, using structured self-completing questionnaires. The respondents were made up of regional managers, branch managers and operational managers of all the Sixteen (16) Quoted banks, operating in the South-South Region of Nigeria. Stratified sampling technique was also used in determining sample size proportions, and data was collected using a five (5) point Likert scale questionnaire. Descriptive analysis was carried out on each of the study variables, using frequency tables, and percentages. Inferential statistics was carried out using Structural Equation modeling (SEM). Technique. The analyses were carried out on the Statistical Package for Social Sciences (SPSS) version 22 software program and on IBM Amos program, Version 21 program.

Before conducting the hypotheses testing, a thorough measurement analysis was conducted to verify the survey instruments. The reliability was tested using a pilot test on some Quoted banks, and the Cronbach's Alpha value of every factor was greater than the minimum value of acceptable reliability (Nunnally, 1979).

Exploratory Factor Analysis (EFA) carried out was based on Principal Component Analysis method, ensuring that the Eigen value of each factor was above 1 and the factor loadings are above 0.3 (Brown 2006). Measurement model was constructed for each of the constructs, and the model fit results are within allowable limits. Hypotheses testing relied on the results from the maximum likelihood estimation and standardized regression weighting to interpret results. Multiple indices of fit were used to specifying the overall model fit, namely CFI, GFI, NFI, RMSEA and Cmin/df . The research hypotheses were tested based on the significant level of p-value in each model. Structural models constructed to examine the relationship between the innovation capabilities and firm competitiveness are shown on Figures 3.1 and 3.2 below.



*Fig. 3.1 Structural Model used in studying relation between Product innovation capability and firm competitiveness*

The relationship between Product Innovation and firm Competitiveness, was investigated using the structural model, shown on Fig 3.1 above. The model fit results are as follows:

*CFI = 0.984 > 0.950, GFI = 0.970 > 0.900; NFI = 0.927 > 0.900; CMIN/DF = 1.357 < 3.0, RMSEA = 0.038 < 0.08, p-value = 0.095 > 0.05,*

These Multiple indices are within acceptable levels as recommended by Hair et. al(2010).

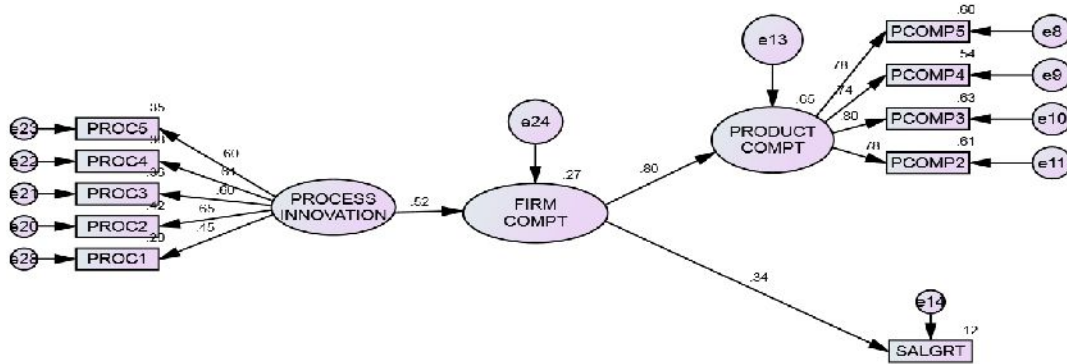


Fig 3.2 Structural Model used in investigating the relationship between Process Innovation and firm competitiveness

The structural model shown in Fig 3.2 above was also used in investigating the relationship between process innovation capability and firm competitiveness. It has the following model fit results:  $GFI=0.978 > 0.900$ ,  $CFI=0.994 > 0.950$ ,  $RMSEA=0.028 > 0.08$ ,  $CMIN/DF=1.195 < 3.00$ ;  $p=0.243 > 0.05$ , and also within allowable fit level.

Table 3.3 Hypotheses Testing

MODEL	Variable	Standardized Regression weight	Squared Multiple correlation (R <sup>2</sup> )	Critical Ratio	p-value	Decision
I	Product Innovation & Competitiveness	0.505	25.5%	2.208	0.027	H01 not supported
II	Process innovation & Competitiveness	0.410	16.8%	3.499	0.000	H02 Not supported

The results of hypothesis testing depicted on Table 3.3 above shows that in Model I, Product Innovation Capability has the following parameter estimates, ( $\beta = 0.505$ ,  $R^2=25.5\%$ ;  $p=0.027 < 0.05$ ) which shows a significant effect on firm competitiveness. With the value of the critical ratio greater than the standard value ( $2.208 > 1.980$ ) and probability value smaller than alpha standard of 0.05 ( $0.0027 < 0.05$ ), therefore, these empirical results do not support the Null hypothesis one (H01) which states that product innovation capability has no significant relationship with firm competitiveness. Therefore, this study concludes that product innovation capability has a positive and significant effect on firm competitiveness.

Also, In Model II of Table 3.3 above, Process innovation capability has the following model parameter estimates ( $\beta = 0.410$ ,  $R^2=16.8\%$ ;  $p=0.00 < 0.05$ ), indicating a significant and positive relationship between process innovation and firm competitiveness. Given the fact that the value of the critical ratio was greater than standard value ( $3.499 > 1.980$ ) and probability value smaller than alpha standard of 0.05 ( $0.00 < 0.05$ ), the study could not support the Null

Hypothesis Two (H02), but rather asserts that process innovation capacity has a positive and significant relationship with firm competitiveness.

## **DISCUSSIONS**

From the analysis carried out, the study concludes that product innovation capability has a positive and significant effect on firm competitiveness. Thus, when organization embark on strategies aimed at enhancing their product innovation capabilities, there tend to be a corresponding increase in firm competitiveness. This result agrees with some earlier studies, especially that of Jegede *et al.*, (2012) which concluded that innovation of products increases firms' sales revenue and profitability. This research finding is also in line with that of Damanpour (1991) and Sungjoo *et al.* (2010), which concluded that business competitiveness is associated with product innovation.

The result of the analysis on Hypothesis Two, (H02) shows that the empirical data used has confirmed that a positive and significant relationship exists between process innovation capability and firm capability. This means that when there are significant improvements in process innovation capability, this results in the enhancement of firm competitiveness. This research outcome is in conformity with the findings of Mensah & Acquah, (2015) and Kiveu (2017).

Further analysis shows that the combined effects of the two innovation capabilities accounted about 21.6% of firm competitiveness. This implies that other factors account for 78.4% of variations in firm competitiveness. This means that developing innovative products and processes do not on its own guarantee firm competitiveness. This finding in line with the observations made by Alejandra, & Arias-Pérez (2017), who studied the effect of product and process innovations on the financial performance of manufacturing firms in Colombia, and noted that companies that developed greater product and process innovation capabilities do not always exhibit the best business results, particularly when you talk about market share, or growth in sales. These researchers believe that the development of product and process innovation capabilities may be insufficient to obtain a better financial performance, and suggest that banks complemented these two innovation capabilities with development of marketing and organizational innovation competences.

## **CONCLUSIONS AND RECOMMENDATIONS**

The findings of this study show that the development of innovative products and processes has positive and significant influence on the competitiveness of Nigerian quoted banks. It is therefore recommended that the development of these two innovation capabilities should form an important component in the overall strategy of banking operation, as these innovative products and processes guarantee speed, convenience, and accurate services. The findings of this study indicate also that product and process innovation capabilities have little impact on firm competitiveness. This may be attributed to the fact that all the Quoted banks are using the same kind of financial innovation and ICT applications. These seemingly highly innovative products tend to lose their appeal as a competition tool for attracting and retaining customers as a result of their being universally available. There is therefore nothing unique about having them since all the other banks have them as well. For these quoted banks to derive optimum benefits from investing in these innovative products, the banks must take additional steps to make their services more appealing, accessible, and operationally more effective than the ones offered by their competitors. Given the fact that the effect of innovative products and processes on firm competitiveness is not much compared to the impact of other innovation capabilities, firms should therefore, develop their marketing and organizational capabilities in order to derive

expected benefits from investments in innovative products and processes. It is also suggested that they combine their ICT investment with complementary investment in human capital development, and firm restructuring.

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