

Effect of Productivity Drivers on the Performance of Selected Manufacturing Firms in Nigeria

Adedeji Elijah Adeyinka “Corresponding Author”

Department of Accounting, Federal University of Technology, Akure, Ondo State, Nigeria
eaadedeji@futa.edu.ng

Olowolaju, Philip Segun.

Department of Accounting, Federal University of Technology, Akure, Ondo State, Nigeria
psolowolaju@futa.edu.ng

Abstract

Manufacturing activities have significant impact on the economy of any nation and account for a considerable total economic activities in developed economies. The qualities of such activities have also been traced to disparities in economic growth between developed and developing nations. Academic key success factors driving productivity in manufacturing sectors especially in developing nations are scarce and their effect on manufacturing firms have not been adequately documented. Therefore the study examined the effect of productivity drivers on the performance of listed foods and beverages manufacturing firms in Nigeria. Total of satisfactorily completed copies of questionnaire was two hundred and ninety six. Relationship between technological innovation and performance were examined using percentage score, correlation and regression analysis. Also, both personnel skill and firm competitiveness were examined using both regression and correlation analysis at 5% level of significance. PT (0.0655) and MT (0.8189) had positive influence on MS at $p = 0.001$ while AIT (-0.1087) had negative influence on MS at $p = 1.000$. Furthermore, PT (0.560) and MT (0.6134) exhibited positive correlation ($p = 1.000$ with MS) while AIT (0.7750) exhibited negative correlation ($p = 1.000$ with MS). EQ (74.0402), EEY (51.01090) and EJS (84.5103) exhibited significant relationship with operational efficiency. The NFI (0.8079), PD (4113), CD (6250) and MD (5540) showed a strong positive correlation with firms' competitiveness at $p = 1.000$. NFI (40.6956), PD (66.8501), CD (97.4940) and MD (47.9514) exhibited significant relationship with ROI ($p = 0.027$). Technological innovation have significant influence on market-share of foods and beverages manufacturing firms. Also, relationship existed between personnel skill and operational efficiency while firm's competitiveness exhibited a significant positive relationship with ROI in foods and beverages manufacturing firms in Nigeria. The study recommended that operators of manufacturing firms should adequately engage the use of production technology, appropriate marketing technology, and good personnel skill and take advantage of firms' competitiveness to drive performance positively.

Keywords: Productivity Drivers, Technological Innovation, Personnel Skill, Firm's Competitiveness.

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Introduction

Adeniran (2014) describe productivity drivers as the factors that are both internal and external to the firm. The internal factors include managerial practice/talent, higher-quality, general labour and capital inputs, information technology and Research and Development (R and D), learning-by-doing, product innovation and firm structure decisions. The external factors include productivity spillovers, competition, deregulation or regulation and input markets. Productivity drivers is categorized into different variables such as; technological innovation, financing structure, personnel skill and firm's competitiveness.

Firms nowadays maintain a mix of debt and equity, but the problem is which proportion of debt is and equity has greater benefits against lesser costs. Organization financing through debt have to pay interest to its creditors while these financing through equity give dividends to its shareholders from profit and sometimes generate the retained earnings account that is not meant for distribute to the shareholders but is reflecting in their profit (Amjed, 2011; Khan, 2012; Umar, 2012).

Capital structure represents the major claims to a corporation's assets. This includes the different types of equities and liabilities (Riahi, 2008). The debt-equity mix can take any of the following forms: 100% equity: 0% debt, 0% equity: 100% debt and other forms of mixes. The mixes of debt and equity have long been the subject of debate concerning its determination, evaluation and accounting (Adaramola and Sulaiman, 2005).

Productivity has played significant roles in consolidating economies of both emerging and middle income countries through higher real earnings, improvements in working conditions and improved returns on asset (Uche 2001). Nto and Mbanasor (2011) observed that enhanced productivity drivers will equally contribute to the competitiveness of manufacturing firms in both domestic and foreign market is what is required to put Nigeria back on the path of economic recovery and growth. This is imperative following the prolonged economic

recession occasioned by the collapse of the world oil market from the early 1980 as well as global financial crisis that rocked all the manufacturing firms since 2007 (Oyeranti, 2012). Anyanwu (2014) reported that middle income countries like Hong Kong, South Korea, Singapore, the Philippines, India, Mexico and Brazil which took similar steps and embraced boosting of productivity drivers among manufacturing firms as an integral part of their national planning scheme have made significant in-roads into the world manufacturers' market. Also, Japan from the end of the World War II and the United States of America from the 1970s have made high productivity drivers the center point of their economic development plans and the results have been resounding. Nigerian manufactures must borrow a leaf by bringing productivity drivers to focus, if the country is to join the league of economically vibrant states following vision 20, 2020 project. Hence, this study is aimed at reviewing effects of productivity drivers on the performance of manufacturing firms in Nigeria.

Previous Nigerian studies have given insight to the identification and measurement of major determinants of productivity drivers but the methodology used by some of them apparently have some short comings, making their application for policy formation not totally reliable. Such studies consulted include, Bankole (2012) which reported that, measuring productivity drivers involves ratio of total output to total inputs. This measure of physical productivity drivers attempts to produce more outputs with fewer inputs while maintaining quality. (Nto and Mbanasor (2011), however observed that this method of measuring productivity drivers cannot produce reliable meaning especially when comparing productivity drivers at different periods or when comparing different facilities producing similar outputs. Furthermore, the method did not contemplate the use of heterogeneous inputs in the production system, though; some authors suggested that this problem could be solved by adding up in 'constant price' money values.

The loophole in this approach is that the resultant productivity index turn out to be economic productivity and not physical productivity drivers which conveys more and better meaning to users (David 1972; Iyaniwura and Osoba, 1983 and Oyeranti 2012). Pasca (2004) and GrossKopt, (1993) asserted that productivity drivers can be measured through non parametric index number like growth accounting equation and productivity index. Onyeranti (2012) added that the notable shortcomings of the above approaches include biased estimates of productivity drivers because of the prevalence of inefficiency. Also, the parameter to be estimated cannot be tested with econometric tools to determine level of significance (Nto and Mbanasor 2011).

Objectives of the Study

General objective of this study is to examine the effect of productivity drivers on the performance of listed foods and beverages firms in Nigeria. Other specific objectives is to:

- i. determine the influence of technological innovation on market-share
- ii. assess relationship between personnel skill and operational efficiency
- iii. examine the relationships between firm's competitiveness and return on investment.

Conceptual Explanation of Productivity Drivers

Concept of Technological Innovation

Mairesse and Robin (2009) found that product innovation appears to be the main driver of labour productivity in the French manufacturing and service industries. The impact of process innovation was either not significant or close to zero. Also, Legros and Galia (2012), analyzing the sources of knowledge and their effects on productivity in French manufacturing, found that the market share and firm size have a positive impact on innovation decision and intensity of research and development. However, this main result is amplified by existence of competing products and patents. So that, they suggest that firms must invest not only in research and development, but also in different sources of internal and external knowledge such as workers' training. They found that firms that operate mainly in international markets and larger firms are more engaged in formal innovative activities (here Research and Development).

The effect of innovation is divided into two parts; one going to the real output, and another pertaining to the price at which the output is sold. However, they concluded that it is very difficult to dissociate them because of measurement issues. Individual studies give further insights about the relationship between innovation and performance and raise detailed econometric problems according to specificities of each other. Also, they give various understandings about the probability of firms to engage in innovative activities.

Concept of Personnel skills

Skill is an ambiguous and complex concept. Skills encompass mental and physical proficiency, as well as physical dexterity. Skill is not only the ability to do something but the word implies a dimension of increasing ability (Attewell, 1990; Eagly et al., 1995). According to the Society for Human Resource Management (2008), skills are the ability to perform an activity that contributes to the effective performance of a job task. The term skill refers to the ability to do something in an effective

Presently the importance of personnel skills is much higher in knowledge economy than in industrial

economy. Better quality personnel skills can help companies to develop their innovation activities as well as increase ability to absorb high technology knowledge from abroad. Greater personnel skills is complementarity for innovation and ICT use, also positively affects firm productivity (Brynjolfsson and Hitt, 2003; Iranzo, 2008; Arvanitis and Loukis, 2009). In addition, innovation abilities are strongly connected with personnel skills. Wide range of skills needed for innovation, including technical skills, academic skills, generic skills, creativity, soft skills, and management and entrepreneurial skills (Brown 2001). Skill is an ambiguous and complex concept. Skills encompass mental and physical proficiency, as well as physical dexterity. Skill is not only the ability to do something but the word implies a dimension of increasing ability (Attewell, 1990; Eagly, 1995).

Technical skills are more important for junior leaders, conceptual skills are more important for senior leaders and human skills are needed for all leaders. There are many different definitions of leadership (Yukl, 2013). Leadership is the influential relationship between leaders and followers to implement current change (Rost, 1993), leadership is the ability to influence, motivate, and enable others to contribute toward the effectiveness and success of the organization (House, 1999), leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives (Yukl, 2013).

Concept of Firms Competitiveness

Competitive environments are a source, and a consequence, of firm performance. The three operational components mentioned previously, which are: debtors, inventories and creditors, are related to the competitiveness of the industry, and impacted by the country. Payments and collection are deterministic in the profitability, and have impact in the ability to deal with customers (Paul, Devi and Teh, 2012). However, in situations of financial and competitive uncertainty, credit and debtor management has significant influence in firm performance (Bastos and Pindado, 2013). There is evidence that product variety is significant for higher lead times and higher inventories (Salvador, Forza and Rungtusanatham, 2002), which can be associated with the brewing industry for firms of a wider variety of finished product brands. Lall (2001) argues that the use of the World Economic Forum, and its competitiveness indicators, is viable in developed economies, since they consider it market friendly and free trade oriented. In the case of the sample population in question for this study, this does not represent such issue.

In a malt beer perspective, Thome and Soares (International market structure and competitiveness at the malted beer: from 2003 to 2012 and 2015) demonstrated that higher concentrated markets, such as Germany, the Netherlands and Belgium, edge in comparison in channeling their sales as exports. In another study, Parsons and De Vanssay (2014) demonstrated that concentrated markets and competition of firms provide rewards in higher relative profits and market share gains. However, as mentioned by Donadini, Fumi, Kordialik- Bogacka, Maggi, Lambri and Scokoi (2016), the European beer industry has seen evidence of flattening sales and room for improvement in profit margins.

Theoretical Review

The modern firm can be seen as a nexus of contracts between resources holders (Charles and Thomas, 1992). And so, a firm is regarded as a system where there are various stakeholders and its objective is to maximize stakeholder's wealth. Consequently, it is considered a black box operated so as to meet the relevant marginal conditions with respect to inputs and outputs. Considering this, several studies (Abdullah 2011; Gray and Birger 1989; Costea 2006) have adopted different theories to underpin researches carried out on factors that determine firm performance. Such theories employed in these literatures include; agency theory, shareholders theory and stakeholders theory.

Agency Theory

Agency theory explains the relationship that exists between the principal (shareholders, stakeholders and others) and the agent as well as defines responsibilities of agents. The theory posits that as the representatives of the shareholders, the managers are expected to act in such a manner that conforms to the shareholders interest. Consequently, the corner stone of this theory is on the assumption that the interests of principals and the agents diverge. Hence, the need to come up with a theory that will be used to help settle the interests conflicts that might arise between these parties. Also, it is possible that when the interests' conflicts of these parties arises, management would not be able to perform their duties which include maximization of shareholders wealth which is been reflected in the performance of the firm.

Stakeholder's Theory

Stakeholder's theory on the other hand, broadens the shareholders perspective on the creation of a firm and its value. The stakeholders' theory is an extension of the agency theory in that corporate accountability is no longer restricted to shareholders but to a broad range of stakeholders (Abubakar, 2013). This implies that the firm and

its managers have a special obligation to perform and ensure that shareholders have a fair return on their investment. This is in addition to satisfying the obligation of other stakeholders which goes beyond those required by law. The theory recognizes the importance of wealth creation as well as the firm's relationships with its multiple constituent groups.

A firm's stakeholders are all those diverse individuals and groups (direct and indirect) who affect or are affected by a firm's actions. Therefore, stakeholders refer to a group of constituents who have a legitimate claim on the firm. This legitimate right and ownership is acquired by those involve through an exchange relationship.

Comparatively, both shareholders and stakeholder theories recognize and see the importance of the firm's financial success, the purpose of the firm and strategies to improve its competitive position; they just advocate different approaches to that end. Both theories are concerned with value creation and they are both built on the predication and assumption that firms should create as much value as possible. However, the stakeholders theory differ from the shareholders theory, in that the stakeholders theory recognizes that a firm can maximize value by understanding how it affects and is affected by all its numerous constituencies. But, the shareholders theory is in some way hostile toward actions not directly impacting the firm's main purpose of its establishment, whereas stakeholder's theory revolves around human decision-making.

The study however is underpinned by the stakeholder's theory. This theory is considered appropriate for the study as it considers all and sundry of a firm very important to the survival, success and improvement of the firm performance. As the theory explicitly spells out the special obligations of the managers to perform to ensure that stockholders have fair return on their investments in additions to satisfying other stakeholders beyond what the law requires. More so, since the performance measure (return on investment) used by the study is arrived at from the additions of all funds made available to the firm through different means and sources, the stakeholder theory is able to cover these various parties interest points.

Shareholders Theory

Shareholders theory according to Michael (2010) emanates from an economic perspective. That considers the creation of wealth for its owners and the minimization of both the importance of the firm's interaction with its other constituencies and its role in society as the major purposes for the establishment of any firm. Again, Michael (2001) sees shareholder theory as encompassing the idea that the main purpose of business lies in generating profits and increasing shareholder wealth.

Therefore, the performance use is from the perspective of shareholders, and shareholders are interested in the return of their investment. In order to measure performance and effectiveness of shareholders, agency theory comes in that is agency theory comes from the effectiveness of shareholders.

Theoretical Framework

The various theories in the study gave a clear view of firms performance and how managers can ensure that stockholders have fair return on their investments in order to satisfying other stakeholders. Stakeholder's theory is appropriate for the study as it considers all and sundry of a firm very important to the survival, success and improvement of the firm performance.

Empirical Review

Abdullah (2011) investigated the association between firm size and financial performance in the kingdom of Saudi Arabia, considering data of 392 listed companies on firm size and return on assets were collected from the Saudi stock exchange from 2007 to 2010, using multiple regression analysis. The result of the study showed that firm size was associated with the firm performance. Firm size was found to be negatively correlated with ROA but was statistically significant. Hence, it has a degree of importance in the model referring to the strongest contribution that explains ROA. They concluded that smaller firms are more creative, innovative and tend to change more rapidly. Supported by this finding is Banz (1981), who found that as firms grow up, it becomes more difficult for them to sustain impressive performance. So, smaller firms are more creative, innovative and change more readily to enhance performance.

Erasmus (2013) examined the impact of firm size on performance of Microfinance. The study employed the use of panel data for five years and 30 Microfinance institutions operating in the country. Firm size from the study was measured using total assets to numbers of borrowers and number of staff. The findings from the study revealed a positive impact of firm size measured by total asset and number of borrowers on the performance of Microfinance. On the other hand, the study also found out that firm size measured by the number of staff was negatively related to the efficiency sustainability and profitability of Microfinance reviewed.

Gray and Birger (1989) tried to see if economic and organizational factors determine firm performance. Found a negative significant relationship on over 1000 firms in more than 300 business lines. Findings showed that organizational factors explain twice as much variance in firm profit rate as economic factors. The same result was found in the study of Pawan and Shuangi (2014).

Conceptual Framework

In a nutshell common measurements of performance often encountered in academic literature. This research adopted measurements of firm's financial performance for the assessment of productivity drivers on the performance of selected food and beverages firms in Nigeria. Thus, the study conceptualized at investigating the extent to which technological innovation influence market share of food and beverages firms in Nigeria. The study also, examined how financing structure influence return on investment of food and beverages firms in Nigeria.

Dependent Variables

Independent Variables

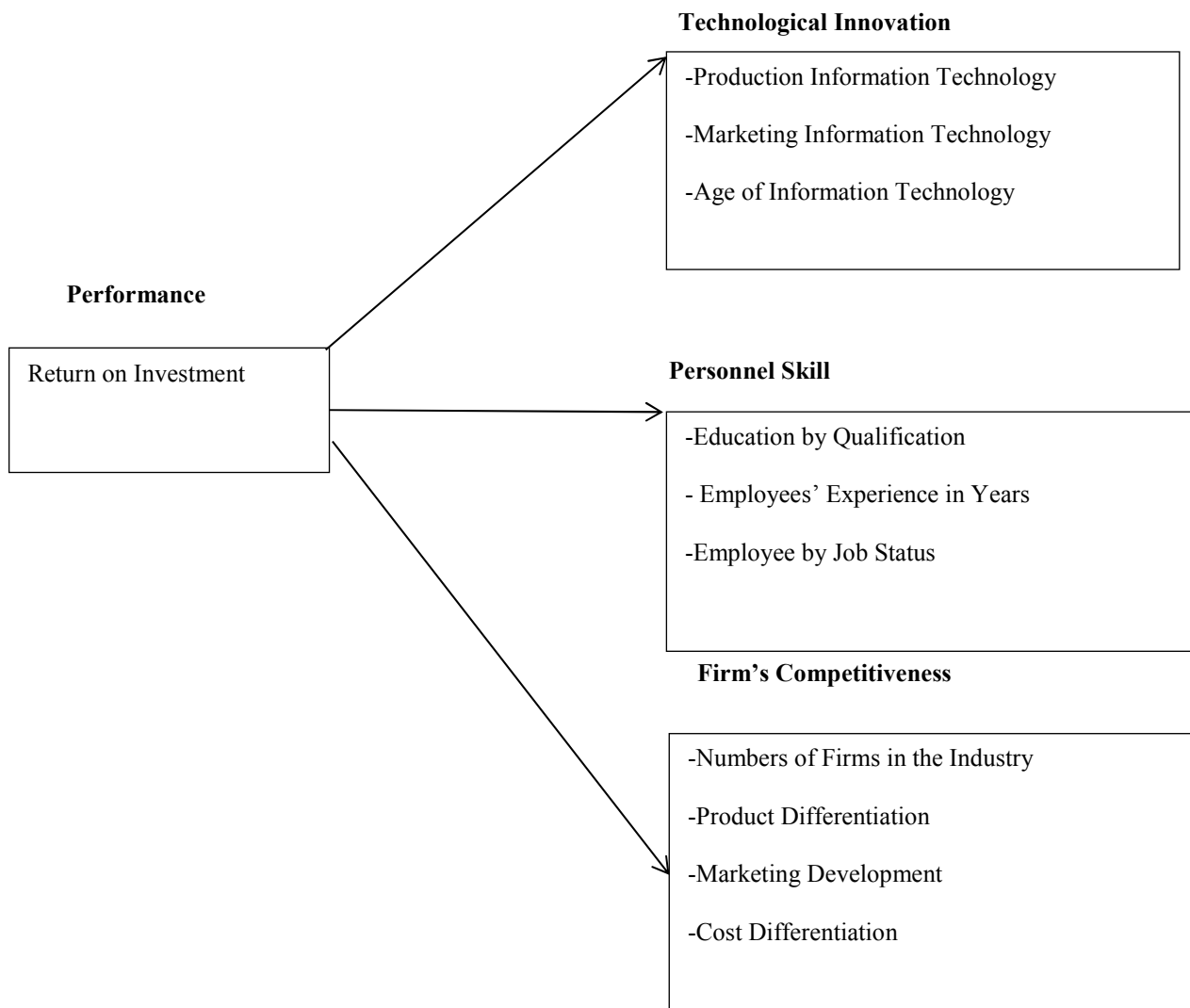


Figure 2.1: Conceptual Model

Source: Adapted from Myers. M and Majluf. A

Study Area

The study area is the Nigerian manufacturing sector especially the firms listed on the Nigerian Stock Exchange (NSE). All together Twenty (20) quoted foods and beverages manufacturing firms are listed on the floor of NSE market as at, 2018 with branches spread all over the country.

Method of Data Collection

The data used for this study were both primary and secondary data. Primary data consist of structured questionnaire which were distributed among selected and purposively sampling foods and beverages firms which were quoted under the Nigerian Stock Exchange (NSE) while, secondary data were sourced from the published account during the Eleven years (11) period of 2007 and 2017.

Method of Data Analysis

Multiple regression analysis was used to specifically resolve objectives 1, 2, and 3.

Results and Discussion

Data Presentation and Analysis

This section of the study provides empirical analysis of the effects of productivity drivers on the performance of manufacturing firms in Nigeria over a period of eleven years (2007-2017). Data for this study was obtained from both primary and secondary sources. Objectives one (1), two (2) and three (3) was addressed with secondary data.

Table 4.1 Regression Analysis Showing the influence of Technological innovation on Market-share of Firms in Nigeria

Dependent variables	Independent variables	Coefficient	Standard Error	T	p> t	[95% conf. interval]	
Market Share	Production Information Technology	0.0655740	0.0584379	1.12	0.000*	.180587	.049439
	Marketing Information Technology	0.8189803	0.0515082	1.59	0.003*	.1319688	.0707799
	Age of Information Technology	-0.1087138	0.0503759	-2.16	0.002*	-.0095679	.2078597
	Constant	3.727758	0.3393012	10.99	0.000*	3.059972	4.395544
R-squared = 0.7218 , Adj. R-squared = 0.6117, P≤0.000				F (3, 292) = 62.16,			
Number of obs = 296, Root MSE = 1.2138							

Source: Researcher's computation using Stata, 2019

* = Significant at 1% level.

Analysis showing the Relationship between Technological innovation and Market-share of Firms in Nigeria

Two of the independent variables (PIT and MIT) showed a strong positive correlation ($r = 0.5602$ and 0.6134) while AIT showed a negative correlation ($r = -0.7750$) $p \leq 0.05$. This is shown in the table 4.3.2 below:

Table 4.2 Result showing the Relationship Technological innovation and Market-share of Firms in Nigeria

	Market Share	Production Information Technology	Marketing Information Technology	Age of Information Technology
Market Share	1.0000			
Production Information Technology	0.5602**	1.000		
Marketing Information Technology	0.6134**	-0.4354	1.0000	
Age of Information Technology	-0.7750	-0.3590	0.5460**	1.0000

Source: Researcher's computation using Stata, 2019.

** = significant at 5% level

Test of Hypothesis one (1) using chi-square Model

Hypothesis one states that Technological Innovation does not have any significant influence on market-share of manufacturing firms in Nigeria.

The tabulated Chi-square (X^2) at the degree of freedom 28 and 5% level of significance equals **41.33**. However the calculated chi-squares were greater than the tabulated value for all explanatory variables, the null hypothesis is therefore rejected and the alternative is accepted which states that Technological innovation does not have any significant influence market-share of manufacturing firms in Nigeria. This result is in consonance with the previous studies of Hall (2011) and Mairesse and Mohnen (2010).

Descriptive analysis of Data on the relationship between personnel skill and operational efficiency among manufacturing firms in Nigeria in line with objective three and hypothesis three

This reveals that 3.04% of the respondents strongly agreed that there is no connection between personnel skills and operational efficiency in their organisations, 7.09% agreed, 9.80% were indifferent about it, 43.92% disagreed while 26.15% strongly disagreed to this. The results implies that majority of the respondents disagreed that There is no connection between personnel skills and operational efficiency in their organisations.

In addition, 30.07% of the respondents strongly agreed that the efficiency of labour in their firm is highly influenced by the level of education of the employees, 37.50% agreed, 11.82% were indifferent about it, 11.15% disagreed while the remaining 9.46% strongly disagreed. This shows that labour is highly influenced by the level

of education of the employees.

More so, 9.46% of the respondents strongly agreed that the less educated employees are more productive than the more educated ones in their companies, 11.49% agreed, 8.11% were indifferent, 40.54% of the respondents disagreed while the remaining 30.41 % strongly disagreed to that. This shows that most of the respondents disagreed that the less educated employees are more productive than the more educated ones in their companies.

The table further shows that 1.69% of the respondents strongly agreed that the more experienced employees are in their companies the less their level of contribution to the profit of the company, 3.04% agreed, 4.05% were indifferent, only 42.91% disagreed while 48.31% strongly disagreed. This result implies that most of the respondents (75.52%) believed that the more experienced employees are in their companies the more their level of contribution to the profit of the company

Lastly, the result from table 4.5.0 also shows that 37.84 % of the respondents strongly agreed that employees in their firms do embark on off-the-job training on periodic basis, 43.92% agreed to this, 4.73% were indifferent, 7.09% disagreed while 6.42 % strongly disagreed, indicating that most of the respondents employees in their firms do embark on off-the-job training on periodic basis.

4.3 Correlation between personnel skill and operational efficiency among manufacturing firms in Nigeria in line with objective three and hypothesis three

	Operational Efficiency	Education Level	Experience of Employee	Employees' level of Training
Operational Efficiency	1.0000			
Education by Qualification	0.5315**	1.0000		
Employee's Experience in Years	0.7162**	0.0250	1.0000	
Employee by Job Status	0.6241**	0.0155	0.0523	1.0000

Source: Researcher's computation using Stata, 2019.

** = significant at 5% level.

Descriptive Analysis of Data on relationships between firm's competitiveness and Return on Investment on manufacturing firms in Nigeria in line with Objective four and Hypothesis four.

43.24% of the respondents strongly agreed that the current level of returns earned by my company is a reflection of competitive advantage of my company in the industry it belongs. 41.55% agreed to it, 4.39% were indifferent, 6.08% disagreed while the remaining 11.20% strongly disagreed. This implies that majority of the respondent (67.22%) support the fact that both demographic and demand-side factors determine the level of financial inclusion in South-West Nigeria. Furthermore, 31.42% of the respondents strongly agreed that the existence of many firms within the food and beverages industry is a motivating factor to perform better in terms of turnover and return on investment, 36.82% Agreed, 12.16% are indifferent, while 11.49% and 8.11% disagreed and strongly disagreed respectively.

The table also reveals that 37.16% strongly agreed that the return on investment of their companies is traceable to product differentiation strategy geared towards having competitive advantage in the industry. 39.53% agreed to this, 8.78% were indifferent, 9.80% disagreed while 4.73% strongly disagreed. This implies that majority of the respondents are of the view that return on equity of their company is traceable to product differentiation strategy geared towards having competitive advantage in the industry. Moreover, 37.50% of the respondents strongly agreed that their firms operate at a reduced cost and this enhances its competitiveness in the industry as reflected in the returns on equity of the company. 47.97% agreed to it, 4.05% were undecided, 5.74% disagreed while 4.73% strongly disagreed. This shows that majority of the respondents believe that firms operate at a reduced cost and this enhances its competitiveness in the industry as reflected in the returns on equity of the company.

Lastly, 25.68% of the respondents strongly agreed that strategic development of new market for our product has fetched us more returns in the last few years. 36.15% agree, 9.12% were indifferent, 16.22% disagreed while the remaining 12.84% strongly disagreed.

Test of Hypothesis four (4) using chi-square Model

Hypothesis one states that there is no significant relationship between firm's competitiveness and Return on Investment on manufacturing firms in Nigeria.

The tabulated Chi-square (χ^2) at the degree of freedom 28 and 5% level of significance equals **41.33**. However the calculated chi-squares were greater than the tabulated value for all explanatory variables, the null hypothesis is therefore rejected and the alternative is accepted .This implies that there is significant relationship between firm's competitiveness and Return on Investment on manufacturing firms in Nigeria. This result is in

consonance with the previous studies of Salvador, Forza and Rungtusanatham, (2002) and Turi, Goncalves and Mocan (2014). This result of the Chi-square analysis is as shown in table 4.6.1 below.

Relationship between firm’s competitiveness and Return on Investment on manufacturing firms in Nigeria

A further test of pairwise correlation between the variables indicates similar result given correlation between return on investment and other variables. All the independent variables (Number of Firms in the industry, Product Differentiation, Cost Differentiation and Market Development) showed a strong positive correlation with Return on Investment, with Number of Firms in the industry = 0.8079, Product Differentiation = 0.5113, Cost Differentiation = 0.6250 and Market Development = 0.5540 respectively. This is shown in the table 4.6.2 below:

4.4 Relationship between firm’s competitiveness and Return on Investment on manufacturing firms in Nigeria in line with Objective four and Hypothesis four

	Return on Investment	Number of Firms in the industry	Product Differentiation	Cost Differentiation	Market Development
Return on Investment	1.0000				
Number of Firms in the industry	0.8079**	1.000			
Product Differentiation	0.5113**	0.0613	1.0000		
Cost Differentiation	0.6250**	0.0749	0.0283	1.0000	
Market Development	0.5540**	0.0855	0.1281*	0.5049	1.0000

Source: Researcher’s computation using Stata, 2019.

** = Significant at 5% level.

Discussion of Findings

The first objective and hypothesis seek to determine the influence of technological innovation on market-share of manufacturing firms in Nigeria. Technological innovation have significant influence on market-share of manufacturing firms in Nigeria. According to the findings, production technology and market technology had positive influence ($\beta = 0.0655; 0.8189$) while age of information technology had negative influence on market share ($\beta = - 0.1087$) at $p \leq 0.05$. More so, that the predictive power of technological innovation as used to explain variation in the dependent variable (market share of firms) is about 72% , $R^2 = 0.7218$; and Adjusted $R^2 = 0.6117$. The fitness of the model is validated given the significance of $\text{prob} \geq f = 0.000$ and $f(3, 292) = 62.16$. This implies that Technological innovation have significant influence on market-share of manufacturing firms in Nigeria. Technological innovation can be operationalized by the proportion of total asset that is committed to technological innovation rather than another form of asset.

More so, the study in its attempt to access relationship between personnel skill and operational efficiency among manufacturing firms in Nigeria, these shows that significant relationship between personnel skill and operational efficiency among manufacturing firms in Nigeria. Education Level, Experience of Employee and Employees’ Training level exhibited significant relationship with the dependent variable (i.e operational efficiency at 1% level of significance) with $X^2 = 74.0402; 51.0109$ and 84.5103 . Furthermore, the Correlation established a strong associations between operational efficiency and personnel skills given $r = 0.5315; 0.7162$ and 0.6241 for Education Level, Experience of Employee and Employees’ Training level respectively at 0.05 level of significance.

Finally, findings from the study also show that firm’s competitiveness exhibits a significant positive relationship with Return on Investment within the study period. The explanatory variables which include; Number of Firms in the industry, Product Differentiation, Cost Differentiation and Market Development exhibit significant relationship with Return on Investment with $X^2 = 40.6956; 66.8501; 97.4940$ and 47.9514 respectively at 10% level of significance. Furthermore, Number of Firms in the industry, Product Differentiation, Cost Differentiation and Market Development) showed a strong positive correlation with firms’ competitiveness with ($r = 0.8079; 0.5113; 0.6250; 0.5540$) respectively.

Conclusion

This study examined the effect of productivity drivers on the performance of foods and beverages manufacturing firms in Nigeria for a period of eleven years (2007-2017). Following the empirical analysis carried out in the study, the study concluded that technological innovation has significant influence on market-share of foods and beverages manufacturing firms in Nigeria. According to the findings, production technology, market technology and age of information technology all had relationship with market share. Also, financing structure had significant impact on Return on Investment of foods and beverages manufacturing firms in Nigeria within the

period covered by the study.

Moreover, a significant relationship exists between personnel skill and operational efficiency in selected foods and beverages manufacturing firms in Nigeria. Education by Qualification, Employee's Experience in years and Employee by job status exhibited significant relationship with the operational efficiency. This resonates with findings from Kennon (2010), Uremadu (2004). Another conclusion drawn from the findings of this study is that firm's competitiveness exhibits a significant positive relationship with Return on Investment within the study period. Factors such as Number of Firms in the industry, Product Differentiation, Cost Differentiation and Market Development exhibit significant relationship with Return on Investment. These results therefore, lend support to the proposition of Saad, (2010).

To this end, the study concludes that technological innovation has significant influence on market-share. Also, financing structure had significant impact on Return on Investment of foods and beverages manufacturing firms, relationship exist between personnel skill and operational efficiency while firm's competitiveness exhibits a significant positive relationship with Return on Investment in foods and beverages manufacturing firms in Nigeria within the period covered by the study.

Recommendations

On the basis of the foregoing, this study now makes the following recommendations to:

Operational management (Manufacturing Firms)

Operators in the manufacturing sector should engage more of technological innovation as this has been found to have positive effect on performance of foods and beverages manufacturing firms. Production processes, marketing and other aspects of operations should be done using appropriate and economical technology.

The firms should rely less on long-term debt, which forms the major part of their leverage, and focus more on developing internal strategies that can help improve their accounting performance. The firms should also use more of return on investment to maximize their market performance in such a way that it yields growth opportunities.

Effort should be made to improve personnel skills in other to further enhance the financial performance of the firms. Skilled labour with requisite educational background and experience should be employed to work in appropriate positions. Periodic training programmes and seminars should be organized to further enhance the value of employees.

While there exists firms' competitiveness, operators of manufacturing firms should take advantage of it to promote efficiency and ultimately give a worthwhile output of performance. The foods and beverages firms should embark on suitable strategies to address challenges brought by competition. Product differentiation, cost differentiation and marketing development of new market should be looked into.

Policy Makers/ Government

Government should ensure that an enabling environment is provided to promote performance of firms and woo investors into foods and beverages subsector of Nigeria manufacturing firms.

Robust policy that engenders growth of manufacturing firms should be formulated and followed. Adequate facilities should be provided to schools to further enhance production of capable and updated graduates who ultimately serve as an input into the operating systems of firms in Nigeria.

Contributions to knowledge

The study is situated on the fact that there is need to examine the effects of productivity drivers on the performance of selected foods and beverages manufacturing firms in Nigeria for a period of eleven years (2007-2017) covering the period of economic boom, recession and recovery in Nigeria.

To this end, the study contributed to knowledge in the following areas:

- i. Previous studies on productivity drivers and performance can be found in the works of Kennon (2010), Uremadu (2004), etc. Many of these studies used secondary data only while both primary and secondary data were used in this study which represents a major contribution to the body of knowledge.
- ii. The study empirically affirms the Mairesse and Mohnen (2010), Hall (2011) and Mohnen and Hall (2013) contributed to literatures by establishing the effects of productivity drivers, on the performance of foods and beverages manufacturing firms in Nigeria. It has also showed the effect of technological innovation, financing structure, personnel skills and firms' competitiveness on performance of foods and beverages manufacturing firms in Nigeria within a wider period (eleven years) when compared with other studies.
- iii. The study has also provided a framework for policy makers in their quest to understand what drives production and how they affect performance of foods and beverages manufacturing firms in

Nigeria.

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