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Firms Innovativeness and Performance in Nigerian Industrial Estates

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Abstract

This paper examined the nature of firms' innovativeness and business performance of manufacturing firms in industrial estates located in Lagos State, Southwestern Nigeria. Data for the study were collected through questionnaire and unstructured interview which elicited information on types of innovation; intensity of innovation; factors influencing innovation; and their effect on business performance. The result revealed that food and beverages (29.3%), metal fabrication (17.1%), chemical/chemical products (12.2%), and rubber/plastic products (12.2%) were the predominant industrial sectors at the estates. The study further showed that 78.0% of the firms carried out innovation activities while 73.2% reported successful innovations. In addition, 41.5% of the innovations were based on internal efforts while external factors accounted for 7.3%. Similarly, 26.8% of responding firms engaged in occasional innovations while a few (19.5%) adopted continuous innovation strategy. Effect of innovation strategy on business performance revealed a significant positive relationship between the average sales turnover of firms and process innovation ($r = 0.518$; $p<0.05$) while variables such as product innovations ($r = -0.046$; $p>0.05$), organizational innovation ($r = -0.213$; $p>0.05$), and marketing innovation ($r = -0.069$; $p>0.05$) had no significant relationship with the firms' performance. The study concluded that business performance could be more enhanced through improved operational efficiency, linkages with R&D institutions and acquisition of appropriate technical skills.

Keywords: Innovations, manufacturing firms, industrial estates, business performance

1. Introduction

The role of innovation as a critical factor influencing firm's commercial activity and competitiveness has been explained in literatures. Innovation is central to the growth of productivity. It is a continuous process that brings about new ideas, new product development, and pioneering of new technologies in various industries. Innovation efforts embarked upon by most firms have continously led to their growth and sustainable competitiveness (Hitt, Hoskisson and Kim, 1997; Tidd, 2001; Souitaris, 2003, Boons & Lüdeke-Freund, 2013).

This suggests that firms need innovations to open up new markets, gain competitive advantage and successfully increase market share. The rate of rapid changes experienced by industries as well as stiff challenges posed by competition and globalization means firms have to innovate or die. However, innovation activities by many firms in developing countries are characterized by erratic investment patterns, while several firms also display apathy to research and development (R&D). As a result, most firms make investment in innovation a priority when making brisk returns, but firms tend to exhibit low interest in innovations when returns are low (Wolpert, 2002, Gotah, 2017).

Firms are required to deliberately invest and engage in the dynamic process of innovations. These innovations could either be radical or incremental. Unsystematic investments on innovation activities by firms may sometimes lead to successful innovation but may not guarantee consistent productivity and returns. Innovation processes generate new products and new routines for an innovating firm (Nelson and Winter, 1982). Given that innovation is the transformation of new knowledge into products and processes, there is a need for a corporate culture of consistent innovation activities generated through an integrated innovation system that can lead to diffusion and creation of new knowledge and technology.

In the recent times, economic growth is being driven by innovation. Therefore, the ability to create knowledge and innovation is essential for increased productivity and global competitiveness. Innovation is define as the process by which firm master and implement the design and production of goods and services that are new to them irrespective of whether they are new to their competitors, customers or the world (Mytelka, 2000).

Furthermore, in a globalised economy, no company is isolated. Different firms play significant roles in one another's progress and the economy as a whole through partnerships, alliances, acquisitions, mergers and linkages. That notwithstanding, an attempt to generate such positive inter-dependence among firms as well as create clusters of competencies by bringing several companies together in a particular location is the industrial estate phenomenon. Therefore, efforts at boosting technology, process, or product profile of firms in such estates could be an important indicator of industrial and economic growth.

In spite of the importance of innovation as the bedrock of a market-driven economy, little is known about innovation activities of small scale industries (SSIs) located within industrial estates in Nigeria. This is not unconnected with the attitude of government and relevant agencies in giving appropriate support and attention to small and medium technology industries located within estates for industrial growth. Industrial estates are dense sectoral and geographical concentrations, comprising of inter-linked firms (Babalola, Amiolemen, Adegbite, & Ojo-Emmanuel 2015) which have intrinsic economic values and innovative potentials. It is also a planned clustering of industrial enterprises with standard factory buildings erected in advance of demand, and a variety of services and facilities to the tenants (UNIDO, 1967). It is globally known that industrial development is easily achieved through the encouragement and active promotion of small scale industries based on availability of space, manageable finance and skills, which industrial estates provide. They can positively influence the socio-economic development and industrialization of a nation by attracting investments and generating employment. They also add to and improve social infrastructure by leveraging on raw material sources, skilled manpower resources, proximity to end-users' markets, and so on. Goods that are new to the locality are produced at competitive costs; thus reducing the import rate and promoting exportation to foreign markets.

2. Literature Review

The establishment of industrial estates in Nigeria was as a result of government policy intervention programme to boost industrial development in the country. The motivation was borne out of the perception that small and medium scale enterprises (SMEs) would have a critical role to play in the industrial development of Nigeria after independence. Industrial estates, as collections of SSIs and other firms are sources of industrial and economic growth. Innovation assessment revealed the level of competitiveness and factors required to maintain competitiveness of the industrial firms within their immediate environment and the globalised economy. It also established a relationship between research and activities of the firms existing in industrial estates in a developing country like Nigeria.

Furthermore, industrial estates are also a platform for job and wealth creation and poverty eradication. However, some entrepreneurs and industrial experts have opined that some of these industrial estates have failed to achieve their set purpose. This is because some of the businesses had shut down due to loss of goodwill and competencies required for profitable operation. Also, industrial estates are expected to generate processes of technological learning; which has been suggested to be a pre-requisite for innovation capability (Jerez-Gomez, Cespedes-Lorente and Vale-Vabreta, 2005; Ogbimi, 2007; Alegre and Chiva, 2008). They have many challenges in stimulating innovation activities. Some of these challenges include lack of infrastructural facilities, unstable nature of electric power from the national grid, lack of linkages between research institutions and firms, lack of collaboration among firms within the industrial estates, as well as poor funding.

Similarly, innovation is the implementation of new or significantly improved product (good or service), or process, a new marketing method, or new organisational method in business practices, workplace organisation or external relations (OECD, 2005, Baer, 2012). Capability to innovation are sets of skills, knowledge and competencies as well as resources and attitude that firms must possess in order to continuously translate ideas generated into marketable new products (services) or processes, and managing technological changes (Oyelaran-Oyeyinka et al., 1996). Outcome of firm innovation activities depends on the volume and utilization of all resources (internal and external) available to such innovative firm (Freel, 2005; Duran et al, 2016). Similarly, Becheikh et al. (2006) in their study identified some of these resources as determinants that influence innovation process at firm level.

A part from firm resources, studies shown that spatial agglomeration of firms also promote the transmission of knowledge in a network. Through networking, firms are expected to access external knowledge in order to compliment internal effort at developing innovations. Firms located within industrial estates are bound in space with a clustering effect that gives opportunity for both formal and informal knowledge interactions. Firms proximity promotes technological learning process with a resulting positive influence on firms' innovation (Gordon and McCann, 2000; Romijn and Albu, 2002).

Some empirical studies found a positive relationship between firms' age and their level of innovation (Sorensen and Stuart, 2000; Wignaraja, 2001, Baer, 2012). Similarly, past experience from previous job as well as on the job experience are also major key factors in enterprise duration, growth and survival (Omisakin, 1999, Boons & Lüdeke-Freund, 2013). Another factor is firm ownership structure. Michie & Sheehan (2003) and Zhang & Prydz (2017) in their research observed that firms with foreign partners were often better placed to acquire technological capabilities because they have easy access to technology, human capital as well as R&D results from their foreign partners. This was further corroborated by the findings of Sarkar and Sarkar (2000) and Pellegrino (2017) which showed that firms with joint ownership and high foreign partnership structure have access to technical and financial resources and were also endowed with superior managerial capital which translates to higher performance than firms with low foreign partnership or fully owned by indigenous entrepreneurs.

Continuous innovation strategy is a central theme in the literature of strategic knowledge management and organizational learning. It can be understood as continuous improvement or as a proactive attitude towards the external world (Lal and Dunnewijk, 2008). Once the capability to improve continuously is established, it can easily contribute to continuous innovation (Bessant, Caffyn and Gallaghen, 2001). Continuous innovation is also connected to the firms' knowledge management systems and processes (Chapman and Hyland, 2004). Furthermore, Lal and Dunnewijk (2008) noted that continuous innovation and learning is very significant for the performance of an enterprise as well as for the strategic orientation and perception of the environment. According to Oyelaran-Oyeyinka (1996) and Duran (2016) resources for innovation capability are important for the firm to continuously translate generated ideas into marketable new products, processes and services. Hence, any deficient resource becomes a stiff obstacle to innovation capabilities and effective performance of industrial firms in creating new products and processes.

3. Research Methods

The study area is Lagos State located in Southwestern Nigeria. Four small-scale industrial estates within the study area were sampled. The estates covered by the study include Matori I (MIE I), Matori II (MIE 2), Yaba (YIE) and Isolo (IIE). The estates and firms were selected using purposive sampling method. The main research instrument of the survey is questionnaire, which was designed to collect data on firm's year of establishment, firm size, and ownership structure. Others were type of innovation and business, innovation activities and strategies, and sales turnover.

Innovation type was captured by indicating whether firm carried out product, process, organizational or marketing innovation in the last three years (reference period). Innovation activity was measured by indicating the number of successful or abandoned innovation carried process, and the source of resources used. Firms were further asked to indicate whether the process is a continuous or occasional. Lastly, the sales turnover was measured by using average of firm's sales for the last three accounting year. The researchers are fully aware of the implication of using sales turnover as a proxy for performance. This is due to the complexity of computing profit by small businesses in developing countries. Mostly, profit is usually lumped with sales as expenses are hardly separated categorized. In fact, small businesses prefer to track the progress (performance) of their investment by using sales generated over time as a result of inappropriate accounting system used or documentation.

The research instrument was pretested on a small group of firms located within industrial estate outside the study area. Retrieved questionnaires were codified while the data were analyzed using statistical package for social sciences (SPSS). Inferential and descriptive statistics were also employed in analyzing the data. Pearson product moment correlation was employed to show the relationship between factors influencing innovation activities and firms' innovation. Regression analysis was carried out to determine the contribution of innovation activities to firms' performance (sales turnover).

4. Analysis/study

4.1 Distribution of Firms

The distribution of firms located in the estates is shown in Figure 1. The study administered forty six (46) questionnaires among the four industrial estates with a response rate of 89.1%. The response shows that Matori I has 53.66%; Matori II (9.76%); Isolo (12.19%) and Yaba (24.39%). Evidently, Matori I had the highest number of firms evaluated in the study.

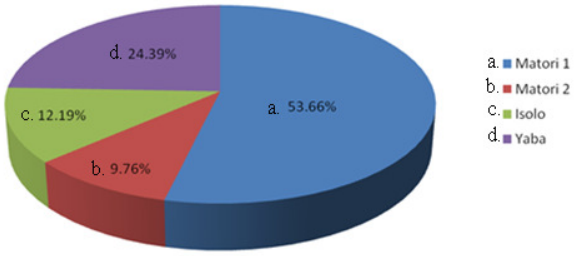

Figure 1. Distribution of Firms by Estate
Source: Authors' Research, 2016

4.2 Nature of Industries and Industrial Activities

Table 1 below shows the distribution of firms in the four sampled industrial estates according to their economic activities. The firms were categorized under various manufacturing industries using the international standard industrial classification (ISIC) code (OECD Manual, 2005). The industrial activities among the estates included food products and beverages; tanning and leather dressing; wood work and processes; paper and paper products; printing and publishing; chemical and chemical products; rubber and plastic products; metal fabrication, machinery and equipment.

The result revealed that food and beverages (29.3%), metal fabrication (17.1%), chemical/chemical products (12.2%), and rubber/plastic products (12.2%) were the predominant sectors at the estates. Furthermore, Matori I had the highest level of industrial activity and spread of twenty two (53.7%) firms in different manufacturing sectors (Figure 1). The main industrial activities were manufacturing of food products and beverages; printing and publishing; and metal fabrication. Matori II had the least spread of only four (9.8%) firms engaged in manufacturing of food/beverages, chemicals, and rubber/plastic products. Isolo industrial estate had five (12.2%) firms manufacturing food/beverage, chemicals, metal fabrication, and electrical machinery. However, majority of other industrial spaces in the estate were locked up and also not in production.

Yaba industrial estate had ten (24.4%) firms that were predominantly engaged in the manufacturing of foods and beverages. The spatial distribution showed that most of the industries surveyed were involved in food processing industry. Food and beverage processing industry was the dominant economic activity in the four industrial estates. Generally, the pattern of prevalence of business activities at the estates might be connected with availability of skilled human resources and technological capability.

Table1. International Standard Industrial Classification (ISIC) of Firms in the Estates

ISIC Code	**Description of Manufacturing Sector**	**Location**				
		Matori I	Matori II	Isolo	Yaba	Total
15	Manufacture of food products and beverages.	6(14.6)	1(2.4)	1(2.4)	4(9.8)	12(29.3)
19	Manufacture of tanning and leather dressing.	1(2.4)	-	-	-	1(2.4)
20	Manufacture of wood work and processes.	-	-	-	1(2.4)	1(2.4)
21	Manufacture of paper and paper products.	2(4.9)	-	-	-	2(4.9)
22	Manufacture of printing and publishing.	4(9.8)	-	-	-	4(9.8)
24	Manufacture of chemicals and chemical products.	2(4.9)	1(2.4)	1(2.4)	1(2.4)	5(12.2)
25	Manufacture of rubber and plastic products.	1(2.4)	2(4.9)	-	2(4.9)	5(12.2)
28	Manufacture of metal fabrication.	4(9.8)	-	2(4.9)	1(2.4)	7(17.1)
29	Machinery and equipment.	1(2.4)	-	-	1(2.4)	2(4.9)
30	Manufacture of office, accounting and computing machinery.	1(2.4)	-	-	-	1(2.4)
31	Manufacture of electrical machinery and apparatus.	-	-	1(2.4)	-	1(2.4)
		22(53.7)	**4(9.8)**	**5(12.2)**	**10(24.4)**	**41(100)**

NOTE. Figures in parenthesis show row percentages
Source: Authors' Research, 2016

4.3 Firms' Years of Experience

The years of firms experience is presented in figure 2. The figure reveals that two (2) out of the total number of firms have the highest level of experience between 31-35 years, followed by a group of seven (7) firms having 26-30 years of experience. However, majority of the firms (37%) have between 1-5 years of experience in business, indicating their entrance into business was very recent. It was also observed that a few, (19%) of the

firms, have spent more than 20 years in the estate.

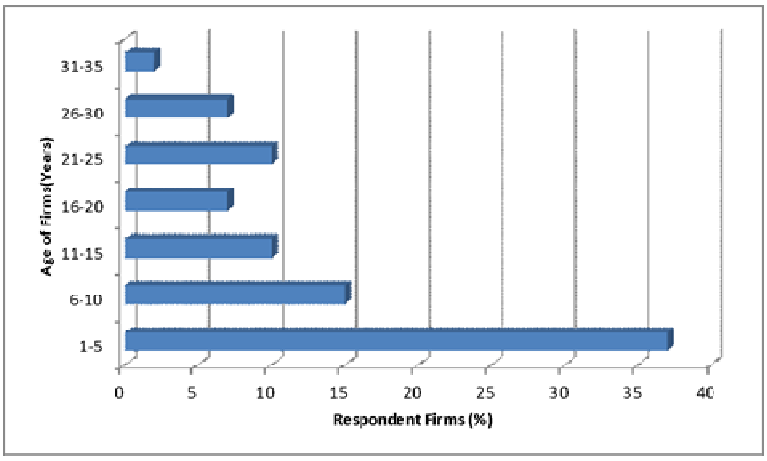

Figure 2. Years of Firms Experience
Source: Authors' Research, 2016

4.4 Firms' Ownership Structure

The ownership structure of the firms is presented in Table 2. It shows that 92.7% of responding firms were fully owned by Nigerians; 4.9% were owned by foreigners, and 2.4% were joint ventures by Nigerians and foreigners.

Table 2. Ownership Structure of Firms

Ownership structure	**Frequency (%)**
Fully owned by Nigerians	38(92.7)
Fully owned by foreign individuals	2(4.9)
Joint venture (Nigerians and Foreigners)	1(2.4)
Total	**41(100)**

Source: Authors' Research, 2016

4.4 Innovation

Firms engage in innovation to sustain market competitiveness. The types of innovations carried out by firms in the four industrial estates are presented in Figure 3. These included product, process, organizational and marketing innovations. The figure reveals that innovation activities among the responding firms is less than fifty percent (50%). Firms in Matori I however performed better in product innovations (31.7%); process (39.0%); and marketing (31.7%). Firms in Yaba industrial estate has innovations outcome of product (17.1%); process (21.1%); and marketing (14.6%). The least innovative firms were found in Isolo industrial estate. The quantities of innovation in the four estates were more of introduction of new goods or services (26.87%) to the market. This was followed by new or improved methods (13.43%) and development of new design and product packaging (11.94%). The findings show that the levels of innovation activities were not substantial in the estates.

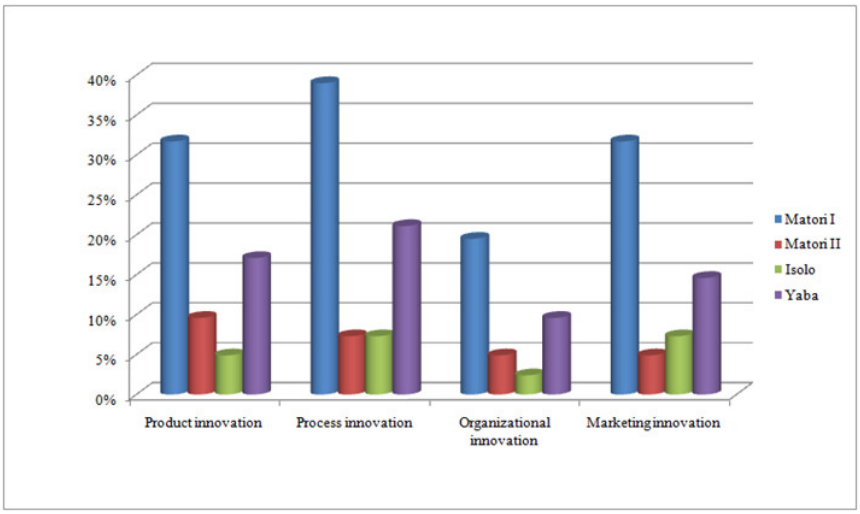

Figure 3. Innovation Activities of Firms in the Estates

Source: Authors' Research, 2016

4.4 Firms' Innovation Activities

Table 3 (a) shows the summary of innovation activities by responding firms. Thirty-two (32) firms, representing 78.0%, carried out innovation activities (IAs) while 73.2% of these firms reported successful innovations. A much lower figure of 4.9% firms actually started but abandoned their innovation efforts due to internal and external constraints. Most, (41.5%) of the innovation, were based on internal efforts while external factors accounted for (7.3%). This low level of innovation by diffusion indicates a poor absorptive capacity of the firms and a more favourable inclination towards in-house efforts. The response to the question on technology innovation strategy adopted by individual firms is shown in Table 3(b) where majority (26.8%) of responding firms engaged in occasional innovation while a few (19.5%) adopted a continuous innovation strategy. The overall result showed a negative attitude towards continuous innovation in their businesses.

Table 3. Summary of Innovation Activities

	Description	Frequency (%)
(a)	**Innovation activities**	
	Firms that carried out innovation activities	32(78.0)
	Firms with successful innovation	30(73.2)
	Firms with abandoned innovation	2(4.9)
	Innovation activities based on internal efforts	17(41.5)
	Innovation activities based on external influence	3(7.3)
(b)	**Innovation strategy**	
	Continuous innovation	8(19.5)
	Occasional innovation	11(26.8)

Source: Authors' Research, 2016

4.4 Effect of Firms' Innovation on Business Performance

Using average sales turnover as a proxy variable for business performance, the study assessed the effect of firms' innovativeness on firms' average sales turnover by running both the correlation and regression analysis. The correlation analysis shows the relationship between the dependent variable (average sales turnover) and the

independent variables (product, process, organizational and marketing innovations). The correlation matrix presented in Table 5 revealed that there was a significant positive relationship between the average sales turnover of firms and process innovation ($r = 0.518$; $p<0.05$). On the other hand, independent variables such as product innovations ($r = -0.046$; $p>0.05$), organizational innovation ($r = -0.213$; $p>0.05$), and marketing innovation ($r = -0.069$; $p>0.05$) had no significant relationship with the firms' average sales turnover.

The regression analysis further confirmed the result of the correlation analysis, and also showed the contributions of each of these independent variables to the dependent variable (average sales turnover). The regression model has R^2 value of 0.320. This implies that the independent variable account for about 32% variation observed in the dependent variable. The regression result showed that only process innovation ($t = 2.097$; $p<0.05$) of the firms was statistically significant. Furthermore, in assessing the contribution of each of the independent variable using the standardized beta coefficient value, process innovation had the highest contribution (beta value = 0.526) to the average sales turnover, and this was followed by organizational innovation (beta value = 0.378), and marketing innovation (beta value = 0.150) while product innovation (beta value = 0.091) had the least contribution.

Table 5. Correlation Matrix of Average Sales Turnover and Innovation

	Sales	Product innovation	Process innovation	Organizational innovation	Marketing innovation
Sales	1				
Product innovation	-.046	1			
Process innovation	.518**	.314	1		
Organizational innovation	-.213	.224	.271	1	
Marketing innovation	-.069	.112	.512**	.300	1

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Authors' Research, 2016

Table 6. Regression Summary of Average Sales Turnover (dependent variable) and Innovation

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.000	.850		1.177	.252
Product innovation	-.271	.629	-.091	-.430	.671
Process innovation	1.943	.927	.526	2.097	.048
Organizational innovation	-.999	.513	-.378	-1.948	.064
Marketing innovation	-.428	.611	-.150	-.701	.491

Source: Authors' Research, 2016

Dependent Variable: *Average Sales Turnover*

$Y = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \beta_4\chi_4$

Average Sales Turnover $= \beta_0 + \beta_1 PDT + \beta_2 PCS + \beta_3 ORG + \beta_4 MKT$

Average Sales Turnover $= 1.000 - 0.271\chi_1 + \mathbf{1.943\chi_2} - 0.999\chi_3 - 0.428\chi_4$

4.4 Discussion

The study outcome supports the findings by The World Bank (1998) that the food and beverage processing industries contribute significantly to satisfying the basic needs in most African countries. It was therefore not surprising that majority of the responding firms in this study were engaged in food and beverage processing industries.

However, the age of the majority of firms in this study suggests that their recent entrance in business may not translate to higher level of innovation. The outcome further supports similar findings by Feldman (1994, Boons & Lüdeke-Freund, 2013) that experience was very crucial to enterprise survival. However, the outcome of this study does not support the assertion.

Our findings further supports the research by Central Bank of Nigeria (CBN) (2003) which indicates that majority of small-scale firms in Nigeria were sole proprietorship form of business owned by Nigerians. The low level of foreign partnership and joint ventures between Nigerian firms and their foreign counterparts may be an explanation for the low level of innovation capabilities at the estates. This is because such foreign partnerships

and ventures would have provided a strong absorptive capacity for innovation. This has critical implication on firm's innovation, productivity and performance in the industrial estates. Furthermore, firms generally seems to understand the processes of implementing process, product and marketing innovations which were highly prevalent in the estates while organizational innovation recorded low implementation.

On innovation activities in the firms, the noticeable difference between introductions of new products to the market and the other two activities (introduction of new or improved methods and development of new design and product packaging) indicates an inherent weakness in the firms' technological capabilities; the lower the level of internal factors such as technically skillful human resource and adoption of new processes and methods, the lower the level of innovation outcome. This supports the findings of Becheikh, Landry and Amara (2006); Romijn and Albaladejo (2002); Sternberg and Arndt (2001); Keizer, Dijkstra and Halman (2002); OECD (2005); and Landry, Amara and Lamari (2002). According to Markman and Hirsa (2005), when it becomes clear that firm's innovation outcomes are being threatened by limitations in internal resources, the firm is expected to bridge this gap through participating in innovation networks which provides access to sophisticated technology and technical expertise. More pro-active policy intervention from government is therefore needed to improve firm relationship with other firms and institutions, as well as re-training of manufacturing firms on new or improved methods of production, organizational management, and marketing in order to enhance the level of technological innovation locally.

The foregoings on innovation strategy suggests grave implication for firms in the industrial estates studied as Albu (1997) and Gotah (2017) observed that sustainable innovation created by consistent innovation activities are important for the small manufacturing firms if they want to remain in business and be competitive especially in a market-driven economy. This was a major drawback as shown in the occasional innovation strategy adopted by firms in our study.

5. Conclusion

The study concluded that majority of the firms in the industrial estate experienced successful innovation and most of the innovation activities (IAs) were based on internal efforts. The nature of IAs though was mainly occasional and incremental as opposed to continuous and radical. The goods and services of the firms were restricted, in large part, to their immediate environment as only few of them, mostly the older ones, established their influence in the markets of other regions. The firms were not well protected from fierce foreign competition through governmental policies and this situation was worsened by the preference of the public sector for foreign goods and services.

The nature of IA carried out by the firms were mainly targeted at the short term goals of increasing operational efficiency and producing more with less as opposed to long term strategic activities. However, despite abundance of trained human resources, the success of IA was minimal and the major R&D activities engaged in were technically less intensive. This might be connected to poor linkages with R&D institutions and foreign enterprises. On few occasion, some of the firms preferred to import products of their foreign counterparts rather than enter into joint ventures or combined R&D efforts with them.

Factors that mainly influenced IA of the firms were obstacles such as lack of infrastructure and funds. The significant reasons for IA of the firms were to improve working conditions and deliberate in-house efforts. The firms mainly interacted and derived information for IA from suppliers, customers, and competitors. Several firms at the estates collapsed and were locked up. This occurred on most occasions, after the demise of the proprietor. Others were driven from the market by foreign competition or failure to innovate within a dynamic industry. The later reason was important, not only in the collapse of the defunct firms but also in the weak performance of the surviving ones.

The study further revealed that government's role and policies were important to the IA and optimal performance of firms located in the industrial estates. Enough steps have not been taken by government to protect the local firms from undue foreign competition. There was little support for developing linkages and enhancing capabilities for innovation. Rather, government concentrated its efforts within the activities of several, mostly regulatory, agencies. This was counter-productive as these agencies laid various demands on the firms. In this regard, the key to enhancing the innovation and performance of firms in the industrial estates lies with government pro-active economic policies.

In conclusion, it is instructive to aver that innovations in small scale manufacturing industries are essentially critical to the revolution of the industrial sector in Nigeria. The assessment of technology innovations in small

scale industries in Matori Industrial Estate I and II, Isolo Industrial Estate, and Yaba Industrial Estate is significant in evaluating the innovation dynamics associated with small scale manufacturing firms in terms of output efficiency, total productivity and technology capability and most importantly, their contributions to the local economy and global value chain (GVC).

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