Analysis of Innovation in Nigeria Small and Medium Enterprises: Implication for Economic Growth

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Abstract: The emergence of innovation in small and medium scale enterprises (SMEs) is vital to achieve economic growth. Hence, product and technological innovations in attaining competitive advantage to achieve desired level of economic growth in Nigeria has recently emerged as one of the most significant subjects in the context of the common marketplace. This made it imperative for the study to conduct an “Analysis of Innovation in Nigeria Small and Medium Enterprises: Implication for Economic Growth”. The study utilized two objectives, research questions and hypotheses. Secondary data sourced from World Bank Development Database and SMEDAN (2018) on Gross Domestic Product (GDP) is used as proxy/measure of Economic Growth while SMEs Product Innovation Index (SPII) and SMEs Technological Innovation Index (STII) were used as proxy/measure of innovation in Nigeria SMEs being the independent variables. The study used the technique of regression analysis to determine the relationship between innovation in Nigeria SMEs and economic growth in Nigeria while probability statistic test was used to test the hypotheses. The study based on the results revealed that product innovation and technological innovation were positively related to economic growth in Nigeria within the study period. Hence, increased in product innovation and technological innovation had positive implication on economic growth in Nigeria. The study concluded that innovations in SMEs are catalysts for product and technological development towards achieving desired level of economic growth in Nigeria. The study therefore recommended that SMEs should ensure that product innovation is enhanced towards achieving the desired level of economic growth in Nigeria. Finally, SMEs should also make provision to improve technological innovation in order to boost economic growth in Nigeria.

Keywords: Innovation, small and medium enterprises, regression analysis and economic growth

1. Introduction

Small and Medium Enterprises (SMEs) is by and large indispensable to achieve economic growth. However, innovation in Nigeria Small and Medium Enterprises (SMEs) is paramount to the survival and growth of any business to ascertain her desired level of economic growth (Martin & Namusonge, 2014). Innovation has changed the way companies conduct their businesses and the ways of satisfying the needs of customers in the contemporary society, this is because Small and Medium Enterprises (SMEs) constitute 99.7% of the enterprises worldwide (Agarwal & Ashwani, 2018). Innovation occurs in several functional areas of any small and medium enterprise. These consist of product innovation, process innovation, service innovation and technological innovation (Sundbo, 2013).

The need for research in innovation in SMEs in Nigeria is mainly crucial because they are the dominant form of firms in sub-Saharan Africa accounting for 95% of business population in sub-Saharan Africa (Small and Medium Enterprises Development Agency of Nigeria SMEDAN, 2016). SMEs have been generally known as a rational behind economic growth in any country. SMEs had over the years made significant contributions to economic growth through their contributions to Gross Domestic Product (GDP), job creation and poverty alleviation amongst others (Kramae-Mbula & Wamae, 2010). SMEs in today’s contemporary day Nigerian economy represent a shift from traditional to modern economy as they employ simple skills, machinery, local raw materials and technology in the process of production towards achieving the desired level of economic growth.

Due to initiation of diverse forms of innovations, SMEs helped to bring gradual socio-economic change through employment creation, use of local technology and raw materials, generation of income, promoting local and indigenous entrepreneurship, technological innovation and poverty reduction. The Nigerian economy is considered the economy of small and medium enterprises just because of 90% of businesses are engaged in the Small and medium enterprises which play strong role in shaping the economy towards achieving the desired level of economic growth (Small and Medium Enterprises Development Agency of Nigeria; SMEDAN, 2018).

However, in the face of 21st century, innovations in SMEs played vital role in the global economy as a result of its significant contribution to Nigeria’s Gross Domestic Product (GDP) towards achieving the desired level of economic growth as well as enhancing the people’s standard of living. SMEDAN (2018) noted that Nigerian economy is today based on the existence of SMEs which had over the years contributed 50% to 70% of her Gross Domestic Product (GDP) in order to achieve the preferred intensity of economic growth.

The focal reason for this research is driven by a strong special interest on innovation in SMEs as a catalyst to achieve macroeconomic target of economic growth. It is additionally inspired by eagerness and burning desire to contribute something meaningful to the toiling small business entrepreneurs struggling to survive in a volatile business environment in which they find themselves in Nigeria. Hence, the choice of the study is to conduct an analysis of innovation in Small and Medium Enterprises and

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its implications on economic growth with the intention to unravel the potentials of Nigerian SMEs towards achieving the desired level of economic growth.

1.1 Statement of the Problem

The contribution of SMEs to Gross Domestic Product (GDP) to boost economic growth in Nigeria had over the years been below expectation (SMEDAN, 2018). SMEs in Nigeria are often faced with challenges of innovation to address the problems of power shortage, lack of capital, poor management skills, inadequate information, and corruption amongst other causal factors. Jahangir and Mohammed (2014) asserted that as a result of decline in product and technological innovations in Nigeria, low productivity among Small and Medium Enterprises resulted to decline in economic growth due to fall in SMEs contributions to GDP. Poor financial base and inefficiency of the market share of SMEs to enhance product and technological innovations resulted to low productivity which hardly allowed SMEs to compete effectively with both factor and product markets to boost the country’s GDP towards achieving the macroeconomic target of economic growth.

1.2 Objectives of the Study

The main objective of the study is to conduct an Analysis of Innovation in Nigeria Small and Medium Enterprises: Implication for Economic Growth. The specific objectives are;
• To determine the relationship between product innovation in SMEs and economic growth in Nigeria
• To examine the relationship between technological innovation in SMEs and economic growth in Nigeria

1.3 Research Questions

The following research questions were utilized in this study. These include;
• What is the relationship between product innovation in SMEs and economic growth in Nigeria?
• What is the relationship between technological innovation in SMEs and economic growth in Nigeria?

1.4 Research Hypotheses

For the purpose of answering the questions raised above, the following working hypotheses were employed. These include;
• \( H_0 \): There is no significant relationship between product innovation in SMEs and economic growth in Nigeria
• \( H_1 \): There is significant relationship between product innovation in SMEs and economic growth in Nigeria
• \( H_0 \): There is no significant relationship between technological innovation in SMEs and economic growth in Nigeria
• \( H_1 \): There is significant relationship between technological innovation in SMEs and economic growth in Nigeria

2. Related Literature Review

The literature review is mainly centered on conceptual framework, theoretical framework of the study, empirical review and summary of empirical review.

2.1 Conceptual Framework

a) Concept of Innovation

Banbawa, Colacino and Dormio (2011) opined that innovation is the generalization, acceptance and implementation of new ideas, processes, products or services. Innovation is a means by which the entrepreneur creates wealth producing recourses or endorses existing resources with enhanced potentials for creating wealth. In other words, innovation is a catalyst to change. It is the combination of marketable and creative and creative ideas of produce desirable result in an organization and the society at large. Innovation is a complex concept because of its multi-dimensionality. Importantly, innovation is generic. It covers a range issues necessary to provide value to customers and a good return to the business enterprise and the economy. Chesbrough and Gassmann (2016) were of the view that innovation is purposive inflows and outflows of knowledge to accelerate internal innovation and to expand markets for external use of innovations.

b) Concept of Small and Medium Enterprises (SMEs)

There is no agreement among policy makers and scholars with reference to the condition at which a business firm or enterprise is considered to be small. In reality, there is no generally or even nationwide satisfactory definition of SMEs except that the size of business needs to be defined for a definite reason. Central Bank of Nigeria (CBN) in its Monetary Policy Circular No. 2 (1980) defined SMEs as enterprise whose annual turnover ranges between \( N25,000 \) to \( N50,000 \). However, Central Bank of Nigeria (2018) also defined SMEs in Nigeria based on assets and number of staff employed. The criteria are; an asset base between \( N5 \) million to \( N500 \) million and staff employed between \( 11 – 300 \). Hence, business enterprises that can meet up to these criteria are known as Small and Medium Enterprises (SMEs). The Federal Ministry of Industry, prior to her structural Adjustment Program and International Foreign Exchange Market defined SMEs as enterprises whose investment is not more than \( N150,000 \) in plant and machinery. In addition, Small and Medium Enterprises (SMEs) had by and large accepted as medium of achieving economic growth and development in an economy. Vivacious SMEs are considered key in solving numerous problems in developing economies. The problems facing developing nations are poverty, unemployment and inequality. SMEs help in the provision of goods and services, job opportunities, wealth creation, poverty alleviation and utilization of local resources.

c) Concept of Economic Growth

Economic growth is the quantitative increase in Gross Domestic Product in an economy within a year. Economic growth is the increased in the inflation-adjusted market value of the goods and service produced by an economy over time. It is conventionally measured as the percent rate of increase in Real Gross Domestic Product or real GDP.
Akingunola (2011) assessed the specific financing options disbursed by banks to SMEs. SMEs indicated no significant difference between loans as a percentage of credit for the period 1993 to 2008, the states as case studies. The study using total credit to SMEs of small and medium scale Enterprises, Equity Investment Azende (2011) conducted an evaluation of the performance of finance has been widely viewed as a constraint to the and improvements in employment generation are positively related, just as promotion of SMEs and sustainable development of Nigerian tests conducted revealed that small and medium scale enterprises and technology, service and ideas that offer an opportunity to increase income towards achieving desired level of economic growth in the economy. On the contrary, loss-making companies such as new start-ups or companies facing economic difficulties are more likely to embrace new product, technology and service ideas, as they offer the opportunity to reduce loss in order to increase income towards achieving economic growth.

2.2 Theoretical Framework of the Study

In literature, many theories of innovation in small and medium scale enterprise had been discussed. However, this study is anchored on prospect innovation theory according to Schumpeter (1934).

Prospect Innovation Theory

The theory stated that profitable companies are likely to be risk averse and therefore are sensitively expected to turn down potentially innovation ideas, particularly new products, technology, service and ideas that offer an opportunity to increase income towards achieving desired level of economic growth in the economy. On the contrary, loss-making companies such as new start-ups or companies facing economic difficulties are more likely to embrace new product, technology and service ideas, as they offer the opportunity to reduce loss in order to increase income towards achieving economic growth.

2.3 Empirical Review

Safiriyu and Njogo (2012) examined the impact of small and medium scale enterprises on employment generation in Lagos state, Nigeria. The study employed primary data instruments, questionnaire and interviews techniques of data collection. The results of simple percentages and chi-Square tests conducted revealed that small and medium scale enterprises and sustainable development of Nigerian economy are positively related, just as promotion of SMEs and improvements in employment generation are positively related and significant. The study concluded that availability of finance has been widely viewed as a constraint to the growth of SMEs.

Azende (2011) conducted an evaluation of the performance of small and medium scale Enterprises, Equity Investment Scheme (SMEEIS) in Nigeria using Benue and Nasarawa states as case studies. The study using total credit to SMEs as a percentage of credit for the period 1993 to 2008, the t-test conducted to determine the extent of relationship between bank loans before and after the introduction of SMEEIS indicated no significant difference between loans disbursed by banks to SMEs.

Akingunola (2011) assessed the specific financing options available to SMEs in Nigeria and their contribution to economic growth performance. The study used spearman’s correlation coefficient to determine the relationship between SMEs financing and investment level. At 10 percent level of significance, the correlation coefficient value of 0.643 indicated a significant and positive relationship between SMEs financing and economic growth in Nigeria.

Eze and Okpala (2015) examined quantitative impact of Small and medium scale enterprises (SMEs) on Nigeria’s economic growth performance econometric technique adopted for the study was multiple regression method based on ordinary least squares technique. The study revealed that SMEs had negative impact on economic growth in Nigeria within the study period. The study concluded that poor government policies, on tariffs and incentives, bribery and corruption, non-existent entrepreneurial development centers and poor state of infrastructure act as impediments to the growth and development of SMEs in Nigeria.

Otugo, Edoko and Ezeanolue (2018) examined the effect of small and medium enterprises on economic growth in Nigeria by modeling the effect of SMEs, government expenditure in promoting SMEs, Employment generation growth rate and level of Corruption, commercial bank credits and lending rate to SMEs on economic growth in Nigeria using an econometric regression model of the Ordinary Least Square (OLS). The study based on the results revealed that small and medium enterprise, government expenditure to small and medium enterprise, employment generations, commercial bank credit to small and medium enterprise and lending rate to small and medium enterprises have a positive impact on economic growth in Nigeria.

Rasak (2012) examined Small and Medium Scale Enterprises (SMEs): A panacea for Economic Growth in Nigeria. The study also examined how government and other agencies finance SMEs in Amuwo Odofin Local Government area of Lagos State. The agencies in this study include banks, cooperative societies, and government, among others. Qualitative and qualitative method was used to collect data for the study. Fifty (50) samples of respondents were selected from the Local Government Area. The data gathered was analyzed using descriptive statistics such as frequency distribution, while the qualitative data was subjected to content and descriptive analysis. The study revealed that SMEs is panacea for economic growth in Nigeria.

Ali (2013) examined the impact of small and medium enterprise on economic development in Nigeria. The study used descriptive content analysis. The study revealed that a small and medium enterprise helped in enhancing economic development through employment creation and increase in the income level of the people. The study concluded that SMEs is considered an important factor to attain the desired level of economic development.

Kongolo (2010) determined the contribution of SMEs to economic development in Africa. The study used descriptive content analysis. The study revealed that SMEs are important contributors to the economic development of many economies of the world. The study concluded that
SMEs produced more than half of the total country output in an African economy.

Mohammad (2014) investigated the effects of process innovation on SMEs Growth and to find the impact of SMEs on economic growth of Pakistan. A secondary data was collected for the period from 1981 to 2013. Main economic variables are included in this research i.e. GDP growth rate, Trademark total, Public expenditure on education, Patent Applications, High Technology Exports, Share of export as percentage of GDP, Inflation rate for the analysis of the objectives. Two linear regression equations were constructed. The study revealed that there is a positive significant effect of process innovation on SMEs growth. Similarly, the strong correlation was estimated between SMEs performance and economic growth of Pakistan.

2.4 Summary of Empirical Review

The emergence of small and medium scale enterprises (SMEs) is a key catalyst to generate employment opportunities for the teeming population in Nigeria towards achieving the desired level of economic growth and development. Most government and business individuals had realized the importance of small and medium scale enterprises (SMEs) as a major constituent of economic growth. Finally, innovation in Nigeria SMEs is necessary to achieve sustainable level of economic growth in the Nigerian economy.

3. Methodology

The study employed secondary data on Gross Domestic Product (GDP) as proxy for Economic Growth while SMEs Product Innovation Index (SPII) and SMEs Technological Innovation Index (STII) were used as proxy for innovation in Nigeria SMEs as the independent variables sourced from the World Bank Development Database and SMEDAN (2018) to conduct an analysis of innovation in Small and Medium Enterprise: Implications for Economic Growth in Nigeria for the period of 2004 to 2018.

Model Specification

The study used descriptive and analytical statistical tools. The descriptive tool consists of the use of table in order to represent the analyzed data employed for the study while the analytical tool involves the use regression analysis technique and its relevant statistic to test the hypotheses of the study. The model specified Gross Domestic Product (GDP) as proxy for Economic Growth while SMEs Product Innovation Index (SPII) and SMEs Technological Innovation Index (STII) were used as proxy for innovation in Nigeria SMEs as the independent variables as specified in the functional form of the model presented in Equation [1]

\[ GDP_t = F(SPI_{It}, STI_{It}) \]  \[ \text{Equation [1]} \]

The mathematical form of the model is specified in Equation [2] as;

\[ GDP_t = \beta_0 + \beta_1SPI_{It} + \beta_2STI_{It} \]  \[ \text{Equation [2]} \]

Expected results: an increase in both product and technological innovations on will lead to increase in Gross Domestic Product vis-à-vis economic growth in Nigeria. Hence, the parameter estimates are expected to be \( \beta_1 > 0 \) and \( \beta_2 > 0 \).

4. Data Presentation and Analysis

Table 1: Data on Gross Domestic Product (GDP), SMEs Product Innovation Index (SPII) and SMEs Technological Innovation Index (STII)

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Domestic Product (GDP) Million</th>
<th>SMEs Product Innovation Index (SPII) %</th>
<th>SMEs Technological Innovation Index (STII) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>17321.30</td>
<td>14.7</td>
<td>20.6</td>
</tr>
<tr>
<td>2005</td>
<td>22269.98</td>
<td>15.3</td>
<td>21.2</td>
</tr>
<tr>
<td>2006</td>
<td>28662.47</td>
<td>15.8</td>
<td>21.9</td>
</tr>
<tr>
<td>2007</td>
<td>32995.38</td>
<td>16.7</td>
<td>23.3</td>
</tr>
<tr>
<td>2008</td>
<td>39157.88</td>
<td>17.1</td>
<td>23.8</td>
</tr>
<tr>
<td>2009</td>
<td>44285.56</td>
<td>17.4</td>
<td>24.4</td>
</tr>
<tr>
<td>2010</td>
<td>54612.26</td>
<td>17.9</td>
<td>25.2</td>
</tr>
<tr>
<td>2011</td>
<td>62980.40</td>
<td>18.4</td>
<td>26.4</td>
</tr>
<tr>
<td>2012</td>
<td>71713.94</td>
<td>19.0</td>
<td>27.0</td>
</tr>
<tr>
<td>2013</td>
<td>80092.56</td>
<td>19.7</td>
<td>27.5</td>
</tr>
<tr>
<td>2014</td>
<td>89043.62</td>
<td>20.1</td>
<td>28.4</td>
</tr>
<tr>
<td>2015</td>
<td>94144.96</td>
<td>21.1</td>
<td>29.6</td>
</tr>
<tr>
<td>2016</td>
<td>101489.49</td>
<td>21.5</td>
<td>29.9</td>
</tr>
<tr>
<td>2017</td>
<td>134612.43</td>
<td>22.7</td>
<td>30.4</td>
</tr>
<tr>
<td>2018</td>
<td>158643.33</td>
<td>22.8</td>
<td>31.0</td>
</tr>
</tbody>
</table>


Table 2: Summary of Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Probability values</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>6.218326</td>
<td>0.0011</td>
</tr>
<tr>
<td>SPII</td>
<td>0.582129</td>
<td>0.0000</td>
</tr>
<tr>
<td>STII</td>
<td>0.423692</td>
<td>0.0005</td>
</tr>
</tbody>
</table>


Table 2 shows that SMEs Product Innovation Index (SPII), SMEs Technological Innovation Index (STII) are positively related to Gross Domestic Product (GDP). Hence, product innovation and technological innovations have positive implications on economic growth in Nigeria within the study period.

Testing of Hypothesis

The study used Probability statistic test values to make decision and conclusion on the basis of the hypotheses set up in this study to answer the research questions. The decision rule of probability test of hypothesis implies that if probability-value >0.05, accept the \( H_0 \) and reject the \( H_1 \) and conclude that the estimated parameter is not statistically significant. On the contrary, if the p-value < 0.05, reject the
H₀ and accept the H₁ and conclude that the estimated parameter is statistically significant. This is analyzed below.

Table 3: Summary of Probability Statistic Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Parameters</th>
<th>P-values</th>
<th>Level of significance</th>
<th>Decision</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPII</td>
<td>β₁</td>
<td>0.0000</td>
<td>0.05</td>
<td>Reject H₀</td>
<td>Significant</td>
</tr>
<tr>
<td>STII</td>
<td>β₂</td>
<td>0.0005</td>
<td>0.05</td>
<td>Reject H₀</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Source: Researcher’s Computation using E-Views Version 9.5, 2019

Table 3 shows that the probability values of SMEs Product Innovation Index (SPII) and SMEs Technological Innovation Index (STII) were 0.0000 and 0.0055. This implied that their probability values were less than 0.05. Hence, we rejected the null hypothesis and accepted the alternative hypothesis and concluded that the variables were statistically significant and there exist a relationship between SMEs Product Innovation and economic growth in Nigeria as well as SMEs Technological Innovation and economic growth in Nigeria within the study period.

Graphical Trend Analysis on the Relationship between Innovation and Economic Growth in Nigeria


Figure 1: The graph shows that innovation in SMEs is positively related to economic growth measured by Gross Domestic Product (GDP) in Nigeria within the study period. Hence, the increased in innovation has positive implication on economic growth in Nigeria.

5. Discussion of Findings

The coefficient of SMEs Product Innovation Index (SPII); that is (0.582129) as showed in table 2 implies there is a positive relationship between SMEs Product Innovation Index (SPII) as proxy for innovation and Gross Domestic Product (GDP) as proxy for Economic Growth within the study period in Nigeria. This because a percentage increases in SMEs Product Innovation Index (SPII) resulted to 58% increase in Gross Domestic Product (GDP) as measure of economic growth in Nigeria within the study period. Hence, increase in product innovation has positive implication on economic growth in Nigeria within the study period.

The coefficient of SMEs technological Innovation Index (SPII); that is (0.423692) as showed in table 2 implies there is a positive relationship between SMEs technological Innovation Index (SPII) as proxy for innovation and Gross Domestic Product (GDP) as proxy for Economic Growth within the study period in Nigeria. This because a percentage increases in SMEs Product Innovation Index (SPII) resulted to 42% increase in Gross Domestic Product (GDP) as measure of economic growth in Nigeria within the study period. Hence, increase in technological innovation has positive implication on economic growth in Nigeria within the study period.

6. Summary of Findings

The study based on the results revealed that product innovation and technological innovation were positively related to economic growth in Nigeria within the study period. Hence, increased in product innovation and technological innovation has positive implication on economic growth in Nigeria.

7. Conclusion

Innovations in SMEs are catalysts for product and technological development towards achieving desired level of economic growth in Nigeria. Based on the findings, the study concluded that increased in product and technological innovations led to increase in economic growth in the Nigerian economy within the study period. Hence,
innovations in SMEs had positive implication on economic growth in Nigeria within the study period.

8. Recommendations

The following policy recommendations were made to seek way forward based on the findings of the study. These include:

a) SMEs should ensure that product innovation is enhanced towards achieving the desired level of economic growth in Nigeria.

b) SMEs should also make provision to improve technological innovation in order to boost economic growth in Nigeria.

References


