Innovation and SMEs Performance in Nigeria: A Proposed Framework

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ABSTRACT

Innovation plays significant role toward improving SMEs performance through employment growth. The major objective of the study is to propose a framework for examining the effect of innovation on SME firm's performance in Nigeria. SME performance will be the dependent variable, while the covariates include product innovation and process innovation. However, firm size, firm age and industry type will be included as the control variables. Finally, both quantile regression and hierarchical regression models are proposed as the econometric models.

I. INTRODUCTION

Small and Medium Enterprises (SMEs) are recognised as agents of economic growth and employment generation in both developed and developing nations. [1] observed that SMEs significantly contribute to innovations which support the nations' economic development across the globe. [2] further posited that innovation is crucial in determining productivity and long-term growth.

In the same vein, [3] emphasized the transformational role of SMEs in industrializing both developed and developing economies across the globe. They significantly contribute toward advancing innovations in products and process. In fact, [3] realized that SMEs "…present a vital platform for boosting technical, technological and entrepreneurial capacities amongst critical segments of the populace"

(p. 1). Micro, small and medium enterprises (MSMEs) employment account for nearly 85% of jobs in the industrial sector, and contribute 49.78% of GDP in Nigeria [3].

Despite the economic importance of SMEs, [4] revealed that nearly four out every five Nigerian SMEs do not survive beyond five years of inception because of inexperience and other wrong business practices. [3] realized that SMEs in Nigeria continue to face numerous challenges making them perform below expectation. Infrastructure deficit and frequent changes in public policy are among the top list. In this regard, [5] believed that "…innovation is a strategic issue … as this will assist at reducing internal inefficiencies, improve process and enhances decision-making process positively" (p. 327).

Studies on innovations and SME performance have been conducted largely in developed countries (e.g.

[6]; [7]; [8]; [9]). Notwithstanding these studies, the subject matter is largely unexplored in developing nations such as Nigeria. However, SMEs are of critical importance to the Nigerian economy. Its size is about 73,000 and employs nearly 3 million people. However, 63.9% of SMEs are uninsured, nearly two-third (65%) have no business plan, about 92% access credit from commercial banks, and three-quarter of SMEs have less than N10 million start-up capital [10]. This statistics implies that for SME firm to survive and perform impressively, it has to be innovative. Therefore, the study aims to examine the effect of innovation on SME firm's performance in Nigeria.

II. LITERATURE REVIEW

2.1 Innovation in SMEs: Conceptual Issues

Innovation is broadly conceived as ability to develop new product, processes, supply sources, market and ways of organizing business activities [5]. Innovation is a multidimensional and of various types. The types of innovation include product, process and market. However, management of innovation may not necessarily improve firm's performance [6]. Therefore, disaggregating innovation is important as this will reveal the significance of each type in driving the performance of SME sector.

According to [11], SMEs consist of different firms that contribute to innovation system in various areas such as Research and Development (R&D) in new products and services, improving designs and processes, and adopting new technologies. In addition, SMEs in OECD countries have been classified into 4 groups in terms of innovative capacity [11]. These include the following:

i. Technology Developers: These represent 1 – 3% of the SME population and employ more than 5 employees.

ii. Leading Technology Users: This category represents 10 – 15% of SME population and its employees exceed 5 persons.

iii. Potential Innovators: They account for nearly 40% of the SME firms and employ more than 5 persons.

iv. Non-Innovative SMEs: They constitute about 40 – 45% of total SMEs and employ more than 5 persons.

[2] recommended strategies for enhancing innovation in established SMEs. These policy recommendations are: 1) to upgrade the skills of the workforce, 2) to help SMEs adopt ICT and adapt to the digital technology, 3) to ensure that SMEs are included in R&D policy, 4) to foster the use of intellectual property among SMEs, 5) to develop an effective and inclusive national innovation system.

Promoting SMEs is beneficial to economic and industrial growth of Nigeria. These benefits as highlighted by [10] include the following:

i. Better income redistribution.
ii. Increase in job creation and skills development.
iii. Increasing competitiveness by adopting technology and innovation.
iv. Diversifying the industrial base.
v. Stimulating local economy.

2.2 Innovation and SME Performance

Previous literature documented the positive role of innovations in driving development and expansion of SMEs sector ([12]; [13]; [14]). For example, [9] assessed the relationship between the degree of innovation and performance among a sample of 1,901 Spanish manufacturing SMEs and their study revealed evidence of a positive relationship between three types of innovation (product, process and managerial/systems) and performance. [6] used case study to investigate the impact of innovation on SME

performance, focusing on SMEs furniture industry in Finland, Spain and Italy. Evidence showed that innovation has some positive influence on SME business performance. However, the impact depends on the type of innovation considered. They suggested controlling for firm size, age and ownership of capital. Study by [8] focused on the effect of innovation management on SME in Australian manufacturing sector. It appeared that innovation strategy has significant positive effect on SME performance.

[7] examined the relationship between innovation and SMEs' performance focusing on OECD countries. They found significant positive relationship between innovation and firm performance. The outcome of process innovation showed significant positive effect on SME performance. [13] surveyed 184 manufacturing firms in Turkey to establish the effects of different innovations on firm performance. The findings documented that innovation types have significant positive effects on the performance of manufacturing firms.

Similarly, [14] analyzed the effect of innovation on the performance of 171 manufacturing SMEs in Cambodia. The findings revealed positive effect of innovation on SME performance. They suggested replicating their study in different industries and countries to expand the scope of generalizability. [1] studied the determinants of SMEs innovations in Turkey by interviewing 33 SMEs' owners. They found that managerial skills, technological capability, financial factor and firm size were the most important factors that influenced innovation performance of SMEs. [15] examined the impact of types of innovation on firm performance in Nigeria. The study found that technological (product and process) and market innovation have significant positive impact on SME firm performance.

[16] analysed the effect of innovation on SME firm performance in Eastern Europe and Central Asia. They found that innovation has significant positive impact on firm performance. However, the relationship is positively mediated by access to finance and negatively moderated by firm size. [12] used a sample of 204 SMEs to examine the effect of innovation in technology on firm's performance in Kenya. They disaggregated innovation into product, process and market. However, only process innovation has significant positive effect on SME performance after controlling firm size and firm age. The following hypotheses are therefore formulated:

H_1: Product innovation has positive effect on SME performance.

H_2: Process innovation has positive effect on SME performance.

III. METHODOLOGY

This section describes the techniques and procedures to be used by the researcher in conducting the study and gathering data for the study. [3] reported that the total number of SMEs in Nigeria is 73081, comprising of 71288 (97.5%) small enterprises and 1793 (2.5%) medium enterprises. In terms of employment, SMEs generates 2,889,714 jobs in the country. Lagos (11.5%), Oyo (8.4%) and Kano (5.2%) rank the top most and account for one-fourth (25.1%) of the total employment. Lagos and Oyo continue to significantly contribute to SMEs employment from 2013 to 2017 while Kano appears as the highest gainer in terms of the net employment within the period. SMEs are classified into 16 economic sectors. Five economic sectors account for more than 90% of total employment. These include education (36.9%), human health & social work (21.2%), manufacturing (21%), accommodation & food services (7.3%), and wholesale/retail trade (5.3%) [3].

The dependent variable is the SME performance which will be measured by employment growth, while product innovation and process innovation will serve as the independent variable in the study. Being multidimensional in nature, product innovation and process innovation will be measured using Likert scale ranging from strongly agree (scale of 5) to strongly disagree (scale of 1). These measures are in line with [12] who measure innovation as multidimensional construct. We will control for firm size, firm age, and industry type in line with ([1]; [16]; [6]; [14], [12]).

Parametric model of data analysis will be used to determine the effects of the independent and control variables on SME performance. Though ordinary least square (OLS) model is widely used in parametric model, it has its limitations. It is sensitive to influential outliers, the standard errors tend to be inefficient, and the residuals are not normally distributed [17]. To correct these shortcomings, [17] recommended quantile regression model which the study proposes.

The following model is proposed to test the hypotheses earlier developed:

Research Model:

$$PRF = \beta_0 + \beta_1 PRD_i + \beta_2 PRC_i + \beta_3 FMS_i + \beta_4 FMA_i + \beta_5 IND_i + \varepsilon_i \ (1)$$

Where:
PRF = SME performance
PRD = Product innovation
PRC = Process innovation
FMS = Firm size
FMA = Firm age
IND = Industry type
β_0 = constant

$\beta_1 - \beta_5$ = parameter estimates of the independent and control variables
ε_i = Error term

Additionally, the study will utilize hierarchical regression model following the work of [12], and [14]. In this regards, two models including control variables model and main effect model are presented in equations 2 to 3.

$$PRF = \alpha_0 + \alpha_1 FMS_i + \alpha_2 FMA_i + \alpha_3 IND_i + \varepsilon_i (2)$$
$$PRF = \beta_0 + \beta_1 PRD_i + \beta_2 PRC_i + \beta_3 FMS_i + \beta_4 FMA_i + \beta_5 IND_i + \varepsilon_i \qquad (3)$$

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Cite this article as :