



# Descriptive Analysis of Process Innovation and Performance of Publishing Firms in North Central Nigeria

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## ABSTRACT

*This study analysed process innovation and performance of publishing firms in Southwestern Nigeria. The study area of this study includes seven (7) states in the North Central of Nigeria such as Federal Capital Territory (FCT), Abuja; Benue state; Kogi State; Kwara State, Nasarawa State, Niger State, and Plateau State. Out of the seven (7) states in North Central Nigeria, three (3) states were randomly selected so as to give the remaining four (4) states equal chances of being selected for this study. Hence, the randomly selected states include: FCT, Abuja; Nasarawa State and Niger State. Cochran formula was used to determine the samples size which gives three hundred and eighty (385). However, for robustness of this study, primary data was collected by administering four hundred (400) copies of questionnaire to the publishing firms in the study area. Three hundred and eighty-five (385) copies were retrieved and used for the analysis. The study discovered that publishing firms in the North Central Nigeria uses innovation in terms of introduction of new or significant improved process: printing technologies; delivery or output distribution methods; support activities for the maintenance system processes and input logistics. The study also found that process innovation improves the operations and activities of publishing firms through: improved flexibility of production or service provision; increases speed of supplying and delivery goods and services, reduces labour costs per unit of output; increases capability of production or operations management; reduces energy per unit output; and increases the efficiency of the publishing firms. The study further found that there is improvement in the sales, and customer base of the publishing firms in North Central Nigeria. It concludes process innovation improve the performance of publishing firms in North Central Nigeria. The study recommends that publishing firms should take cognizance of their process innovation because of its importance in their production and operations activities.*

**Keywords:** Process innovation, Performance, Publishing firms and Nigeria

## I. Introduction

Publishing firms basically deal with making information available to the general public in a readable format (Joshua, 2014). Publishing firms entail series of publishing processes. These processes include creation, acquisition, copy, editing, production, printing (and its electronic equivalents), marketing and distribution of intellectual work. The commercial publishing industry ranges from large multinational conglomerates such as Bertelsmann, RELX, Pearson and Thomson Reuters to thousands of small independents (WIPO, 2022). Publishing firms have various divisions such as: trade/retail publishing of fiction and non-fiction, educational publishing, academic and scientific publishing.

There are strata of stakeholders that are into publishing activities for one reason or the other. Among the stakeholders are government institutions, civil society and private companies for administrative or compliance requirements, business, research, advocacy or public interest objectives. The publishing activities includes annual reports, research reports, market research, policy briefings and technical reports. Although, self-publishing with series of innovation has become very common in most business organization (Quan-Hoang Vuong, 2020).

On that note, innovations have been defined and classified by authors and statutory bodies. Innovation is generally recognized as “introduction of new results or significantly improved on the existing results”. Meanwhile, innovations were classified in Oslo manual by statutory body into four such as process innovation, products innovation, marketing innovation and organizational innovation (Organization for Economic Co-operation and Development (OECD, 2018). Based on the classifications, however, process innovation is defined as implementation of new or significantly improved production or delivery approaches, including changes in operational methods, the techniques used and the equipment or software (OECD, 2018). The improvement needs to be novel to the organization but not necessarily to the market.

Although, improvement in innovations is prerequisite for improved performances of an organisation. Performance of a firm could be related to its ability to gain profit and growth in order to achieve its main objective (Bartoli & Blatrix, 2015). According to Taouab and Issor (2019), in the 50s, firm performance was considered as the equivalent of organizational efficiency, which represents the degree to which an organization, as a social system with some limited resources and means, achieves its goals without an excessive effort from its members. The non-financial criteria mostly used in literature for assessing performance are productivity, flexibility, and inter-organizational tensions. Bartoli and Blatrix (2015) believed that performance should be achieved through items such as piloting, evaluation, efficiency, effectiveness, and quality. Nevertheless, Performance measurement is very important for firm’s effective management. It serves as a main provider to the perceptual and organization control abilities of the firm. Performance requires measurement to study and identify the management strategy; to predict future internal and external situations; to monitor state and behaviour relating to its aims; and to make decisions as at when due (Taouab & Issor, 2019). There are different financial measures that can be used to evaluating performance of a company. Some of the common financial measures are revenue, return on equity, return on assets, profit margin, sales growth, capital adequacy, liquidity ratio, and stock prices, among others.

Recent studies have shown that performance of publishing firms is poor in Nigeria. Furthermore, there have been studies on innovations in Nigeria (Ukpabio, Siyanbola and Oyebisi, 2017). Despite that, there is dearth of studies on the descriptive analysis of process innovation and performance of publishing firms in North Central Nigeria. This is the need for this study.

However, the remaining part of this study is ordered thus: literature review, methodology, results and discussions, conclusion and recommendations.

## **II. Literature review**

According to Ukpabio *et al.*, (2017), innovation can be viewed as a process of furnishing and improving on products and services to appeal to customers’ taste and demand thereby expanding on workers’ aptitudes. Adeyeye, Jegede & Akinwale (2013) describe innovation as a process by which firms master and implement the design and production of goods and services which are new to them, irrespective of whether they are new to their competitors, their countries or the world. Advancement implies creating unique ideas and it is a driver of reimagining business. Organizations that advance can set the association in an alternate worldview to recognize new open doors and the best strategies to take care of current issues.

The concept of technological innovation is usually seen as encompassing product and process innovation (Kermarrec, Budzik, Khalil & Le-Thuc, 2010). Hindle and Yencken, (2004) defined technological innovation as an iterative process initiated by the perception of opportunity for a technology-based invention leading to the conception, development, production, commercialization and marketing of inventions.

According to Ibem and Laryea (2014), technological innovation entails the development, adoption and diffusion of products and/or applications resulting from scientific and/or technological discovery and knowledge. More so, technological innovation has been considered by several studies (de Valence, 2010) as being in form of processes or products which may include engineering and scientific concepts, new product development, processing systems, production processes, physical equipment or tools. Ibem and Laryea (2014), on their part added that the major features of technological innovation

include: a continuous process development and introduction of new or significantly improved products/services, processes or strategies, development of an invention into innovation, introduction of an innovation to end-users as well as the adoption and diffusion of an innovation.

This study adopted innovation theory because of its intrinsic characteristics which is basically related to the attributes of innovation in the publishing firms. Innovation theory was propounded by Schumpeter in 1950. The theory postulated that, entrepreneur is basically an innovator and innovator is one who introduces new things or significantly improve on the existing things for value addition. Furthermore, Schumpeter's innovation theory is anchored on the following elements: (i) the introduction of new goods and services which consumers are not familiar with before or of a newer quality. (ii) the introduction of a new method of production that is valuable to the concerned bodies. (iii) the opening of a new market i.e. a market into which the particular branch of product of the firm in question has not being previously experienced. (iv) the conquest of a new source of supply of raw materials or semi manufactured goods, irrespective of whether this source has already existed or whether it has first been created. (v) the carrying out of the new organization of any industry like the creation of a monopoly position or the breaking up of a monopoly position. The Schumpeterian theory makes strong distinction between an innovator and an inventor. According to the theory, an inventor discovers new methods and new materials, while, an innovator applies inventions and discoveries to make new combinations of which results to new products, new processes, new marketing strategies and new organizational strategies. Meanwhile, the new combination values will result to meaningful performance of enterprises globally.

Musa and Adamu (2018) examined the determinants of a firm's innovation in Nigeria. The study utilized enterprise survey data developed by the World Bank, which were analyse using probit and tobit regression models. The findings from the study showed that investing in Research and Development (R&D), formal training, firm's size, exporting status, competitors, location, type and sector, or activity of firms all positively drive the innovativeness of firms. It was however established by the study that firm's age and employee education negatively affect the chances of their innovation. The study also showed investing in R & D, formal training, firm's size, type, and sector were the significant determinants of product, process, organizational, or marketing innovation in Nigeria. However, the study did not focus on publishing firm in specific term. Therefore, its findings may not be sufficient to explain the impact of process innovation and performance of publishing firms in north central Nigeria. Hence, there is need for further study on the identified gap.

Ukpabio, Siyanbola and Oyebisi (2017) investigated the impact of technological innovation on the performance of manufacturing firms in Nigeria. The study employed survey research sample for the study, the data was from 305 SMEs in the textile/leather/apparel and footwear subsector; wood/furniture and woodworks subsector; and domestic/industrial plastic and rubber subsector in Southwestern Nigeria. Data collected was analyse using correlation analysis and hierarchical regression analysis. The correlation result showed that product innovation and process innovation had significant positive relationship with firm performance. More so, the regression results confirmed that product and process innovations have positive impact on the performance of firms. The study concludes that product and process innovations are critical elements for enhancing the performance of manufacturing SMEs in Nigeria. However, the study scope is limited to textile/leather/apparel and footwear subsector; wood/furniture and woodworks subsector; and domestic/industrial plastic and rubber subsector in Southwestern Nigeria. Further study is needed in another sector. More so, the sample size obtained in the study is not scientific. Thus, it is not likely to explain the performance of the publishing firms in North Central Nigeria.

Namusonge, Muturi and Olawoye, (2016) examined the role of innovation on performance of firms listed in the Nigerian Stock Exchange. The target population of the study was 176 firms listed in the Nigerian Stock Exchange. The study employed mean, standard deviation, and Pooled, Random and Fixed regression models in its analysis. Findings of the study revealed that, there is relationship between Entrepreneurial Orientation dimension - Innovation, and performance of firms listed in the Nigerian Stock Exchange. Returns on assets and returns on equity as proxy revealed a negative relationship between innovation and performance of listed firms. This result suggests that, in Nigeria, like in Kenya, innovation has been widely adopted and practiced.

Atandi, Bwisa and Sakwa (2016) examine the effect of technological innovation on savings mobilization among MSEs in Trans Nzoia county Kenya. The study used mixed methods research design. 339 MSEs that registered with KNCCI Trans Nzoia county were used for this study. Stratified sampling was used to categorize MSEs into three strata's namely; service, manufacturing and commerce or trade. Findings of the study indicated that technological innovation influences, introduction of variety of new product and services offered to customers drastically reduce the cost of saving mobilization and make financial products and services appealing/attractive. The study concluded that financial institutions should consistently innovate new technologies to deliver their products and services.

Mohammed, Idris, Saridakis & Benson (2020) examined the relationship between innovation, information and communication technologies, and SMEs performance. A sample of 1989 enterprises was obtained from 21 states in America. The results revealed that innovation has significant positive impact on both information and communication technologies (ICT) and SMEs performance. However, the methodology used in the study is not sufficient enough to arrive at logical conclusion. There is the need for mixed methods of data collection such as questionnaire, interview and focus group discussion.

Ndesaulwa and Kikula (2016) used a desktop methodology to investigate the world wide existing empirical studies on the relationship between Innovation and performance of Small and Medium Enterprises (SMEs) in West and East Africa. The literature survey revealed that the studies on innovation and its effect on performance are observed to have concentrated on Western, Middle and Far East and very little empirical evidence is noticeable in Africa. The issue of innovation and how it relates to firm's performance especially SMEs is therefore yet to be exhaustively explored. The results from review further show that no consistent results on whether the innovations altogether influence firm's performance. However, the study's findings did not provide detailed explanation on the how technological entrepreneurship and innovation have impacted on the performance of the publishing firms in North central region of Nigeria.

Onyeiwu, Obumneke & Moruf (2020) examined the effect of entrepreneurial characteristics on the performance of Small and Medium Scale Enterprises using Yaba Local Government Area (L.G.A) of Lagos state as the case study. The study employed survey research design and data were collected through questionnaire administered to 92 entrepreneurs in various activities. The data collected were analysed through the use of descriptive statistics with the aid of SPSS version 20. The formulated hypotheses were tested through the use of simple regression. The findings of the study revealed that entrepreneurial characteristics, entrepreneurial competency and orientation and the level of education of an entrepreneur have significant effect on the performance of Small and Medium Scale Enterprises in Lagos State, Nigeria.

### **III. Methodology**

This study analysed the process innovation and performance of publishing firms in North Central Nigeria using quantitative research technique, specifically, questionnaire. The states in the North Central entail Federal Capital Territory (FCT), Abuja; Benue state; Kogi State; Kwara State, Nasarawa State, Niger State, and Plateau State. Out of the seven (7) states in North Central Nigeria, three (3) states were randomly selected so as to give the remaining four (4) states equal chances of being selected for this study. Hence, the randomly selected states include: FCT, Abuja; Nasarawa State and Niger State. The population of the publishing firms North Central Nigeria is unknown because there are some of the publishing firms that are operating informally, and there is need for this study to include publishing firms that are informally operating in the study area. Therefore, Cochran formula was adopted to determine the sample size that is appropriate for this study. Cochran's formula = (same as  $n_0 = Z^2 p q / e^2$ ). Where  $n_0$  = sample size,  $Z^2$  = abscissa of the normal curve that cuts off an area  $\alpha$  at the tails ( $1 - \alpha$  equals the desired confidence level is 95%),  $e$  = desired level of precision,  $p$  = estimated proportion of an attribute that is present in the population, and  $q$  is  $1-p$ . The value for  $Z$  is found in statistical tables that contain the area under the normal curve. For a small sample size up to one thousand (1,000), adjusted formula of Cochran can be used denoted as  $n = n_0 / [1 + \{(n_0 - 1) / N\}]$ , where  $n_0$  = sample size and  $N$  = population size. The calculation of sample size: Assuming  $p = 0.5$  (samples with maximum

variability), 95% confidence level, Z values of 1.96 (gotten from normal table), the sample size is calculated thus:  $n_0 = (1.96)^2 (0.5) (0.5) / (0.05)^2 = 385$ . Hence, the results of the Cochran formula is three hundred and eighty-five (385). For robustness of this study however, trained research assistants were employed to purposively administered four hundred (400) questionnaire to the publishing firms in the selected states in North Central Nigeria. The justification for purposive administration of questionnaire is to eliminate emerging (new) publishing firms from the study so as to obtain reliable information. Three hundred and eighty-five (385) questionnaire were retrieved and used for the analysis of this study. Descriptive statistics were used in the analysis of this study such as frequency, percentages, mean and standard deviation.

#### IV. Results and Discussion

Table 1 shows that 34.3% of the publishing firms indicates that they always introduce new or significantly improved printing technologies (such as 3D printing) to simplify the production process of their publishing services. Also, 61.3% of the publishing firms agree that they often introduce new or significantly improved printing technologies (such as 3D printing) to simplify the production process of their publishing services. Furthermore, 3.1% of the publishing firms reports that they sometimes introduce new or significantly improved printing technologies (such as 3D printing) to simplify the production process of their publishing services. While 1.3% of the publishing firms notes that they rarely introduce new or significantly improved printing technologies (such as 3D printing) to simplify the production process of their publishing services. In addition, Table 1 shows that the mean value (4.29) indicate that the publishing firms agree that they often introduce new or significantly improved printing technologies (such as 3D printing) to simplify the production process of their publishing services. The standard deviation value (0.588) implies that the responses of the publishing firms clustered around the mean. The implication is that the publishing firms in North central Nigeria unanimously agree that they often introduce new or significantly improved printing technologies (such as 3D printing) to simplify the production process of their publishing services.

Furthermore, Table 1 shows that 32.2% of the publishing firms reports that they always implement new or significantly improved on the delivery or output distribution methods of their publishing firms. In addition to that, 65.5% of the publishing firms reports that they often implement new or significantly improved on the delivery or output distribution methods of their publishing firms. Furthermore, 1.0% of the publishing firms reports that they sometimes implement new or significantly improved on the delivery or output distribution methods of their publishing firms. While 1.3% of the publishing firms notes that they rarely implement new or significantly improved on the delivery or output distribution methods of their publishing firms. In addition, Table 1 shows that the mean value (4.29) and standard deviation (0.551) indicate that the publishing firms unanimously agree that they often implement new or significantly improved on the delivery or output distribution methods of their publishing firms. The implication is that the publishing firms in North Central in Nigeria often implement new or significantly improved on the delivery or output distribution methods of their publishing firms.

Table 1 shows that 54.3% of the publishing firms reports that they always implement new or significantly improved support activity for the maintenance system processes of their publishing firms. In addition to that, 37.7% of the publishing firms indicates that they often implement new or significantly improved support activity for the maintenance system processes of their publishing firms. Furthermore, 6.8% of the publishing firms reports that they sometimes implement new or significantly improved support activity for the maintenance system processes of their publishing firms. While 1.3% of the publishing firms notes that they rarely implement new or significantly improved support activity for the maintenance system processes of their publishing firms. Meanwhile, Table 1 shows that the mean value (4.45) and standard deviation (0.679) indicate that the publishing firms unanimously agree that they always implement new or significantly improved support activity for the maintenance system processes of their publishing firms. The implication is that the publishing firms in North Central in Nigeria always implement new or significantly improved support activity for the maintenance system processes of their publishing firms.

Table 1 shows that 50.6% of the publishing firms indicates that they always introduce new or significantly improved input logistics of their firms. Also, 41% of the publishing firms agree that they

often introduce new or significantly improved input logistics of their firms. Furthermore, 3.4% of the publishing firms reports that they sometimes introduce new or significantly improved input logistics of their firms. While 4.9% of the publishing firms notes that they rarely introduce new or significantly improved input logistics of their firms. In addition, Table 1 shows that the mean value (4.37) indicates that the publishing firms reports that they often introduce new or significantly improved input logistics of their firms. The standard deviation value (0.774) implies that the responses of the publishing firms clustered around the mean. The implication is that the publishing firms in North central Nigeria unanimously agree that they often introduce new or significantly improved input logistics of their firms.

Table 1 further shows that 33.8% of the publishing firms indicates that they always implement new or significantly improved support activity for accounting of their publishing services. Also, 46.2% of the publishing firms agree that they often implement new or significantly improved support activity for accounting of their publishing services. About 17% of the publishing firms reports that they sometimes implement new or significantly improved support activity for accounting of their publishing services. While 3.4% of the publishing firms notes that they rarely implement new or significantly improved support activity for accounting of their publishing services. Meanwhile, the Table 1 shows the mean value (4.10) and standard deviation (0.794) which means that the publishing firms unanimously reports that they often implement new or significantly improved support activity for accounting of their publishing services. The implication is that the publishing firms in North central Nigeria often implement new or significantly improved support activity for accounting of their publishing services.

Characteristics	5	4	3	2	1	Total	Mean	SD
Our firm introduce new or significantly improved printing technologies (Such as 3D printing) to simplify the production process of our publishing services	132 (34.3)	236 (61.3)	12 (3.1)	5 (1.3)	-	385 (100)	<b>4.29</b>	<b>0.588</b>
Our firm implement new or significantly improved on the delivery or output distribution methods of our publishing services	124 (32.2)	252 (65.5)	4 (1.0)	5 (1.3)	-	385 (100)	<b>4.29</b>	<b>0.551</b>
Our firm implement new or significantly improved support activity for the maintenance systems processes of our publishing services	209 (54.3)	145 (37.7)	26 (6.8)	5 (1.3)	-	385 (100)	<b>4.45</b>	<b>0.679</b>
Our firm introduce new or significantly improved input logistics of our publishing firms	195 (50.6)	158 (41.0)	13 (3.4)	19 (4.9)	-	385 (100)	<b>4.37</b>	<b>0.774</b>
Our firm implement new or significantly improved support activity for accounting of our publishing services	130 (33.8)	178 (46.2)	64 (16.6)	13 (3.4)	-	385 (100)	<b>4.10</b>	<b>0.794</b>
<b>Key: 1= Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Always</b>								
Source: Researchers' Field Work, 2022.								

Table 2 shows the process innovation impact of the publishing firms in the North Central Nigeria. The Table 2 shows that 39% of the publishing firms strongly agree that process innovation improved flexibility of production or services provision of their publishing firms. In addition to that, 56.4% of the publishing firms agrees that process innovation improved flexibility of production or services provision of their publishing firms. While 2.3% of the publishing firms was indifference about the notion that process innovation improved flexibility of production or services provision of their publishing firms. Nevertheless, 1.3% of the publishing firms disagree that process innovation improved flexibility of production or services provision of their publishing firms while only 1% of the publishing firms strongly disagree that process innovation improved flexibility of production or services provision of their publishing firms. Meanwhile, Table 2 shows the mean value (4.31) and standard deviation (0.681) which

implies that the publishing firms in the North Central Nigeria unanimously agree that process innovation improved flexibility of production or services provision of their publishing firms.

Table 2 shows that 44.7% of the publishing firms strongly agrees that process innovation increased the speed of supplying and or delivering goods or services of their firms. In addition to that, 35.8% of the publishing firms agrees that process innovation increased the speed of supplying and or delivering goods or services of their firms. While 16.1% of the publishing firms was indifference about the notion that process innovation increased the speed of supplying and or delivering goods or services of their publishing firms. Nevertheless, 3.4% of the publishing firms disagrees that process innovation increased the speed of supplying and or delivering goods or services of their publishing firms. Meanwhile, Table 2 shows the mean value (4.22) and standard deviation (0.835) which implies that the publishing firms in the North Central Nigeria unanimously agree that process innovation increased the speed of supplying and or delivering goods or services of their publishing firms.

Table 2 shows that 47.8% of the publishing firms strongly agrees that process innovation reduced labour costs per unit output of their publishing firms. In addition to that, 39% of the publishing firms agrees that process innovation reduced labour costs per unit output of their publishing firms. While 7.3% of the publishing firms was indifference about the notion that process innovation reduced labour costs per unit output of their publishing firms. Nevertheless, 2.3% of the publishing firms disagrees that process innovation reduced labour costs per unit output of their publishing firms while 3.6% of the publishing firms strongly disagrees that process innovation reduced labour costs per unit output of their publishing firms. Meanwhile, Table 2 shows the mean value (4.3) and standard deviation (0.955) which implies that the publishing firms in the North Central Nigeria unanimously agree that process innovation reduced labour costs per unit output of their publishing firms.

Table 2 shows that 48.6% of the publishing firms strongly agrees that process innovation increased capability of production or service operation of their publishing firms. In addition to that, 34.8% of the publishing firms agrees that process innovation increased capability of production or service operation of their publishing firms. While 6.2% of the publishing firms was indifference about the notion that process innovation increased capability of production or service operation of their publishing firms. Nevertheless, 8.2% of the publishing firms disagrees that process innovation increased capability of production or service operation of their publishing firms while 2.1% of the publishing firms strongly disagrees that process innovation increased capability of production or service operation of their publishing firms. Meanwhile, Table 2 shows the mean value (4.19) and standard deviation (0.716) which implies that the publishing firms in the North Central Nigeria unanimously agree that process innovation increased capability of production or service operation of their publishing firms.

Table 2 shows that 51.7% of the publishing firms strongly agrees that process innovation reduced materials or energy per unit output of their publishing firms. In addition to that, 40.5% of the publishing firms agrees that process innovation reduced materials or energy per unit output of their publishing firms. While 4.4% of the publishing firms was indifference about the notion that process innovation reduced materials or energy per unit output of their publishing firms. Nevertheless, 2.4% of the publishing firms disagrees that process innovation reduced materials or energy per unit output of their publishing firms while 1.3% of the publishing firms strongly disagrees that process innovation reduced materials or energy per unit output of their publishing firms. Meanwhile, Table 2 shows the mean value (4.4) and standard deviation (0.780) which implies that the publishing firms in the North Central Nigeria unanimously agree that process innovation reduced materials or energy per unit output of their publishing firms.

Table 2 shows that 40.8% of the publishing firms in the North Central Nigeria strongly agrees that process innovation increased the efficiency of their publishing firms. In addition, 33% of the publishing firms agrees that process innovation increased the efficiency of their publishing firms. While 19% of the publishing firms was indifference about the notion that process innovation increased the efficiency of their publishing firms. Nevertheless, about 5% of the publishing firms disagrees that process innovation increased the efficiency of their publishing firms while 2.3% of the publishing firms strongly disagrees that process innovation increased the efficiency of their publishing firms. Meanwhile, Table 2 shows the mean value (4.05) and standard deviation (0.880) which implies that the publishing firms in the North Central Nigeria unanimously agreed that process innovation increased the efficiency of their publishing firms.

Characteristics	5	4	3	2	1	Total	Mean	SD
Process innovation Improved flexibility of production or service provision	150 (39.0)	217 (56.4)	9 (2.3)	5 (1.3)	4 (1.0)	385 (100)	<b>4.31</b>	<b>0.681</b>
Process innovation increased the speed of supplying and/or delivering goods or services	172 (44.7)	138 (35.8)	62 (16.1)	13 (3.4)	-	385 (100)	<b>4.22</b>	<b>0.835</b>
Process innovation reduced labour costs per unit output	184 (47.8)	150 (39.0)	28 (7.3)	9 (2.3)	14 (3.6)	385 (100)	<b>4.25</b>	<b>0.955</b>
Process innovation increased capability of production or service provision	187 (48.6)	134 (34.8)	24 (6.2)	32 (8.3)	8 (2.1)	385 (100)	<b>4.19</b>	<b>0.716</b>
Process innovation reduced materials or energy per unit output	199 (51.7)	156 (40.5)	17 (4.4)	8 (2.1)	5 (1.3)	385 (100)	<b>4.39</b>	<b>0.780</b>
Process innovation increases the efficiency of their publishing firm	157 (40.8)	127 (33.0)	73 (19.0)	19 (4.9)	9 (2.3)	385 (100)	<b>4.05</b>	<b>0.883</b>

**Key: 1= Strongly Disagree; 2= Disagree; 3 = Indifference; 4 = Disagree; 5 = Strongly Agree**  
 Source: Researchers' Field Work, 2022.

Table 3 shows that 40.3% of the publishing firms strongly agrees that there is an improvement in the sales volume of their publishing firms during 2019 to 2021. In addition, 37.1% of the publishing firms agrees that there is an improvement in the sales volume of their publishing firms during 2019 to 2021. About 5.2% of the publishing firms was indifference with the notion that there is an improvement in the sales volume of their publishing firms during 2019 to 2021. While only 17.4% of the publishing firms disagrees with the notion that there is an improvement in the sales volume of their publishing firms during 2019 to 2021. Meanwhile, Table 3 shows the mean value (4.00) and standard deviation (0.873) which implies that publishing firms in the North Central unanimously agree that there is an improvement in the sales volume of their publishing firms during 2019 to 2021.

Table 3 shows that 34.8% of the publishing firms strongly agrees that there is an improvement in the customer base of their publishing firms during 2019 to 2021. In addition, 28.1% of the publishing firms agrees that there is an improvement in the customer base of their publishing firms during 2019 to 2021. About 32.2% of the publishing firms was indifference with the notion that there is an improvement in the customer base of their publishing firms during 2019 to 2021. While only 3.9% and 1% of the publishing firms disagree and strongly disagree respectively with the notion that there is an improvement in the customer base of their publishing firms during 2019 to 2021. Meanwhile, Table 3 shows the mean value (3.92) and standard deviation (0.957) which implies that publishing firms in the North Central unanimously agree that there is an improvement in the customer base of their publishing firms during 2019 to 2021.

Characteristics	5	4	3	2	1	Total	Mean	SD
There is an improvement in our sales volume	155 (40.3)	143 (37.1)	20 (5.2)	67 (17.4)	-	385 (100)	<b>4.00</b>	<b>0.873</b>
There is an improvement in our customer base	134 (34.8)	108 (28.1)	124 (32.2)	15 (3.9)	4 (1.0)	385 (100)	<b>3.92</b>	<b>0.957</b>

**Key: 1= Strongly Disagree; 2= Disagree; 3 = Indifference; 4 = Disagree; 5 = Strongly Agree**  
 Source: Researchers' Field Work, 2022.

## V. Conclusion and Recommendation

The study concludes that publishing firms in the North Central Nigeria introduce innovation in terms of introduction of new or significant improved process: printing technologies; delivery or output distribution methods; support activities for the maintenance system processes; input logistics. The study also concludes that process innovation improves the operations and activities of publishing firms



through: improved flexibility of production or service provision; increases speed of supplying and delivery goods and services, reduces labour costs per unit of output; increases capability of production or operations management; reduces energy per unit output; and increases the efficiency of the publishing firms. The study further concludes that there is improvement in the sales, and customer base of the publishing firms in North Central Nigeria. The study recommends that publishing firms should take cognizance of their process innovation as it influences their performance.

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