

## EFFECT OF CREATIVITY AND INNOVATION ON SUSTAINABLE BUSINESS PERFORMANCE OF MANUFACTURING FIRMS IN KWARA STATE, NIGERIA

Ibrahim Olanrewaju Lawal

Kwara State University, Malete, Ilorin, Kwara State, Nigeria.  
E-mail: lawal.olanrewaju@kwasu.edu.ng or lanre1279@gmail.com

### Abstract

*High economic prosperity is attained and sustained by most economies interested in increasing and propelling its entrepreneurial activities such as creativity and innovation. Most firms in Nigeria particularly in the manufacturing industry are scared to invest in research that will discover new creative ideas (product and process) that can guaranty sustainable business solutions. This study investigates the effects of creativity and innovation on sustainable business performance of manufacturing firms in Kwara State, Nigeria. Schumpeterian theory (1912) on innovation was adopted to guide the study. This study used a cross-sectional design and a survey method to distribute a self-administered questionnaire to collect primary information from a sample of 116 registered manufacturing firms out of the total registered manufacturing firms in Kwara State. Two hypotheses were formulated and tested. Statistical Packages for Social Sciences (SPSS) Version 23 was utilized to perform data gathering, computation, correlation and regression analysis. The results from findings revealed an established positive relationship between creativity and innovation dimensions: product and process with sustainable business performance. The study recommends that manufacturers in Nigeria and Kwara State in particular should invest in research that will improve creativity and innovation practice to attain better and sustainable business solutions among the manufacturing firms in Nigeria.*

**Keywords:** Creativity, Innovation, Product, Process, Sustainability, Manufacturing- firms.

### INTRODUCTION

The global business environment considers entrepreneurship pivotal to stable and sustained nations' prosperity and economic growth (European Union, 2012). High economic development is attained and sustained by most economies interested in increasing and propelling its entrepreneurial activities (Edralin, Tibon, Poblador, & Yu, 2019; Zoo, de Vries, & Lee, 2017). Many Scholars (e.g Austin, Stevenson & Weiskillern, 2006; Dacin, Dacin & Matear, 2010; European Union 2012; Zoo, de Vries, & Lee, 2017) have shown how organizational structure, strategy, technology,

culture, and other management tools help to bring effectiveness and competitive advantage to organizations. The scholars, therefore, suggested that in the 21st-century, friendly business environment, sustainable creativity and innovation are the primary sources of competitive advantage. Psychological research highlights that true creativity comes not from the areas in which one is generally active but from the ability to conceive ideas that are both new and appropriate (Amabile, & Mueller, 2006)

Indeed, manufacturing firms may have to leverage creativity and innovation for a different agenda that goes beyond just competitiveness, enhanced customer product, or service experience to securing adaptation. Mott (1972) and Brown, Martinsson, and Petersen, (2017) suggests that sustainable manufacturing firms should be in the first instance productive then flexible and adaptive. In the current dynamic environment, a lot of pressure is put on organizations not just to be productive but also to be adaptive. However, much research and practitioner racket has been on leveraging effectiveness through productivity. Successful organizations have now recognized that human activities are characterized by creativity and innovation likely to produce unexpected value if noticed and not taken for granted. In contrast, smart identification and appropriateness of these organizations' intellectual capacities (creativity) is a major challenge (Brown, Martinsson & Petersen, 2017). The shift to knowledge economies has been abrupt and there is a flurry of interest in creativity and innovation in the workplace (Brown, Martinsson & Petersen, 2017; Vandervert, Schimpf, & Liu, 2007)

Entrepreneurial ventures are now clamoring for creative breakthrough ideas, products, and services that provide for entrepreneurial success. Product innovation is one of the important sources of competitive advantage to the firm (Camison & Lopez, 2010). With innovation, the quality of products could be enhanced, which will in turn contributes to firm performance and ultimately to a firm's competitive advantage (Garvin, 1987; Austin et. al. 2006; Wilson, & Doz, 2011). According to Zoo, et.al. (2017) product innovation offers potential protection to a firm from market threats and competitors. Acar and van den Ende (2016) proved that product innovation had a positive and significant link with organizational performance. Getting the right product at the right place at the right time with the right price is one of the paramount goals of all consumer goods companies.

In the era of globalization, the sustainability of manufacturing firms and its performance has become more cut-throat as a result of increased competition among firms (Zoo, et. al. 2017). Firms need to increase the competencies and capacities of their intellectual capital to improve operational performance. Thus, manufacturers must apply new technologies to track and respond to customer demands and achieve desired sustainable solutions (Brown et. al. 2017). Sustainability will be achieved

based on unique creativity and innovation in response to customer needs for new products and services, which will lead to increased market share, profits and as well contributes to business performance (Adedeji, 2011; Acar, & van den Ende, 2016). Extant literature reveals that creativity and innovation are considered an important element of firm success (Delgado-Verde, 2011; Harper & Becker, 2015; Oluwadare, 2015). Harper and Becker (2015) suggested that creativity and innovation are achieved when significant change made to the structure and processes of a product surpasses the previous achievements. The authors further suggest that creativity and innovation are supported by sustainable business management. Manufacturing firms thus, encourage creativity and innovation in order to achieve production and marketing goals; improve product or service quality; lower their operational costs; increase their market share; attain production flexibility; and improve the management process (Walker, 2013).

Regular ideation, development as well as the introduction of new products is necessary to sustain firms in the competing market, but investing in the new business processes may be risky and costly (Damanpour, 2010; Harper, 2014; Minafam, 2019). Risky and costly investments can be avoided or reduced if the organization's intellectual capital is properly managed. This is realized if continuous management support is given by improving product and service quality through creativity and innovation (Adedeji 2011; Hjalager 2011). By this, innovation could significantly influence business outcomes by enhancing the competitiveness and sustainability of businesses.

The objective of this research was to establish the relationship between creativity and innovation sustainability of manufacturing firms in Nigeria with particular reference to Kwara State. This study seeks to examine how product innovation influences business sustainability manufacturing firms in Kwara State. The study also determines how process innovation affects the business sustainability of manufacturing firms in Kwara State.

## CONCEPTUAL REVIEW

### Creativity and Innovation

Creativity is referred to as the generation of new imaginative ideas (Adedeji, 2011; Camisón, & López, 2010; Edralin, et. al., 2019; Harper & Becker, 2015; Laužikas, & Mokšėckienė, 2013) involving a radical newness innovation or solution to a problem, and a radical reformulation of problems Creativity could also be regarded as a creative solution, either new or recombined, must have value (Higgins, 1999; Edralin, et. al., 2019). These values can be integrated in a diverse way into existing knowledge. Therefore, a creative idea is not valuable if it does not translate to wealth

creation. An imagination of this novelty involves the generation of ideas not previously available as well as the generation of different ways of seeing events important to achieve creative actions (dtogilvie, 1998; Higgins, 1999; Edralin, et. al., 2019; Laužikas, & Mokšėckienė, 2013). Whereas, innovation is a strategic tool for firms to survive and gain competitive advantages in the global marketplace. Innovative firms can improve their performances, defeat their competitors, and provide value to their stakeholders. Innovation is a source of competitive advantage for a firm (Zawislak, Alves, Tello-Gamarra, Barbieux, Reichert, 2012). According to the Organization for Economic Cooperation and Development (OECD, 2005), innovation is the implementation of a firm new or significantly improved product (good or service) through new business methods and practices. Innovation is categorized as product innovation, process innovation, marketing innovation, and organizational innovation. It links innovation to performance: “the ultimate reason is to improve firm performance, for example by increasing demand or reducing costs (OECD, 2005).

### Product Innovation

The process of developing and bringing new or substantially better products or services to the market has been consistently used in the literature to define product innovation (Hauser, Tellis & Griffin 2005; Verde, Castro, Gregorio & José, 2011). Booz, Allen, and Hamilton 1982, Oslon, Walker, and Uekert, 1995). further, clarify and distinguish product innovation into three basic forms such as (i) Product line extensions (familiar to the organization but new to the market); (ii) Me-too products (familiar to the market but new to the organization); and (iii) New-to-the-world products (new to both the organization and the market).

The term product innovation is regarded as an improved or new goods (product) and or services that include user improvements in friendly technology and processes, material, and component (OECD, 2005). Product innovations can utilize new knowledge or technologies or can be based on new uses or combinations of existing knowledge or technology. New knowledge and technology or both may be employed for product innovations. Product innovation (new product or an improvement of an existing product) is usually determined, first by the untimely death of an existing product life cycle due to dynamics in customers' taste and an increase in volatile global business competition. Firms must therefore encourage better relationship employees, customers, organization suppliers (Eze, 2012; Fuglsang, Sundbo, & Sørensen, 2011). Deming (1996) averred that firms have to understand customer needs and expectations, design products and services to create better lives for them to survive in the long term. Bish (2006), Bamidele, Abdulraheem, and Brimah, (2019) explain that a product innovation may be in two dimensions namely new products and new innovations in current products. Tübitak (2006) acknowledges that there is a

relationship between product innovation and technology.

### **Process Innovation**

Many businesses adopt a new production method to secure customer loyalty and gain an advantage in a competitive business environment. The process of new innovation is strongly related to organizational learning which assists the organization to generate, accept and implement new ideas, processes, products, or services (Calantoneam, Cavusgila, & Zhao, 2001; Fuglsang, 2008; Wu, Liu, & Zhang, 2017). Fagerberg, Mowery, and Nelson (2004) explained that the introduction of new products is commonly assumed to have a clear and positive effect on the growth of income and employment, the cost involved in process innovation may have a serious effect, due to its cost-cutting nature. Often times, the cost of products usually reflects in the process of innovation (Olson et al. 1995). Effective process innovation leaves product functionality unchanged while lowering the cost of production by a constant percentage (Adner & Levinthal, 2001; Ezenwakwelu, & Ikon, 2014). Successful process innovations may lead to reductions in both the cost and price of the product. This will eventually lead to pressure on profit levels and an increase in the attractiveness of product innovation. Process innovation clearly induces extra productivity growth at any point of the process (Ezenwakwelu, & Ikon, 2014; Huergo & Jaumandreu, 2004; Lin, 2012) and will result in increasing the organization's price-cost margin by lower production cost. The production and logistic methods as well as supporting services which include accounting; purchasing; maintenance, and computing are significantly improved (Polder et al., 2010) when the organization introduced new production and delivery techniques.

Process innovation is the process of reengineering and improving the internal operation of the business process (Cumming, 1998). The Oxford Handbook for Innovation summarizes process innovation as new or significantly improved methods in the production or manufacturing process. In a similar fashion, Baer and Frese (2003) define process innovation as deliberate and new organizational attempts to change production and service processes. According to (OECD), process innovation is the implementation of new or significantly improved methods for production or delivery, to include significant changes in techniques, equipment, and/or software (OECD, 2005). Process innovation may also be an adoption of new tools, devices, and knowledge or an improved strategic method employed in production activity in making a product (Ezenwakwelu, & Ikon, 2014; Langley et al., 2005). The process innovation introduced by the firm can be an improvement of the existing production techniques or an entirely new process for the organization. The process may also be developed by the organization or by another organization (Adner & Levinthal, 2001; Verde, Castro, Gregorio & José, 2011). These methods

may concern changes in equipment, production organization, or a combination of these changes and may be derived from the use of new knowledge.

### **Sustainable Business Performance**

The business environment is recently characterized by continuous and dynamics changes. An organization must consistently introduce new ideas and new production processes into their business plans to attain and sustain superior competitive advantage. This is essentially important for its long-term performance and sustainability. Sustainable business performance depends on the possibility that a business builds intentional integration of its productive resources, including human, physical, and capital assets, to accomplish an organization's goals (Lubin & Esty, 2010). The embodiment of performance in this study is in relation to the organization's ability to meet customers' tastes and demands by developing new products and the adoption of new strategies for production processes in a complex and dynamic business environment (Abbasi & Nilsson, 2012).

Many scholars such as Cameron and Whetton, 1998; Lebars and Euske, 2006; Roshchina, Nekhoda, and Kalyanova, 2020 suggested that the nature of organizational performance and its measurement has been an ongoing topic for both scholars and practitioners since organizations were first formed with a unique set of circumstances making performance measurement inherently situational. Performance is usually measured with financial and non-financial indicators that provide information relating to organization achieved set objectives (Kaplan & Norton, 1992; Lebars & Euske 2006; Roshchina, et. al., 2020). Etzioni (2011) explained that frequent assessments of organizations' performance must be performed to measure whether set objectives by an organization are realized or not realized. This implies that continuous improvement of organizational performance is assured with continuous assessment and reassessment of organization set objectives.

Undoubtedly, the manager's input plays a significant role in enhancing firms' competitiveness (Barney, 1995). Barnard (1938) viewed organizational effectiveness as the accomplishment of organizational purposes, while he defined efficiency as the degree to which individual motives are satisfied. Barnard argued that the primary measure of an effective and efficient organization is its capacity to survive. Clearly, Barnard proposed a multi-constituency, one-dimensional perspective of organizational performance. Drucker (1954) also argued that the ultimate measure of organizational performance is survival. To this end, Drucker proposed eight different performance dimensions that he felt were essential for the survival and prosperity of a firm. These dimensions included (1) market standing relative to the market potential both now and in the future, (2) innovation, (3) productivity, (4) physical and financial resources, (5) profitability sufficient to cover



the risk premium for being in business, (6) manager performance and development, (7) worker performance and attitude, and (8) public responsibility. According to Drucker, these eight dimensions are all necessary for the long-term survival of the organization, which is the ultimate test of performance.

### **Empirical Review**

The study performed by Bamidele, Abdulraheem, and Brimah, (2019) on innovation Complexities and Market Performance: Evidence from the Nigerian Food and Beverage sector indicated that there is a significantly positive interplay between product innovation, process innovation, and market innovation and market performance. Meanwhile, it was found in the study that organization innovation did not predict market performance. The study utilized questionnaires to collect primary data from the respondents. The statistical analysis performed in the study was through Pls-Sem. The study on investigation of creativity and innovation as a strategy for enhancing entrepreneurship development in Nigeria using some selected medium scale enterprises at Jos metropolis by Gontur, Davireng, and Gadi (2016) was performed using questionnaires to gather information from 50 entrepreneurs in Jos. The study employed the Pearson Product Moment Correlation coefficient through SPSS to test the hypotheses. The study found that creativity and innovation are instrumental in increasing a country's competitive advantages and entrepreneurship development.

In another study performed by Olugbo, (2015) on the effect of innovation on the performance of SME'S organization in Nigeria. The study discovered that innovation is related to business performance. The study employed a primary source to gather useful information from 200 sampled respondents from six SME firms in Nigeria. Research work by Salim, and Sulaiman, (2011) in the ICT industry on 320 small and medium enterprises investigated the effect of organizational learning on innovation. The study utilized a primary source to collect data. Two hypotheses formulated were tested. The study found an established relationship and positive impact of innovation on performance.

### **Theoretical review**

#### **Schumpeter's innovation theory**

This paper adopts the Schumpeterian theory on innovation as a guide to explain the relationship between creativity and innovation on sustainable business performance of manufacturing firms in Kwara State, Nigeria. The theory opined that an entrepreneur can be referred to as a creative and innovative person that introduces innovative activities to the economy. The theory proposed three concepts: First is

that entrepreneurs are a visionary change management agent (Sandberg & Hofer, 1987; Wu, Liu, & Zhang, 2017) who introduce a new economic activity that leads to a change in the market. The person (entrepreneur) creative activity is considered independent different from the organization where he/she is engaged. The theory explains that innovations come in swarms i.e. the initial innovator followed by a bunch of 'imitators' which mostly results in an economic boom during the periods of innovation. Second, the theory postulates that the absence of genuine innovation results in business continuous recycles. Third, the theory suggested that an entrepreneur is not only an innovator but also a leader in the industry particularly among the manufacturing firms discussed in this study. This study adopted the Schumpeter's innovation theory because the assumptions describe an entrepreneur as an innovator and leader. According to this theory, an entrepreneur is not only described as a business owner or a risk taker which is one of its features but also mainly an inventor and a leader.

### **METHODOLOGY**

This study employed a cross-sectional design and survey method to investigate the effects of creativity and innovation on sustainable business performance of manufacturing firms in Kwara state, Nigeria. Simple random sampling techniques and convenience sampling techniques were used as sampling techniques procedures. Simple random sampling techniques were carefully utilized to select representative samples from the targeted population. Convenience sampling techniques were also adopted to personally-administer well-designed questionnaires to the selected respondents. Descriptive statistics such as frequency distributions and percentages were adopted to analyze the demographic responses collected. It was also used to determine the mean and standard deviation of the variables. The inferential statistics via Statistical Packages for Social Sciences (SPSS) version 23 was further utilized to analyze collected data.

#### **Measurement and Data Collection**

This study targeted respondents that are in small and medium manufacturing firms in Kwara state, Nigeria. The respondents consist of owners/entrepreneurs of small and medium manufacturers in Kwara state, Nigeria. The questionnaire is designed to request the respondent's views on the effects creativity and innovation have on sustainable business performance. In total, out of 116 questionnaires distributed; 112 questionnaires were returned that represents a 97% response rate. 4 questionnaires were declared unusable out of 112 questionnaires returned due to incompleteness and ineligibility, while usable questionnaires 108 (94%) constitute the effective response rate. According to Linus (2002), 94% is considered as the acceptable response rate for any social science studies in Nigeria. This indicates that the study

met the response rate requirement of 61% and an effective response rate of 94%. All the measurement instruments for the three constructs (product and process innovation and creativity; and sustainable business performance) in this study were adapted. The dependent variable instruments of sustainable business performance were adopted from (Lebas & Euske, 2006). The independent variables measurement instruments of product innovation and creativity with 7 items were adapted from (Hauser, Tellis & Griffin 2005; Akande, 2014). Process innovation and creativity with 5 items were adopted from (Fuglsang, 2008). All instruments were measure on a 5-points Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach alpha coefficient utilizes for 15 items measuring scale is 0.87.

**Data Analysis**

**Cronbach's Alpha and Reliability Test**

According to Sekaran and Bougie (2010) reliability test is performed to mitigate to a large extent the measurement error. The study investigates the internal-items consistency reliability of the instruments through Cronbach's alpha coefficient. The data showed that there is a high internal-items consistency reliability standard that ranges between 0.736 and 0.902. According to the rule of the thumb, measuring instruments is considered average reliability with a coefficient of not less than 0.60, and a coefficient of more than 0.70 is considered as high-reliability standard (Sekaran & Bougie, 2010). The illustration of the reliability test results of the latent constructs is depicted in Table 1 below.

Table 1: Reliability test of Constructs

Latent variables	Items	Cronbach's Alpha
Product Innovation (PI)	5	0.736
Process Innovation (PRI)	5	0.813
Sustainable Business Performance (SBP)	5	0.902

Research Survey 2019

**Demographic Profile of the Respondents**

The profile of the respondents was analyzed by the researcher using their demographic characteristics in terms of grade level, gender, name of the agency, age, academic qualification, as well as length of service as a public sector staff. The detailed analyses are presented below.

**Respondents Profile by sex**

The analyses in the table below show the gender distribution of the respondents. The analyses showed that out of the 108 valid responses used in this study, 60 (55.5%) of them are males while the remaining 48 (44.5%) are females. This implies that most of the respondents are male entrepreneurs an indication that males' innovators and more than female innovators in Kwara State, Nigeria. The summary is presented in Table 2.

Table 2: Respondents by Gender

Items	Frequency	Percentage (%)
Male	60	55.5
Female	48	44.5

Source: Research Survey 2019

**Respondents Profile by Age**

As revealed in the descriptive analysis, 35 (32.3%) of the respondents are between the age of 18-28years, 40 (37.1%) are between 29-39 years of age, 21 of the respondents representing 19.2% are in the age of brackets 40-50 years. And 12 of the respondents representing 11.4% are above 51 years of age. An indication from the analysis below revealed that the majority of the respondents fall below the age of 50 years. This means that many youths are involved in manufacturing activities in Kwara State, Nigeria. See Table 4.3

Table 3: Respondents by Profile of Age

Items	Frequency	Percentage (%)
18 – 28yrs	35	32.3
29 – 39yrs	40	37.1
40 – 50yrs	21	19.2
51yrs and Above	12	11.4

Source: Research Survey 2019

**Respondents Profile by Educational Qualification**

As seen in Table 4, 17 (15.7%) of the respondents are primary education; 40 (37.6%) are secondary education, while 29 respondents representing 26.6% of the total number of the valid questionnaire are ND/NCE, why HND/B.Sc had 10 (9.6%)of the Respondents and lastly, postgraduate had 11 (10.5%) of the respondents. The analysis in the distribution table below showed that all the entrepreneurs selected

have at least a minimum form of formal education to guide their business. The details are shown in Table 4.

Table 4: Respondents by Educational Qualification

Items	Frequency	Percentage (%)
Primary Education	17	15.7
Secondary Education	40	37.6
OND/NCE	29	26.6
HND/BSc	10	9.6
Postgraduate	11	10.5

Source: Research Survey 2019

### Respondents Profile by Marital Status

The table below shows the marital status of the respondents. The table reveals that out of the 108 valid responses, 37 (35.8%) are single, 55 (50.7%) are married. While other categories such as widow (ed) and separated are 15(13.5%). See Table 5 for the summary of the respondents' Marital status.

Table 5: Respondents by Marital Status

Items	Frequency	Percentage (%)
Single	37	35.8
Married	55	50.7
Others	15	13.5

Source: Research Survey 2019

### Respondents Profile by Length of Service

The table below shows the working experience of the respondents. The analyses showed that out of the 108 valid responses, most of the respondents represents 56 (51.5%) are between 1 – 5years, 37 (35.8%) respondents are between 6 – 10years, 9 (8.3%) respondents are between 11 – 20years, and finally, 5 (4.4%) respondents are above 21years. Table 6 presents a summary of this profile.

Table 6: Respondents Profile by Working Experience

Items	Frequency	Percentage (%)
1 – 5yrs	56	51.5
6 – 10yrs	37	35.8
11 – 20yrs	9	8.3
21yrs and above	5	4.4

Source: Research Survey 2019

### Descriptive Statistics for the Variables

The most common measure of central tendency is the mean, which is referring to the average value of the data set (Sekaran & Bougie, 2010). Standard deviation is a measure of spread or dispersion, which provides an index of variability in the data. Both mean and standard deviation are fundamental descriptive statistics for interval and ratio scale. This study used a 5-point Likert scale with Nik, Jantan, and Taib (2010) interpretation of the level of score adapted. They recommended that scores of less than 2.33 are low level, 2.33 to 3.67 are moderate level, and 3.67 and above are regarded as high level. Table 4.7 below presents the mean and standard deviation of the entire variables used in this study. Process innovation has the highest mean (M = 4.35, SD = .474) and Product Innovation has the lowest mean (M = 3.88, SD = 0.608). Finally, the entire variables mean were in the range of a high level. This means that the scale of measurement utilized was appropriate for the analysis.

Table.7: Mean and Standard Deviation of Variables

Variables	N	Min	Max	Mean	Std. Dev.
Product Innovation (PI)	108	1	5	3.88	.608
Process Innovation (PRI)	108	1	5	4.27	.491
Sustainable Business Performance (SBP)	108	1	5	4.03	.500

Source: Research Survey 2019

### Assumptions of Regression Analysis

Hair et al., (2010) believe that it is very important to refer to some basic assumptions (i.e., normality, linearity, and Multicollinearity) regarding the variables to be able to confirm the results and to deal with the incidence of errors effectively such as Type I and Type II error. For easy understanding, these assumptions are highlighted as follows:

#### Normality Test

Hair, et al. (2014) suggested that researchers should perform a normality test on the data. Highly skewed or kurtotic data can inflate the bootstrapped standard error estimates which in turn underestimate the statistical significance of the path coefficients (Ringle, Sarstedt, & Straub, 2012a). Going by the guidelines provided by Hair et al. (2012) that, variables should be seen as having violated normality if, they have their respective values higher than  $\pm 2.58$ . This study, however, achieves normality because all the variables as shown in Table 4.8 do not have the problem of normality.



Table .8: Normality Test (Skewness and Kurtosis of the Variables)

Variables	Items	Skewness	Kurtosis
Product Innovation (PI)	5	-.367	.573
Process Innovation (PRI)	5	-1.931	1.250
Sustainable Business Performance (SBP)	5	-1.591	1.846

Source: Research Survey 2019

Table 8 indicates that skewness and kurtosis are not higher than  $\pm 2.58$  among the exogenous latent constructs as suggested by Hair *et al.* (2012). Therefore, skewness and kurtosis are not an issue in the present study.

**Multicollinearity Test**

Multicollinearity is a situation where two or more exogenous latent constructs become highly correlated. The presence of multicollinearity among the exogenous latent constructs can substantially distort the estimates of regression coefficients and their statistical significance tests (Hair, et al., 2014). Specifically, multicollinearity increases the standard errors of the coefficients, which in turn render the coefficients statistically non-significant (Tabachnick & Fidell, 2007). To detect multicollinearity, two methods were embraced in the present study. Firstly, the correlation matrix of the exogenous latent constructs was examined. According to Hair et al. (2010), a correlation coefficient of 0.90 and above indicates multicollinearity between exogenous latent constructs. As presented in Table 4.9, the correlations between the independent variables were sufficiently below the suggested threshold values of .90 or more, which suggests that the independent variables were not highly correlated. Secondly, variance inflated factor (VIF), and tolerance value were examined to detect multicollinearity problem. Hair, et al. (2014) suggested that multicollinearity is a concern if the VIF value is higher than 5 and the tolerance value is less than .20. Table 4.9 shows the VIF values and tolerance values for the exogenous latent constructs.

Table 9: Collinearity Test (VIF and Tolerance)

Variables	Tolerance	VIF
Product Innovation (PI)	.736	1.359
Process Innovation (PRI)	.596	1.679
Sustainable Business Performance (SBP)	.632	1.581

Source: Research Survey 2019

Table 4.9 indicates that multicollinearity did not exist among the exogenous latent constructs as all VIF values were less than 5 and tolerance values exceeded .20 as suggested by Hair *et al.* (2011). Therefore, multicollinearity is not an issue in the

present study.

**Correlation Test**

Correlation analysis is used to explain the strength and direction of a linear relationship between two variables (Pallant, 2010). Pearson correlation was employed to assess the interrelationship between study variables. The table below shows the interrelations among product innovation, process innovation, and sustainable business solutions. Pallant (2010) asserted that a correlation of 0 indicated no relationship at all, a correlation of 1.0 is an indication of positive correlation, and value of -1 is a pointer of a perfect negative correlation. Cohen (1988) suggested the following guidelines as:  $r = 0.10$  to  $0.29$  small;  $r = 0.30$  to  $0.49$  medium; and  $r = 0.5$  to  $1.0$  large.

Table 4.10: Correlation Analysis

Variables	PIC	PRC	SBS
Product Innovation PI	1		
Process Innovation PRI	.480**	1	
Sustainable Business Performance SBP	.423**	.582**	1

Source: Research Survey 2019

The table above signifies that the variables are significantly correlated to the fact that there is no variable with a value of 0.9 which indicated that there is no problem of multicollinearity (Hair *et al.*,2010).

**Regressions and Hypotheses Test**

Multiple regression analysis provides an avenue of neutrally assessing the degree and character of the relationship between independent variables and the dependent variable (Sekaran & Bougie, 2010; Field, 2009). The regression coefficient is used to show the relative importance of each of the independent variables in the prediction of the dependent variable. The independent variables are jointly regressed against the dependent variable in an attempt to explain the variance in it, the size of each (individual) regression coefficients will show how much an increase in one unit in the individual variable would affect the dependent variable, taking into cognizance all other individual variables and dependent variable cave into multiple correlation coefficient (Sekaran & Bougie, 2010). Regression analysis was employed to test the hypothesis in this study; it is intended to investigate the relationship between predicting as well as the criterion variables respectively.

Multiple regression analysis was conducted in determining the relationship between

creativity and innovation and sustainable business performance

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.573 <sup>a</sup>	.328	.319	.41207

a. Predictors: (Constant), Product, Process.

The model summary as indicated in table 4.11 above shows that R Square is 0.33; this implies that 33% of the variation in the dependent variable (sustainable business performance) was explained by the constant variables (creativity and innovation) while the remaining 67% is due to other variables that are not included in the model. This means that the regression (model formulated) is useful for making predictions.

Table 12: ANOVA<sup>a</sup>

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18.678	3	6.226	36.666	.000 <sup>b</sup>
	Residual	38.206	225	.170		
	Total	56.883	228			

a. Dependent Variable: Sustainable Business Performance

b. Predictors: (Constant), Creativity & Innovation, Product, Process

Table 12 above summarized the results of an analysis of variation in the dependent variable with a large value of the regression sum of squares (18.4678) in comparison to the residual sum of squares with a value of 38.206. This value indicated that the model does not fail to explain a lot of the variation in the dependent variables. However, the estimated F-value (36.666) as given in the table above with a significance value of 0.000; which is less than the p-value of 0.05 (p<0.05) which means that the explanatory variable elements as a whole can jointly influence change in the dependent variable (c).

Table 13: Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.408	.264		5.342	.000
	Product	.103	.052	.125	1.966	.051
	Process	.152	.072	.149	2.108	.036

a. Dependent Variable: Sustainable Business Performance

The dependent variable as shown in table 4.13 explains the influence of creativity and innovation on sustainable business performance. This was used as a yardstick to examine the influence between the two variables. According to the result in the table above, the product innovation t-test coefficient is .103 and the P-value is 0.050 which is less than 0.05 (i.e., T= 1.97; P=0.050). In addition, process innovation and creativity t-test coefficient are .152 and the P-value is 0.036 which is less than 0.05 (i.e., T=2.108; P=0.036). This means that these variables are statistically significant at a 5% significant level. The overall summary of this regression outcome in relation to the coefficient of innovation and creativity has a significant influence on the sustainable business solution of the selected manufacturer in Kwara State. This implies that the null hypothesis will reject while (i.e., creativity and innovation have a significant influence on a sustainable business solution). Therefore, hypotheses Ho<sub>1</sub> and Ho<sub>2</sub> were supported.

**DISCUSSION OF FINDINGS**

As explained in the findings, the creativity and innovation possess the potentials to predict the sustainable business performance of manufacturing firms in Kwara state in Nigeria. The discussion mainly focuses on the research questions. Research objectives is in line with research questions. There were two hypotheses formulated to test the direct effect on sustainable business performance and all the two hypotheses were supported. Table 4.14 showed the hypotheses and summary of the findings.

Table 14: Summary of Hypotheses Testing

Hyp.	Relationship	T - value	P -value	Decision
Ho <sub>1</sub>	Product innovation -> Sustainable Business Performance	1.970	0.050	Supported
Ho <sub>2</sub>	Process innovation -> Sustainable Business Performance	2.108	0.036	Supported

**Creativity and Innovation on Sustainable Business Performance**

The research objective examined the effects of creativity and innovation on sustainable business performance of most manufacturing firms in Kwara State. In the first place, the descriptive statistics performed on the data provided substantial evidence indicating that creativity and innovation have a strong and positive influence on sustainable business performance. Correlation and regression analysis were conducted to test the stated hypothesis. The result indicates that the product creativity and innovation variable found to predict better sustainable business performance with the following figures (t= 1.97, p = <.050), hence, the Hypothesis H1 is supported. In addition, process creativity and innovation variable found to



predict enlarge customer base with the following figures ( $t=2.108, p<.036$ ), hence, the Hypothesis H2 is supported. Therefore, the result indicates that the creativity and innovation significantly influence the sustainable business performance of manufacturing firm in Kwara state which is in line with many authors (e.g Delgado-Verde, 2011; Harper & Becker, 2015; Oluwadare, 2015; Wu, Liu, & Zhang, 2017) which indicated that creativity and innovation resulted in significant change preferably as improvement in the real product, process, or service that exceeds the impact of previous achievements and the stated theory of Economic Development (1912) by Schumpeter which identified the entrepreneur as an individual who introduces new combinations i.e. innovation to the economy. This means that creativity and innovation of products as well as its processes at all times performed in the manufacturing industry can determine and maintain organization prosperity and in turn guarantee the economic growth of Kwara State in Nigeria. This study contributes to the extant literature on creativity and innovation using product and process innovation as variables to determine Kwara State manufacturing firm's performance with an emphasis on SME's.

## CONCLUSION

This study focuses on the effects of creativity and innovation on sustainable business performance of manufacturing firms in Kwara State. Data were analyzed through descriptive (e.g. frequencies and percentages) and inferential statistics via SPSS version 23 to determine the correlation and regression of the data collected. The result of this study illustrates that product and process innovation has positive and significant influences on sustainable business performance. More specifically, the higher the level of innovation mix, the greater the sustainable business performance, which means that the larger the level of product and process innovation activities the higher level of sustainable business performance is likely to be. Hence, in order to improve innovation and business performance, those firms in the manufacturing industry should concentrate on product and process innovation activities.

## RECOMMENDATIONS

In this study, creativity and innovation are considered as one of the factors for sustainable business performance in manufacturing firms. Product innovation is also considered as the main driver for process innovation which successively heightens the sustainable business performance. Hence, manufacturing firms should put additional emphasis on process innovations because they are important instruments for achieving sustainable competitive strength. Improved process innovative performance is contingent upon the degree of implementation of newly introduced product innovation. This study recommends that the Government should formulate policies that will address issues related to better and viable inducement to support

innovative activities by manufacturing firms in Kwara State. This study suggests that higher institutions of learning and organizations should invest and support for more research attempts on product and process innovative capabilities so that continuous organization improvement can be guaranteed. Entrepreneurs/business owners should also invest more in training and better education to improve their innovative competencies. Organizations should recognize and manage innovations in order to boost their operational performance.

## FURTHER AREA OF RESEARCH

Innovation is an undeniable issue for the future development of each company, industry, and region, specifically, in the manufacturing sectors. However, in Nigeria, more research should adopt higher statistical analysis to perform future and related studies on innovation and creativity in a sustainable business solution. Other research should also be encouraged on the mediating factors of creativity and innovation on sustainable business performance. Further to this, the next research may focus on other sectors such as education and oil and gas sectors to investigate the relationship between creativity and innovation on sustainable business performance of manufacturing firms.

## References

- Acar, O. A. & Tarakci, M., & Van Knippenberg, D. (2018). Creativity and Innovation under Constraints: *A Cross-Disciplinary Integrative Review Journal of Management*, 20(10), 1–26.
- Acar, O. A., & van den Ende, J. (2016). Knowledge distance, cognitive-search processes and creativity: The making of winning solutions in science contests. *Psychological Science*, 27(1): 692-699
- Adewusi, A.O & Aluko, Y.O. (2011). Factors for Creativity, Innovation, and Inclusive Development in Nigeria.
- Akande. O. O, (2014). Entrepreneurial business orientation and economic survival of Nigerians. *International Review of Management and Business Research*, 3(2), 1254-1263.
- Akinbode, S. O., & Hamzat, S. G. (2017). Women Asset Ownership and Household Poverty in Rural Nigeria. *Journal of Studies in Social Sciences*, 16(1).
- Amabile, T. (2013). Componential theory of creativity. In E. Kessler (Ed.), *Encyclopedia of management theory* (135–139). Newbury Park, CA: Sage Publications. <http://dx.doi.org/10.4135/9781452276090.n50>
- Amabile, T. M. (1996). *Creativity and innovation in organizations*. Boston USA: Harvard Business School Publishing
- Amabile, T. M., and Mueller, J. S. (2006) "Assessing creativity and its antecedents: An exploration of the componential theory of creativity." In C. Ford (ed.),

- Handbook of Creativity. Mahwah, NJ: Lawrence Erlbaum (in press).
- Austin, J.E., Stevenson, H., Wei-Skillern, J. (2006) Social and commercial entrepreneurship: same, different, or both? Theory and Practice Journal, da-Baylor University, Boston, vol 47: 3, 370-384.
- Babbie, E. (2004). *The Practices of Social Research, 10<sup>th</sup> ed.* The US: Wadsworth, Thomson Learning, Inc.
- Bamidele, A.G., Abdulraheem, I. & Brimah, A.N. (2019): Innovation Complexities and Market Performance: Evidence from Nigerian Food and Beverage Sector. *Humanities, Management, Arts, Education & the Social Sciences Journal*. 7(1), 1-10.
- Booz, Allen, and Hamilton. Management of New Products. New York: Booz, Allen and Hamilton, 1982.
- Brown, J. R., Martinsson, G., & Petersen, B. C. (2017). What promotes R&D? Comparative evidence from around the world. *Research Policy*, 46, 447-462.
- Brown, P. B. (2012). Why everyone will have to become an Entrepreneur (Crowd Sourced Version). Retrieved from <http://www.forbes.com/sites/actiontrumpeverything/2012/11/03/>
- Calantoneam, S. T., Cavusgila, R. J., & Zhao, Y. (2002) Learning orientation, firm innovation capability, and firm performance, *Industrial Marketing Management*, 31, 515–524.
- Camisón, C. & López, A. V. (2010). An examination of the relationship between manufacturing flexibility and firm performance: The mediating role of innovation. *International Journal of Operations & Production Management*, 30(8), 853-878.
- Caning, C., & Edralin D. (2016). Innovation management strategies of four pioneering Entrepinays from Camarines Sur, Philippines. *ABAC ODI Journal Vision. Action. Outcome*, 3(2), 228–242
- Chambers, R. L. (1986). Outlier Robust Finite Population Estimation *Journal of American Statistics Association*, 81, 1163–1169.
- Cohen, J. (1988). *Statistics Power Analysis for the Behavioural Sciences*, (2<sup>nd</sup> ed). New Jersey: Lawrence Erlbaum Associates.
- Dacin, P. A., Dacin, M. T. & Matear, M. (2010). Social Entrepreneurship: Why we don't need a new theory and how we move forward from here. *Academy of Management Perspectives*, 24(3): 37-57.
- Damanpour, F. (2010). An Integration of Research Findings of Effects of Firm Size and Market Competition on Product and Process Innovations. *British Journal of Management*, 21, 996-1010.
- Damanpour, F., & Aravind, D. (2011). Managerial Innovation: Conceptions, Processes, and Antecedents. *Management and Organization Review*, 8, 423-454.
- De Castro, G. M., Delgado-Verde, M., López-Sáez, P., and Navas López, J.E. (2011) **Technological Innovation. An Intellectual Capital-Based View: R & D**

- Management. Vol: 41: no 3** Pages 319-319
- Delgado-Verde, M., Martín-de Castro, G., & Emilio Navas-López, J. (2011), “Organizational knowledge assets and innovation capability: evidence from Spanish manufacturing firms”, *Journal of Intellectual Capital*, 12 (1), pp. 5-19.
- Dillman, D. A. (2000). Mail and internet surveys: the tailored design method. *Brisbane: Wiley*.
- Divina M. E., Maria Victoria P. T., Paz Esperanza T. P., & Junius W. Yu (2019) Creativity, Innovation, and Sustainability: Insights of Entrepinays in the Handicrafts Industry, *DLSU Business & Economics Review*, 28(3) 64-79.
- Edralin, D., Tibon, M. V., Poblador, P. E., & Yu, J. W. (2019). Creativity, innovation, and sustainability: Insights of entrepinays in the handicrafts industry. *DLSU Business and Economics Review*. 28(1). 64-79.
- Egbide, B. C., & Agbude, G. A. (2014). Good budgeting and good governance: A Evaluation of Military and Civilian Regimes. *Acta Universitatis Danubius*.
- Eze, J. (2012). Capacity Building for Entrepreneurship Education: The Challenge For The Developing Nations. *American Journal of Business Education (AJBE)*, 5(10). 19-30.
- Ezenwakwelu, C.A., & Ikon, M.A. (2014). Empirical analysis on innovation and implication for entrepreneurship development in Nigeria. *European Journal of Business and Management*, 6(36), 141–148.
- Fauzi, N., & Imran, M.K (2019) Journal of Global Business and Social Entrepreneurship (GBSE), 5(14), 1-10.
- Felix, J. M. (2014). Why Have Efforts to End Poverty Failed in Nigeria.
- Field, (2009). *Discovering statistic using SPSS: (Ans sex and drugs and rock 'n' roll)*. Thousand oak, CA: Sage.
- Fillis, I., & Rentschler, R. (2010). The role of creativity in entrepreneurship. *Journal of Enterprising Culture*, 18, 49–81.
- Fuglsang, L. (2008). Innovation and the creative process: towards innovation with care. Cheltenham: Edward Elgar.
- Fuglsang, L., Sundbo, J., & Sørensen, F. (2011). Dynamics of experience service innovation: Innovation as a guided activity- results from a Danish survey. *The Service Industries Journal*, 31(5), 661–677.
- Garvin, D.A. (1987) *Competing in the Eight Dimensions of Quality*. Harvard Business Review, 87, 101-109.
- Gerrit, V. B., Martin, S., Gary, L., & Bernd, S. (2010). Prediction Markets as Institutional Forecasting Support Systems. *Decision Support Systems*, 49(4), 404-416.
- Gontur, S., Davireng, M., and Gadi, P. D. (2016) Creativity and Innovation as a Strategy for Enhancing Entrepreneurship Development in Nigeria: A Study of Some Selected Small and Medium Scale Enterprises in Jos Metropolis, *Journal of Teacher Perspective*, 10 (2), 1-17

- Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1988). *Multivariate data analysis* 5<sup>th</sup>ed. New Prentice-Hall International, Inc.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage, Thousand Oaks.
- Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). Applications of partial least squares path modeling in management journals. A review of past practices and recommendations for future applications. *Long Range Planning*, 45 (5-6), 320-340.
- Hair, J., Anderson, R., Tatham, R. & Black, W. (2010). *Multivariate Data Analysis*, Upper Saddle River, NJ: Prentice-Hall International.
- Harper, S.M.; Becker, S.W. (2004) On the leading edge of innovation: A comparative study of innovation practices. *South. Bus. Rev.*, 29, 1–15.
- Hauser, J., Tellis, G. J., & Griffin. A. (2005). Research on innovation: A review and agenda for Marketing Science. *Marketing Science*. 25(6), 687-717.
- Hjalager, A.M., & Nordin, N. (2011) User-driven Innovation in Tourism-A Review of Methodologies, *Journal of Quality Assurance in Hospitality & Tourism*, 12 (4), 289-315.
- Kuratko, D.F. & Hodgetts, R.M. (2004). *Entrepreneurship: Theory, process, practice*. Mason, OH: South-Western College Publishers.
- Laužikas, M., & Mokšėckienė, R. (2013). The role of creativity in sustainable business. *Entrepreneurship and Sustainability Issues*. 1(2), 10-22.
- Leban, M., & Euske, K. (2006) A Conceptual and Operational Delineation of Performance. *Business Performance Measurement: Theory and Practice*, 1, 65-79.
- Lin, L. (2012). An empirical study on the relationship between service innovation and firm performance based on revised SPC model: Evidence from China's communication industry. *International Journal of Services, Technology and Management*, 18(3/4), 154–183
- Linus (2002) Marketing Research Practices by Nigerian Companies, *Journal of African Business*, 3(1), 81-107.
- Liu, P., Lei, L., & Zhang, X. F. (2004). *A Comparison Study of Missing Value Processing Methods*, *Computer Science*, 31(10), 155-156.
- Minafam, Z. (2019). Corporate entrepreneurship and innovation performance in established Iranian media firms. *AD-minister*, (34), 77-100.
- Mott, P. E. (1972). *The Characteristics of Effective Organizations*, Harper and Row: New York.
- Natali, D., & Vanhercke, B. (2012). Social developments in the European Union: The European Trade Union Institute (ETUI) and the European Social Observatory (OSE) *Fourteenth annual report*.
- National Bureau of Statistics (2014). *Nigeria Poverty Profile 2010*. Retrieved from Abuja: [www.nigerianstat.gov.ng/.../Nigeria%20Poverty%20Profile%20200](http://www.nigerianstat.gov.ng/.../Nigeria%20Poverty%20Profile%20200)
- Nik Muhammad, N.M., Jantan, M., & Md Taib, F. (2010). Moderating effect of

- information processing capacity to investment decision making and environmental scanning. *Business Management Quarterly Review*, 1(1), 9-22.
- Nowduri, S. (2012). Framework for sustainability entrepreneurship for small and medium enterprises (SMES) in an emerging economy. *World Journal of Management*, 4(1), 52–66.
- Olson, E., Walker, O & Ruekert, R. (1995) Organizing for Effective New Product Development: The Moderating Role of Product Innovativeness. *Journal of Marketing*, 3(1), 48-62.
- Olughor, R. J. (2015). Effect of innovation on the performance of SMEs organisations in Nigeria. *Management Review*, 5(3), 90-95. 30
- Oluwadare, A.A. (2015). Creativity and innovation: A viable tool for entrepreneurial development. *Global Advanced Research Journal of Educational Research and Review*, 4(11), 225-231.
- Oluwatayo, I. B. (2008). Explaining Inequality and Welfare Status of Households in Rural Nigeria: Evidence from Ekiti State. *Humanity & Social Science Journal*, 3(1), 70-80.
- Pallant, J. (2007). *SPSS Survival Manual: A step – by step guide to data analysis using SPSS for Windows (version 15)*. Australia: Allan and Urwin.
- Pallant, J. (2010). *SPSS Survival Manual: A step by step guide to data analysis using SPSS*. 4<sup>th</sup> Ed. McGraw Hill.
- Pallant, J. (2010). *SPSS Survival Manual: A step by step guide to data analysis using SPSS*. 4<sup>th</sup> Ed. McGraw Hill.
- Pellegrino, G., & Savona, M. (2017). No money, no honey? Financial versus knowledge and demand constraints on innovation. *Research Policy*, 46: 510-521.
- Philips. J. (2010). Open Innovation Typology, *International Journal of Innovation Science*, 2(4), 175-183.
- Roshchina, I., & Nekhoda, E., & Kalyanova, G. (2020). On the Relationship of Indicators of Sustainable Development, Quality of Life and the Share of Creative Middle Class. *E3S Web of Conferences*. 174. 04052. 10.1051/e3sconf/202017404052.
- Salim M., & Sulaiman, I. M. (2011). Organizational Learning, Innovation and Performance: A Study of Malaysian Small and Medium Sized Enterprises. *International Journal of Business and Management* 6(12), 118-125.
- Saunila, M. (2014). Innovation capability for SME success: Perspectives of financial and operational performance. *Journal of Advances in Management Research*, 11(2), 163–175.
- Sekaran, U. & Bougie, R. (2010). *Research Methods for Business: A Skill Building Approach*. 5th Ed. John Wiley & Sons, Ltd, Publication.
- Sekaran, U. (2003). *Research method for business: A skill building approaches* (4<sup>th</sup>ed.). New Jersey: John Wiley and Sons.



- Sobanke, V. O., Ilori, M. O., & Adegbite, S. A. (2012). Technological capability in metal fabricating firms in southwestern Nigeria. *American Journal of Industrial and Business Management*, 2(4), 176.
- Tabachnick, B. G. & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education Inc.
- Terziovski, M. (2010). Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: A resource-based view. *Strategic Management Journal*, 31(8), 892-902
- Van Auken, H., Madrid Guijarro, A., & García Pérez de Lema, D. (2008). Innovation and performance in Spanish manufacturing SMEs. *International Journal of Entrepreneurship and Innovation Management*, 8 (1), 36-56.
- Vandervert L. R., Schimpf, P.H. & Liu, H. (2007). "How Working Memory and the Cerebellum Collaborate to Produce Creativity and Innovation." *Creativity Research Journal* 19:1-18.
- Verde, M. G., Castro, G. M., José, E. N. (2011). Organizational knowledge assets and innovation capability: Evidence from Spanish manufacturing firms. *Journal of Intellectual Capital*, 12, 5-19.
- WEF (2011) Global Entrepreneurship and the Successful Growth Strategies of Early-Stage Companies. A World Economic Forum Report in Collaboration with Stanford University, Graduate School of Business, SPRIE and STVP. [www.weforum.org/usa](http://www.weforum.org/usa).
- Wilson, K., & Doz, Y. L. (2011). Agile innovation: A footprint balancing distance and immersion. *California Management Review*, 53(2): 6-26
- World Bank. (2011). World development report: Conflict, security, and development. Washington, DC: World Bank.
- Wu, L., Liu, H., & Zhang, J. (2017). Bricolage effects on new-product development speed and creativity: The moderating role of technological turbulence. *Journal of Business Research*, 70, 127-135
- Zoo, H., de Vries, H. J., & Lee, H. (2017). Interplay of innovation and standardization: Exploring the relevance in developing countries. *Technological Forecasting and Social Change*, 118: 334-348.

## CONSUMER RESPONSE TO ADOPTION AND DEMAND FOR ENERGY SAVING BULBS IN NIGERIA

Oteh, O. U., Oloveze, A. O., Obasi, R. O., Nduka, C.,

Asaga, G., Osumba, B., and Ahaiwe, E. O.

Department of Marketing, Michael Okpara University of Agriculture, Umudike Abia State  
E-mail: ogboteh@gmail.com

### Abstract

The power sector of any nation is a critical engine of growth and development. Despite Nigeria's growing population and absence of critical energy infrastructure, consumer demand for inefficient energy has not decreased with severe economic and social consequences. Evidence shows that consumer response to energy saving bulbs such as compact fluorescent lamps (CFLs) is abysmally low. This study considered consumer response to the energy saving bulbs and examined factors that influence the adoption and use of energy-saving lights using a sample of 300 residents of Abia State, Nigeria. Descriptive statistics and logit regression were used to evaluate the acquired data. The findings revealed that the level of awareness is modest and the usage rate isn't promising. Bills and the cost of energy-saving bulbs have a negative and considerable impact on energy bulb uptake and usage in the research area. As a result, the study found that bills and the cost of CFLs had a significant impact on the adoption of energy-saving bulbs in Abia state. To prevent the importation of poor CFL, the study advises policy formulation and severe measures that will forestall importation of inferior CFL.

**Keywords:** Electricity consumption, Consumer demand, Adoption and usage, Energy saving bulbs, Consumer perception.

### INTRODUCTION

Electricity energy has been linked to industrialization (Ugwoke, Dike, & Elekwa, 2016) and economic growth (Alley, Egbetunde, & Oligbi, 2016). This gain of electrification often comes either in direct or indirect form, hence the benefits of industrialization are enormous. Economic development, higher income creation, increased productivity, and combatting poverty are all examples of the advantages (Ndiaya & Lv, 2018; Anyanwu & Kalu, 2015). However, in spite of increase in population (Simandan, 2020), and pressure on available electricity infrastructure on industry, most developing countries are not realizing the benefits of industrialization (Nwankwo, & Njogo, 2013; Ugwoke et al. 2016) due partly to absence of critical energy infrastructure and energy behavior of its citizens.

Because of the important role electricity plays in increasing activities and supporting