

# WORKFORCE DIVERSITY AND PRODUCT INNOVATION IN THE MANUFACTURING INDUSTRY: NIGERIAN EXPERIENCE

ISIAKA, Abdulakeem Abiodun<sup>1</sup> ( B.Sc, M.Sc)

&

IBITOMI, Taiwo<sup>2</sup> (B.Sc, M.Sc)

[Prof4real4all@yahoo.com](mailto:Prof4real4all@yahoo.com)

1. Department of Business Administration University of Ilorin, Nigeria.
2. Department of Business Administration, Nasarawa State University, Keffi, Nigeria

## Abstract

*Diversity is a common phenomenon in an organization, society and even internationally because homogeneity is very rare in all aspect of life including physical, economical and social. Hence, this paper examines workforce diversity and product innovation with specific reference to the manufacturing industry in Nigeria. The study used survey research design. Primary sources of data was used through questionnaire to the employees of the organisations. A total of 301 questionnaires were administered out of which 161 were properly filled and returned. The formulated hypotheses were tested using multiple regression. The findings of the study revealed that; educational background diversity have positive effect on product innovation in manufacturing industry in Nigeria, this shows that educational background diversity contribute to product innovation in the selected organisations. Also, the study also revealed that work experience diversity have positive effect on product innovation in manufacturing Industry in Nigeria which shows that work experience diversity contribute to product innovation in the various organisation in Nigeria. The study therefore recommended that to ensure that innovative products that can capture the attention of customers are manufactured; organisations should ensure that a diverse workforce in terms of differences in their level of education and the number of years spent in the manufacturing industry should be employed by the manufacturing industry. Also, management should provide training opportunities to employees who lack the required skills.*

**Keywords:** work experience diversity, educational background diversity, product innovation

## 1.0 Introduction

Business organization in the developed and developing country are all caught up in the web of globalization which has heralded increase demographic as well as personality diversity in the workforce. Diversity is a common phenomenon in an organization, society and even internationally because homogeneity is very rare in all aspect of life including physical, economical and social. Workforce diversity emerged mainly to further the availability equal opportunity in the workplace. This phenomenon is one of the most challenging human resources and organizational issues currently as both practitioners and those in the academic have sought to investigate the salient and symbolic relationship the composition of workforce in terms of demographic characteristics as well as the personality traits has on the capability of an organization to innovate (Ehimare & Ogaga-Oghene, 2011).

The diverse workforce has become a reality today. Workforce diversity acknowledge the reality that people differ in many ways, visible or invisible in terms of age, gender, marital status, educational background, social status, disability, sexual orientation, religion, personality, ethnicity and culture (Onday, 2016). Diversity includes all group of people at all levels in an organization. Diversity require a kind of organizational culture in which each employee can make real his or her career aspirations without being prohibited by gender, race, nationality, religion, or other factor that are irrelevant to performance ( Onday, 2016).

Manufacturing firms in Nigeria are faced with stiff competition that is non-pricing. Hence, manufacturing firms are forced to think out of the box on how they can remain in the market for a very long time. This has led many firms to innovate on their product. Product innovation

therefore, is the creation and subsequent introduction of goods and services that are either new or an improved version of the previous goods and services.

The workforce diversity are of two levels, the first level of dimension of workforce diversity has to do with characteristics of workforce that are not subject to change such as age, sex, race and so on. The second level which includes educational background, work experience, income, family size and so on can be utilized by manufacturing firms to achieve product innovation that will engender increase profit, increase market share, increase sales as well as increase customers. Hence, this study is aimed at creating a link between workforce diversity (level two) and product innovation.

The broad objective of the study is to examine workforce diversity and product innovation with specific reference to Nigerian experience, the specific objectives of the study ;

- i. to determine if educational background diversity has impact on product innovation
- ii. to examine the impact of work experience diversity on product innovation.

The hypotheses of the study are set in line with the specific objectives of the study;

**H<sub>01</sub>:** educational background diversity has no significant effect on new product innovation.

**H<sub>02</sub>:** work experience diversity has no significant effect on new product innovation.

The scope of the study covers southern parts of Nigeria which covers Lagos, Ogun , Anambra and Portharcourt States of Nigeria, the reason for the choice of these states was that they are classified as the industrial zone of Nigeria. The choice of the variables educational background diversity, work experience diversity was due to fact that they are mostly associated to product innovation in Nigerian manufacturing industry. The time scope for the study was 2018 to 2019, the choice of the year was due to the point study nature of the research.

## **2.0 Literature Review**

### **Concept of Workforce Diversity**

Scott and Sims (2016) defined workforce diversity “as a strategy that promotes and supports the integration of human diversity at all levels and uses focused diversity and inclusion policies and practices to guide this approach in work environment.” Otike, Messah and Mwaleka (2010) define diversity as a mosaic of people who bring a variety of backgrounds, perspectives, values and benefits as assets to the groups and organisations with which they interact. Workforce diversity is generally viewed as acknowledging, understanding, accepting, valuing and celebrating differences among people with respect to age, class, ethnicity, gender, physical and mental ability, race, sexual orientation, spiritual practice and public assistance status. Jones and George (2011) asserted that diversity is differences among people in age, gender, race, ethnicity, religion, sexual orientation, socio-economic background and capabilities/disabilities. Dessler (2011) opined diversity as the variety of multiplicity of demographic features that characterize a company’s work force particularly in terms of race, sex, culture, national origin, handicap, age and religion. Currently, the case of diversity is enjoying high profile in organizational debate partly due to changes in workforce demographics (Armstrong & Mkamwa, 2010). Workforce diversity refers to organisations that are more heterogeneous with the mix of people in terms of gender, age, race and education background (Robbins, 2009). A diverse workforce for instance includes gender, age, ethnicity and education background (Robbins, 2009).

Workforce diversity has important implications toward management practices and policies. Childs (2005) argued that any business that intends to be successful must have a borderless view

of the workforce by ensuring that workforce diversity is part of its day to day business conduct. Today's workforce is getting more and more heterogeneous due to the effects of globalization (Kurtulus, 2012). The challenge of a diverse workforce to most 21<sup>st</sup> century organization is on how to create a work setting in which each person can have an opportunity to perform his or her full potential and therefore compete for promotion and other reward on merit alone. Hence, Cascio (2010) refers to workforce diversity as a pragmatic business strategy that focuses on maximizing the productivity, creativity and commitment of the diverse workforce while meeting the needs of diverse consumer groups. Davidson and Griffin (2006) opines that diversity definition can be classified as both narrow and broad and that while the narrow definition of diversity emphasize differences in race, ethnicity and gender, the broader definitions imply that the term refers to all individual differences among people. Davidson and Griffin believe that diversity exists in a group or organization when its members differ from one another in respect of one or more important dimensions such as age, sex or ethnicity.

Diversity is not characterized against a predetermined standard however, in other words, diversity does not refer merely to those people who are different from the majority group but includes the differences and similarities of the majority. Workforce diversity has evolved from a focus legally protected human attributes such as race, gender and age to a much broader definition that includes the entire spectrum of human differences among employees in terms of age, culture background, physical abilities and disabilities, race, religion, sex, and sexual orientation (Jayne & Dipboye, 2004). Gupta (2013) argues that the overall workforce diversity enhances better decision making higher creativity, innovation and greater competitive advantages. All the definitions above simply show that workforce diversity is all about those characteristics that makes us similar or different to one another.

## **Dimensions of Workforce Diversity**

Davidson and Griffin (2006) posited that there are two levels of diversity. First-level dimensions (also called primary or core dimensions) include characteristics that have an important influence on our lives – age, ethnicity, sex, gender, mental and physical abilities and characteristics, race and sexual orientation. These characteristics are often visible to others and are either impossible or difficult for individuals to change.

Second-level dimensions are characteristics that are generally less visible to others and more variable in terms of their influence on our lives. We have more control over these characteristics because we can make choices regarding their acquisition, modification or dismissal. These secondary dimensions comprise work experience, education, communication style, family status, religion, first language, geographic location, income, work style, and organisational role and level. Some of these secondary dimensions such as religion, family status and first language, can have such a powerful impact on individual lives that some people may regard them as primary dimensions. However, this paper considers the second-level dimensions.

## **Concept of Product Innovation**

Innovation is a concept that has been widely acknowledged to play a key role in the competitiveness of firms and countries. Innovation is understood to be a major driver of improved productivity and performance. Innovation helps business to improve the way products and services are delivered or to introduce entirely new ones. However, product innovation is the creation and subsequent introduction of goods and services that is either new or an improved version of previous goods and services (Wong, 2014). This is broader than the normally accepted

definition of innovation that includes the invention of new products. Product innovation is the introduction of a good or service that is new or significantly improved regarding its characteristics or intended uses; including significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics (Peter, 2014). Product innovation is inevitable if businesses are to remain relevant and sustainable. There are various theories that have been developed that tend to bring out the relationship between product innovation and organisations performance.

According to Vermon,(as cited in Kulkarni, 2009) in his theory the product life cycle theory, a product goes through five stages where at some point unless modifications are done, the product becomes obsolete and irrelevant. It is important that businesses invest highly on market research programmes in order to identify changes in consumer needs as the product advances through its productive life. He argues that like any living being, products go through various stages in their productive lives from invention, maturity to decline stage forming a unique cycle in the product life. These stages are characterised by specific features which determine the length of time a product spends in one stage depending on the marketing strategies applied (Kulkarni, 2009). If not nurtured through continuous improvements the products decline and die naturally like any living being. With this understanding, product innovations are expected to be a continuous and deliberate strategic approach if organisations expect to sustain profitability and growth (Palmer, 2000).This theory has proven that products do not survive forever. Aggressive marketing strategies have to be applied to prolong product life in any stage of the product life cycle. These strategies may include differentiation strategies, modifications and product positioning techniques including new innovations all together (Schilling & Hill, 1998). At present, product life cycle is perceived to be faster than ever before. Innovative product becomes a crucial point

in the industry where through innovative products, customers gain benefits from the sides of either the new feature, design or function (Khin, Ahmad & Ramayah, 2010). However, competitive organisation no longer keep offering similar products or only competing based on traditional reasons such as price and quality. Particularly for technical companies, the inevitable trend is to differentiate product offering to innovation in gaining competitive advantage over competitors.

A company is said to be able to innovate once it is successful to implement creative idea into its product/service (Amabile, Conti, Coon, Lazenby & Herron, 1996). Khin et al. (2010) proposes that a product is said to be innovative when the customers gain various benefits from the new design, function and feature. Janssen, Stoopendaal & Putters (2015) classify innovation into two words, novelty and newness. Innovation means there is something new that is applicable on the process, product and idea (West, 1990).

### **Theoretical Review**

The theory used to align with this study was Information and Decision Making theory.

The information and decision making theory of diversity predicts a significance and a positive relationship between workforce diversity and performance based on the fact that diversity in educational background is known to introduce new skills, knowledge, information, perceptions and ideas to bear when it comes to problem solving and decision making abilities among workforce. However, when diverse employees come together they will have access to diverse information sets because of the different educational background, experience and expertise that the workforce have and they are able to exchange information among themselves, they will also



be able to consider alternative solutions that will ensure effective decision making and as such improve their performance.

Hence, the theory above was adopted for this study because since employees have different roles and responsibilities to perform which gives them access to specific information while other employees may have gained different educational experiences. That is, everyone at one time or another is exposed to diverse life experiences, have gain access to various formal and informal channels of information, and also move in social networks that make them also acquire information. Thus, the assertion above is in tandem with the objective of this study which is to examine the effect workforce diversity will have on product innovation.

### **Empirical Review**

Mushtaq, Haider and Khan (2015) studied workforce diversity as a source of innovation in context of telecom sector in Pakistan. The study explores the impact of gender, age and education background on innovation in Pakistani telecom sector which is renowned to employ highly diversified workforce. The targeted population for the study was 30 employees in all levels of management from the 2 telecommunication companies (15 employees from Zong and 15 employees from Mobilink) in (southern Punjab, D.G.Khan) Pakistan. Data was collected through self-administered questionnaire. In the study, sampling frame is irrelevant, thus non-probability technique was used in selecting the sample. The findings of the study indicated that only two variables, gender and educational background were significant in explaining the variance in employee performance when different workforce work together while surprisingly, age diversity does not. It was recommended among others that organizations should view diversity as part of their key strategy rather than a business expense will benefit far greater

Ozgen, Nijkamp and Poot (2011) examined the impact of cultural diversity on innovation: Evidence from Dutch firm-level Data. The study constructed and analyzed a unique link employer-employee micro-data set of 4582 firms based on survey and administrative data obtained from statistics in Netherlands. The study excluded firms in the hospitality and other industries that employed low-skilled migrants. It was found out that firms in which foreigners account for a relatively large share of employment are somewhat less innovative. However, there is strong evidence that firms that employ a more diverse foreign workforce are more innovative particularly in terms of product innovations.

Yang and Konrad (2011) researched the effect of work place diversity and employee involvement on organizational innovation. Using a sample of 182 large Canadian organizations. The study found a three – way interaction between level of employee involvement, high variation in involvement and racio-ethnic diversity on innovation. The study explains that in organizations with high levels of employee involvement high variation in involvement was associated with higher involvement levels among racio-ethnic minorities, resulting in a stronger association between diversity and innovation.

Ostojic, Mihic, Umihanic and Fazlovic (2015) investigated the role of organizational innovation in achieving and maintaining company's business excellence. The methodology of Croatian innovation score is applied to assess the condition and the activities undertaken in order to build innovation capacity and an assessment of the perception of innovation at the enterprise level, whereas the methodology of business excellence index was used to measure business excellence of an enterprise. Applying the methodology on a sample of large manufacturing companies from Bosnia and Herzegovina, the composite innovation indices and business excellence indices were calculated. The standard multiple regression was applied to explain the relationship between

innovation and business excellence of an enterprise. The findings of the study reveal that managers of the studied companies should strengthen the innovation capacity in order to advance on the business excellence ranking scale.

### **3.0 Methodology**

Survey research design was adopted in the study to examine the effect of educational background diversity and work experience diversity on product innovation in the manufacturing industry in Nigeria. The studied organization is the Nigeria Distilleries Limited, Sango Otta, Ogun State, Ikeja in Lagos State, Nnewi in Anambra state and porthacourt in Rivers state. The organisation is in the food and beverages sector of the manufacturing industry. A combination of multistage and simple random sampling technique was employed to give employees equal chance of been selected. The study covers a population of one thousand two hundred and twelve (1212) employees of the Nigeria Distilleries Limited across the country. A sample of three hundred and one (301) was drawn from the population using Guilford and Flusher (1973) formula for estimating sample. A total of 301 questionnaires were administered out of which one hundred and sixty one (161) were filled and returned.

Primary source of data collection was used with the use of questionnaire adapted from Alghazo and Shaiban (2016) and Mc Namara and Chaurset (2014) as it instrument. The questionnaire was divided into two sections; section A on demographic questions while section B bothers on questions relating to the subject matter of the research. Using a Likert scale of 5 points, the degree of agreement by the respondents to each of the items in the questionnaire is measured by calibrating the scale into Strongly agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly disagreed (SD) with the value of 5, 4, 3, 2, and 1 respectively. The data obtained by means of questionnaire was analysed and interpreted, simple frequency tables were used in

presenting the results. Multiple Regression analysis was used to test the hypotheses at 5% level of significance.

## 4.0 Results and Discussion

### Analysis of Research Hypotheses

#### Test of Research Hypothesis I

**H<sub>01</sub>:** educational background diversity has no significant effect on new product innovation.

**Table4. 1:** Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.648 <sup>a</sup>	.674	.668	1.572

a. Predictors: (Constant), educational background Diversity

**Source:** *Printout from SPSS, 2019.*

From the regression analysis result shown in table 1, it was found that the coefficient of the adjusted R square 66.8% and the standard error of estimate is (1.572) and this value is statistically significant looking at significant p-value of 0.000 from the ANOVA table. The high value of R indicates the fitness of the model that is the extent to which the independent variable (educational background diversity) explain the variation in the dependent variable (product innovation). This result therefore depicts that educational background diversity accounted for (64.8%) of the variation in product innovation.

**Table 4. 2:** ANOVA<sup>a</sup>

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	47.521	1	47.521	35.756	.000 <sup>b</sup>
	Residual	211.410	159	1.329		
	Total	258.931	160			

a. Dependent Variable: Product Innovation

b. Predictors: (Constant), Educational Background Diversity

**Source: Printout from SPSS, 2019.**

The ANOVA in table 4.2 shows that the p-value = 0.000 < 0.05 (sig.). Since p-value < 0.05 thus the rejection of the null hypothesis that educational background diversity of workforce does not significantly determine product innovation and the alternative that educational background diversity of workforce significantly determine product innovation is accepted.

**Table 4.3:** Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.338	.193		6.548	.000
	EduBkDiversity	.309	.055	.312	5.605	.000

a. Dependent Variable: Product Innovation

**Source: Printout from SPSS, 2019.**

Table 4.3 shows that product innovation is equal to 1.338 when all other variables are held to zero. Product innovation would increase by 0.309 when there is an increase in educational background diversity by one unit, while other variables remain constant. However, the table shows the model coefficient (that is, the intercept and the slope) shows that “educational background diversity” (B = 0.312, p-value = 0.000) is statistically significant at 5% level. This implies that educational background diversity brings about 31.2% improvements to product innovation.

In other words, employees with diverse educational background create opportunities for greater innovation and more creative solutions to problems because educational background diversity brings in new skills, knowledge, information and unique perspective to the organization and enhances effective problem solving and decision making processes. This result supports the study of Mushtaq, Haider and Khan (2015) who emphasized the significance of workforce diversity variables including educational background on employee performance.

**H<sub>02</sub>:** work experience diversity has no significant effect on new product innovation.

**Table 4.4 :** Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.626 <sup>a</sup>	.637	.616	1.621

a. Predictors: (Constant), Work Experience Diversity

**Source:** Printout from SPSS, 2019.

From the regression analysis result shown in table 4.4, it was found that the coefficient of the adjusted R square 63.7% and the standard error of estimate is (1.621) and this value is statistically significant looking at significant p-value of 0.000 from the ANOVA table. The high

value of R indicates the fitness of the model that is the extent to which the independent variables (work experience diversity) explain the variation in the dependent variable (product innovation). This result therefore depicts that work experience diversity accounted for (62.6%) of the variation in product innovation.

**Table 4. 5: ANOVA<sup>a</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	40.237	1	40.237	32.954	.000 <sup>b</sup>
	Residual	194.126	159	1.221		
	Total	234.363	160			

a. Dependent Variable: Product Innovation

b. Predictors: (Constant), Work Experience Diversity

*Source: Printout from SPSS, 2019.*

The ANOVA table 4.5 shows that the p-value = 0.000 < 0.05 (sig.). Since p-value < 0.05 thus the rejection of the null hypothesis that work experience diversity of workforce does not significantly determine product innovation and the alternative that work experience diversity of workforce significantly determine product innovation is accepted.

**Table 4. 6: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.323	.183		6.574	.000

WorkExpDiversity	.272	.059	.259	4.650	.000
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a. Dependent Variable: Product Innovation

*Source: Printout from SPSS, 2019.*

Table 4. 6 shows that product innovation is equal to 1.323 when all other variables are held to zero. Product innovation would increase by 0.272 when there is an increase in work experience diversity by one unit, while other variables remain constant. However, the table shows the model coefficient (that is, the intercept and the slope) shows that “work experience diversity” (B = 0.259, p-value = 0.000) is statistically significant at 5% level. This implies that work experience diversity brings about 25.9% improvements to product innovation. The implication of the result is that experienced workers as being more aware of the organization and its operation thus being able to identify and manage business risk more effectively. Also, and those with diverse experiences can influence organisational capability to innovate new products. Besides, experienced employees are able to exchanged information among themselves, which reflect different perspective they analyze which at the end leads to higher, better and more effective decision making, creativity and innovation. This result support the study of Gitonga, Kamaara and Orwa (2016) which examined workforce diversity and the performance of telecommunication firms while emphasizing element such as work experience and culture.

## 5.0 Conclusion and Recommendations

From the findings of the study it was concluded that employees with diverse educational background create opportunities for greater innovation and more creative solutions to problems because educational background diversity brings in new skills, knowledge, information and unique perceptives to the organization and enhances effective problem solving and decision making processes. Furthermore, experienced workers as being more aware of the organization and its



operation thus being able to identify and manage business risk more effectively. Also, and those with diverse experiences can influence organisational capability to innovate new products. Besides, experienced employees are able to exchanged information among themselves, which reflect different perspective they analyze which at the end leads to higher, better and more effective decision making, creativity and innovation.

It is therefore recommended that to ensure that innovative products that can capture the attention of customers are manufactured; organisations should ensure that a diverse workforce in terms of differences in their level of education and the number of years spent in the manufacturing industry are employed by the manufacturing industry. Also, management should provide training opportunities to employees who lack the required skills. Management should also encourage employees by providing study leave to employees who wish to further their education. Management can provide financial aid by sponsoring high performance to acquire some certification that will improve performance.

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