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INFLUENCE OF ADOPTING NEW TECHNOLOGY AND NEW PRODUCT SUCCESS IN THE SMALL AND MEDIUM-SCALE INDUSTRIES IN THE SOUTH-SOUTH STATES, NIGERIA

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Abstract: *This paper seeks to exploring Examine the influence of adoption of new technology and new product success in the Small and Medium-Scale Industries in the South-South States, Nigeria. The specific objectives of the study are to: Ascertain the impact of new channels of distribution on Organizational Growth in the Small and Medium-Scale Industries in the South-South States, Nigeria. This study adopts a descriptive survey method. The total sample size for the study was 566 staff of selected SMEs staff constitutes the respondents of the study. The major instrument used in generating primary data for the study was structured questionnaire developed by the researcher and designed in likert scale format. Hypotheses formulated were tested using inferential statistic of linear regression and correlation. The study find out that Adoption and modification of new technology influences product success (r = 769; r^2 =. 591; F = 375.754; T = 19.384; p = .000). The study recommended that SME's need to establish intense linkages with R&D institutions (Research and Development) in order to carry out technology up grade in the long term in order to overcome the rapid technological obsolescence in the globalized economy.*

Keywords: *New Technology, New Product Success, Small and Medium-Scale Industries*

INTRODUCTION

The modern business environment which is dominated by globalization, hyper-competition, and knowledge and technological innovation revolution has revolutionized the way business is conducted (Pavic et al., 2007). Accordingly, Ghobakhloo, Sabouri, Hong and Zulkifli (2011) noted that Small and medium-sized enterprises (SMEs) account for major source of employment, technological advancements, and competitive advantages for both developed and developing countries. Owing to the intensified competitive pressure and necessity for entering to global market undergone by SMEs, these businesses are incrementally employing Information Technology (IT) to take advantage of its substantial benefits. Furthermore, New Technological Advancement has brought about changes in the way businesses are conducted amongst SME's as they play a major role in storing, retrieving, processing and disseminating information.

Technological innovation relates to the adoption and modification of new technological information, skill, and access to technical and technology support mechanisms, rate of use of computers and ICT and technology network (Martins and Namusonge, 2014).

Technological innovation is a key factor in a firm's competitiveness. Technological innovation is unavoidable for firms which want to develop and maintain a competitive advantage and gain entry in to new markets (Becheikh et al. 2006). Among firms of different sizes, SMEs are generally more flexible, adapt themselves better, and are better placed to develop and implement new ideas. The flexibility of SMEs,

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their simple organizational structure, their low risk and receptivity are the essential features facilitating them to be innovative (Harrison and Watson 1998). However, the challenge confronting SMEs therefore is their ability to innovatively harness the various potential associated with business innovations. This challenges seems to affect their ability to create and introduce new products, adopt new technologies, device new method of things, develop new markets and processes, hence many SMES have remained stagnant in a dynamic and competitive business environment. It is therefore panacea for the management/founders of the various SMEs in the area under study to responsibly grow the SMEs by adopting innovative ways of rendering services. On this ground, this study the influence of adoption of new technology and new product success in the Small and Medium-Scale Industries in the South-South States, Nigeria was conducted.

1.3 Objectives of the Study

1. Examine the influence of adoption of new technology and new product success in the Small and Medium-Scale Industries in the South-South States, Nigeria

1.4 Research Questions

1. To what extent does adoption of new technology and new product success influence in the Small and Medium-Scale Industries in the South-South States, Nigeria**?**

1.5 Research Hypotheses

1. There is no significant relationship between Adoption of new technology and new product success in the Small and Medium-Scale Industries in the South-South States, Nigeria.

REVIEW OF RELATED LITERATURE

2.1 Adoption and Modification of New Technology

This otherwise known as technological innovation relates to the adoption and modification of new technological information, skill, and access to technical and technology support mechanisms, rate of use of computers and ICT and technology network (Martins and Namusonge, 2014). Schumpeter (in Tidd et al. 2006) asserts that entrepreneurs attempt to use technological innovation – a new product or service or perhaps a new process in the course of their production – provided they thus gain a strategic competitive advantage. This creates competition that does not attack profit margins or the outputs of existing organizations, but their essence and their existence as such. With respect to the above said it is important – within the frame of innovations – that are a necessity in today's knowledge, information and innovative society – to follow large organizations that engage in innovation and set the direction for others (Zemplinerová, 2010).

Some researchers observe that increasing profit of organization is because of change in technology (Ruttan, 1997). Regarding the relevance of technological innovation to SMEs, Martins Namusonge (2014) captured it in these words:

> *Technology is important to support and promote SMEs development as it is responsive to local economies and results in distinctive products and services. Initiatives to support indigenous technology should therefore aim to link SMEs with technology specialists in order to generate an enabling environment that develops technology capacity. This is likely to result in a great performance of SMEs as it provides differentiated products, services and technical services in accordance with the resources available and the market needs in the context of these SMEs.*

Technological innovation is a key factor in a firm's competitiveness. Technological innovation is unavoidable for firms which want to develop and maintain a competitive advantage and gain entry in to new markets (Becheikh et al. 2006). Among firms of different sizes, SMEs are generally more flexible, adapt themselves better, and are better placed to develop and implement new ideas. The flexibility of SMEs, their simple organizational structure, their low risk and receptivity are the essential features facilitating them to be innovative (Harrison and Watson 1998).

2.1.2 Relevance of SMEs

Small scale and medium enterprises have been recognized the world over as the engine room of industrial and technological development. The giant strides recorded in the fields of SMEs innovation manufacturing, ICT, service delivery and agriculture, etc in the Western industrialized economies, Japan and Asian tigers countries of South Korea, Hong Kong, Malaysia and Singapore derived largely from the contribution of the small scale business sector (Raynold, 2004).

In the light of importance SMEs innovation to the socio-economic and technological development of any society, the small/medium-scale sub-sector has continued to stimulate interest among scholars, researchers, government and institutions in developed and developing countries.

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Osuagwu (2001) observes that the small/medium business sector is one of the areas which many empirical efforts have been directed. Similarly, it is one of the areas that have attracted discussions at national and international economic development forum or when poverty reduction strategies are contemplated.

As in the other part of world, the small business sector in Nigeria has tremendous contribution to the economy. A study done by Federal Office of Statistics in 2007 shows that the small and medium enterprise sector provided 50 % of Nigeria's employment and 50% of its industrial output (Ariyo 2007). Comparatively speaking this contribution is lower than that of the SMES sector in the developed and developing countries. Economists and development professionals attribute the difference in the level of development of small business sector in different countries to the degree of importance attached to the sector by the governments of each country and perceived role they play in national economic, development. While government in other part of the world have provided a conducive environment for the development and growth of the small scale business sector through effective policies, the Nigerian government does not appear to be committed to the growth of the sector.

In any case, it has been established that the small/medium-scale enterprises contribute significantly to the economic growth of any nation. As Nwokoye rightly stated:

> *The issue of definition is of minor concern to us; what is to be emphasized is the overall importance of small businesses in the Nigerian economy. Even in the industrialized countries of the world, the small businesses by their sheer numbers may constitute as high as 95 percent of all registered businesses. In Nigeria, where the list of medium scale businesses and they account for a considerable proportion of the gross domestic product (Nwokoye, quoted in Chanaron, 1998)*

Writing on the importance of small and medium scale business operations to the economic and industrial development of the United States of America, Pavitt (1984), stated that this sub-sector collectively generates more than half of all business receipts. Small-scale enterprises also contributed immensely to the growth and industrialization of the developed countries like Japan, Germany,

Small and Medium Scale in Nigeria

Small businesses In Nigeria, the gross under-performance of small businesses have undermined their contributions to the nation's economic growth and development. Before the advent of the colonial administration, majority of Nigerians are predominantly small business owners who engaged themselves in one form of small business or the other, majorly agriculture. During this period, agricultural produce, like cocoa from the south-west, rubber and palm oil plantations from the east and groundnut pyramid from the core north were the main sources of wealth. Thus, small businesses through which the country's wealth was generated were accorded due attention and unwavering support (Ariyo, 2007).

However, the post-independence period witnessed a massive transformational change. The governance of the Nigeria states and its economy seized to be in the hands of the British government, and Nigeria discovered hidden oil treasures in some part of the country. The eventual discovery of oil in Nigeria is widely consented, most especially among the lower class majority who dominated the small business in agricultural sector, as bad occurrence. This is because the sector was totally neglected and hence paralysed hundreds of thousands of small businesses both in the rural and urban area (see Organisation for Economic Co-operation and Development (OECD), 2009). Successive Nigerian government since then right up to 2008 have focused on the oil generated revenue with very little or no attention given to the small businesses at the grass root level. In 2008, the economic downturn hit so many small businesses hard that many of them went into oblivion. By the turn of the century, however, all these had combined to produce a chorus of complaint from small business owners and stakeholders at all levels across the country.

Furthermore, several studies have indicated that thousands of small businesses start up every year but significant numbers of them fail before or by the first year of their operation while majority shut down before their second year (Freeman, 1982, Raynold, 2004). This assertion is also supported by Ekanem (2002) who succinctly puts it thus: *Of every 100 start-ups only 50 firms survive the first three years.* The rate of small businesses dissolution is alarming that researchers have enjoined authorities to come to their aid in order to reduce unemployment and boost the gross domestic product output. Consequently, Walker (2005) and Marlow and Patton (2005) also argue that venturing into small business is very risky and that the rate of small businesses failure in developing countries such as Nigeria is very high. However, the topmost priority in this study is to fill the research gap in the literature by making

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a significant contribution towards advancing our understanding of the realities of small businesses in Nigeria.

METHODOLOGY

This study adopts a descriptive survey method to generate primary data through the questionnaire and interview. Two types of data are involved in this study, namely primary and secondary. Primary data was obtained from the respondents through questionnaires and personal interviews. On the other hand, secondary data was generated for the study from research journals, scholarly publications in magazines, textbooks and the Internet resource and the financial statement of the organizations under study. The target research population of this study consists of the staff of registered small and medium- scale enterprises dealing on information and technology related services and products within the six states that make up the South-South geo-political zone of Nigeria (Akwa-Ibom, Bayelsa, Cross River, Delta, Edo and Rivers) which gives a total population of 5,784 obtained from Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) Business Directory, 2016 in those States. The total sample size for the study was 566 staff of selected SMEs staff constitutes the respondents of the study. The major instrument used in generating primary data for the study was structured questionnaire developed by the researcher and designed in likert scale format. The researcher established content and face validity of the instrument by submitting the instrument to his supervisor, experts in entrepreneurship innovative and organizational growth in well-established business organizations for their assessment, criticisms and contributions, all geared towards improving content and facial validity of the instrument. All corrections were effected before the final copy of the questionnaire was administered. To ascertain the reliability of the research instrument, a test-re-test method was adopted in which 30 copies of the questionnaire were distributed to the SMEs in various states understudy; five (5) copies each to the five managers of difference SMEs in the various states. These were collected afterwards and re-distributed for the second time. In carrying out the reliability of the research instrument, the Cronbach's Alpha was used. Cronbach's alpha (α) is an estimate of reliability, specifically the internal consistency, of test or scale. In order to measure internal consistency of the instrument, Cronbach alpha was applied, which gave a reliability coefficient of $\alpha = 0.882$ which indicate that the instruments 88.2% reliable. Hypotheses formulated were tested using inferential statistic of linear regression and correlation. Reject the null hypothesis (H_O) if $p < 0.05$. Do not reject if otherwise.

PRESENTATION AND ANLAYSES OF DATA

4.1 TEST OF HYPOTHESES

Hypothesis one

Ho: Adoption and modification of new technology does not significantly influences product success

Hi: Adoption and modification of new technology significantly influences product success

Descriptive Statistics

	Mean	Std. Deviation	N
Adoption and Modification of New Technology	3.2710	1.48525	262
Product Success	2.1985	1.26806	262

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.769[a]	.591	.589	.95165	.225

a. Predictors: (Constant), Adoption and Modification of New Technology

b. Dependent Variable: Product Success

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	340.295	1	340.295	375.754	.000[b]
	Residual	235.465	260	.906		
	Total	575.760	261			

a. Dependent Variable: Product Success

b. Predictors: (Constant), Adoption and Modification of New Technology.

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.291	.118		10.958	.000
	Adoption and Modification of New Technology	.900	.046	.769	19.384	.000

a. Dependent Variable: Product Success

Result Summary

R = .769

R^2 = .591

F = 375.754

T = 19.384

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DW = .225

Interpretation of the Result

Table 4.2 shows the descriptive statistics of the adoption and modification of new technology and new product success. The result shows that adoption and modification of new technology have a mean and SD responses of 3.27 ± 1.485 while new product success have a mean and SD responses of 2.199± 1.268. The standard deviation values, shows that there is less difference in terms of the standard deviation scores. This implies that there is about the same variability of data points between the dependent (adoption and modification of new technology) and independent variables (new product success). A linear regression analysis was conducted to eexamine the effect of adoption and modification of new technology on increase in number of employees (table 4.13- 4.15). The result of the regression indicates that there is strong positive relationship between adoption and modification of new technology and increase in number of employees (R-coefficient = .769). The R square, the coefficient of determination, shows that only 59.1% of the variation in increase in number of employees can be explained by adoption and modification of new technology with no autocorrelation as Durbbin-Watson (.225) is less than 2. With the linear regression model, the error of estimate is low, with a value of about .952. The regression sum of the square 340.295 is greater than the residual sum of the square 235.465 indicating that the variation is not due to chance with F-statistics = 375.754 showing that the model is significant.

Decision Rule

Reject null hypothesis (Ho) if P-Value < 0.05 and do not reject Ho if otherwise

Decision

Since the P-Value 000 < 0.05, we reject the null hypothesis (Ho) and then conclude that adoption and modification of new technology significantly influences product success.

Discussion of the Result

The study findings shows that adoption and modification of new technology significantly influences product success (r = 769; r^2 =. 591; F = 375.754; T = 19.384; p = .000). The use of new technology in enhance product/service have assumed a great position in the last few centuries. Adopting and possible modification of technology adds added value to products which makes possible to achieve higher patronage.

CONCLUSION

The study finding out that adoption and modification of new technology significantly influences product success. However, the combined effects of technology advancements, competition from local and foreign brands as well as increasingly sophisticated and demanding customers are increasing the pressure on SMEs to innovate or risk failure. The implication is that many SMEs in Nigeria will not grow and compete favourably with their foreign counterparts in international market if they do not innovate. The business will eventually die if their owners do not innovate in order to have competitive edge.

RECOMMEDATIONS

SME's need to establish intense linkages with R&D institutions (Research and Development) in order to carry out technology up grade in the long term in order to overcome the rapid technological obsolescence in the globalized economy.

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