
Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

Abaikpa Udeme Anthony¹, Thomas Cornelia David², Dr. Udom, Daniel³

¹Department of Business Administration, Faculty of Management Sciences Akwa Ibom State University, Nigeria.

²Department of Management, Faculty of Social and Management Sciences Ritman University, Akwa Ibom State, Nigeria.

³Department of Business Administration, Faculty of Management Sciences Trinity Polytechnic, Uyo, Akwa Ibom State, Nigeria

ABSTRACT: This study was designed to examine the relationship between Open Innovation and Organizational Performance in selected firms in Akwa Ibom State. To achieve this objective, a survey research design was utilized. Data were collected through questionnaire carefully designed and administered to the respondents. A total of 30 copies of questionnaire were distributed to respondents, out of which 28 copies were returned and found to be correctly filled. This gave a response rate of about 97%. Regression analysis was conducted to examine the strength of the relationship between each of the dependent and independent variables. The result of the study showed a positive significant relationship between open innovation and organizational performance in selected firms: Airtel Nigeria Limited, Uyo, Globacom Nigeria Limited, Uyo and MTN Nigeria Limited, Uyo. It was recommended from the study that, Airtel Nigeria Limited, Uyo, Globacom Nigeria Limited, Uyo and MTN Nigeria Limited, Uyo should be more proactive in the provision of modern technologies to encourage rapid knowledge sharing and be more concerned with personnel training to encourage employees' effectiveness and improved performance.

KEYWORDS: Open Innovation, Organizational Performance, Lack of Corresponding Assets, Limited Financial Resources, Lack of Relevant Technologies.

1.1 INTRODUCTION

The concept of open innovation has dominated innovation research since its inception by Henry Chesbrough in 2003. Scholars have also made huge effort to demonstrate that competing on the basis of openness is not only profitable but a sensible strategy (Laursen and Salter, 2006; Kirschbaum, 2005; Harhoff, Henkel, and von Hippel, 2003). Nevertheless, in practice, firms that adopted the open innovation approach have reported significant success in their innovation goals. Indeed, many large firms such as Walmart, Google, Amazon, and Samsung amongst others, have taken conscious effort to implement the open innovation philosophy with positive evidence on their bottom-line and productivity gains (Kale and Singh, 2007). Apart from the increasing evidence of open innovation approach in private corporations, public sector organizations, howbeit in leading countries (Lee, Hwang and Choi, 2012) are also, with success gradually embracing open innovation in policy making and strategy execution (Hilgers and Ihl, 2010; Padilla-Meléndez, and GarridoMoreno, 2012).

In its simplified form, open innovation implies the propensity of a firm to open-up, embrace, and exploit external sources of knowledge (in-bound) for its developmental purposes while also being ready to give out (out-bound) information that may not be useful for the time being. Several scholars have also attempted to define open innovation while pointing out its benefits and limitations as well. One remarkable definition is that given by Chesbrough et al., (2006) as "the purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively" While many examples of firms adopting and benefitting from the implementation of open innovation abound. But empirical literature appears somewhat silent on the drivers of open innovation adoption particularly, in a less-developed country like Nigeria. By drivers, we imply what motivate organizations- whether public or private enterprise to consider the open innovation practice as a worthwhile strategy. Moreover, issues relating to real or perceived benefits of open innovation, its likely challenges, and ways of mitigating the challenges are yet to be comprehensively studied and documented. Given these unexplained gaps in the literature, one may be tempted to erroneously conclude that the practice of open innovation is a mirage and a mere academic exercise.

1.2 Statement of the Problem

In spite many evidence where the adoption of open innovation thrives in both large and small firms, the missing link in the literature is the lack of clear insight on how organizations in developing nations, particularly Nigeria, openly innovate since the concept was introduced in 2003. Many scholars contend that open innovation is without significant limitations and offers nothing phenomenal (Valkokari, 2015; Veer, Lorenz and Blind, 2013; Dahlander and Gann, 2007). These limitations include inability of firms to

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

effectively introduce their own innovations that are capable of making significant market impact, lack of corresponding assets in terms of manufacturing equipment, limited financial resources and lack of relevant technologies among others. Though, there are several studies on the concept of open innovation, it is not known to the researcher whether researches are done in selected firms in Akwa Ibom State, Nigeria relating to open innovation and organizational performance. Hence, the need to shift the knowledge frontier in this regard. It is against this background therefore, that, this study was carried out to examine the relationship between Open Innovation and Organizational Performance in selected firms in Akwa Ibom State, Nigeria.

1.3 Objectives of the Study

The main objective of this study was to examine the relationship between Open Innovation and Organizational Performance in selected firms in Akwa Ibom State, Nigeria. Specific objectives include to:

- i. examine the relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State.
- ii. examine the relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State.
- iii. examine the relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State.

1.4 Research Questions

The following research questions were formulated to guide this study:

- i. What is the relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State?
- ii. What is the relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State?
- iii. What is the relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State?

1.5 Research Hypotheses

From the objectives of the study, the following null hypotheses were formulated to guide this study:

- i. There is no significant relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State.
- ii. There is no significant relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State.
- iii. There is no significant relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State.

2.1 REVIEW OF RELATED LITERATURE

Several scholars have attempted to define open innovation while pointing out its benefits and limitations as well. One remarkable definition is that given by Chesbrough et al., (2006) as “the purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” The need to innovate through peer networking (Chesbrough et al. 2006) is very important given the increasing rate of globalization and its attendant effect on product development and commercialization particularly for firms operating in less developed nations (Spithoven et al. 2013). In many African nations for example, many firms are reputed for their ability to gestate and deliver innovative schemes, but they tend to lack the requisite resources to sustain these innovations at commercial stage. Thus, in order to survive in a complex and globalized market, Lee et al., (2010) argued that open innovation by seeking and acquiring external knowledge becomes the unavoidable means to speed up, mature and sustain their innovation processes.

2.2 Lack of Corresponding Assets and Organizational Performance

Organizational innovation is relevant in today’s dynamic and turbulent business environments, where other internal variables—such as technological assets, employee capabilities and more adaptable organizational designs—must be encouraged to create value and competitive advantage, Bontis et al. (2000). It is believed that, few decades from now less people will do physical work and more people will do brain work. This is called intellectual asset. Though this asset does not always appear on the company balance sheet but it has more value for organizations than physical assets Grootaert et al (2001). Another kind of asset required by an organization is called knowledge asset. In support of this unique asset, Akpınar & Akdemir, (1999) assert that, economic wealth of any organization is driven more by knowledge and information than the production process.

2.3 Limited Financial Resources and Organizational Performance

Sometimes, business activities in organizations may not properly executed due to limited or nonavailability of financial resources. Innovation in an organization might be easily compromised if the organization is experiencing limited or non-availability of finances, Kosgei (2014). However, limited financial resources can hamper innovation process in an organization.

Cho & Pucik (2005) believe that organizational superior financial performance is a way to satisfy investors and can be represented by innovation, growth and market value. According to Oakland (1989), the sufficiency of funds practically determines the quality of the products and activities of an organization. A successful innovation programmes of any firm depend chiefly upon availability and appropriate management of funds in an organization, Herman and Herman (1995).

2.4 Lack of Relevant Technologies and Organizational Performance

The relevance of technology on accomplishment of organizational performance especially in the competitive business environment cannot be ignored. By technology we mean the combination of skills, knowledge, tools and machines that are used in design, production, and distribution of goods and services. The changes resulting from the simultaneous developments in technology and the globally competitive marketplace have significant influence on the firm's innovation, managerial tasks and responsibilities. Technological skills of managers and employees is very important in defining organizational success and performance (Bassellier, et al, 2001). Effectively utilizing technology will result in increased business performance as organizations strive to gain a competitive edge in the business environment (Mujtaba and McFarlane, 2005).

Many organizations have undergone dramatic transformations spanning several developmental decades, and these became extremely pronounced after the Industrial Revolution, Dilworth (1989). This approach to management led to more complex definitions of managerial roles, tasks and responsibilities. As a result, technological skills became the central point of innovation when dealing with organizational effectiveness and performance. To drive an effective innovation in any firm, current technologies are required Mellander, (2001). Similarly, Yeh (2005) believe that successful design and transfer of any innovation within and outside an organization depend on effective technology.

2.5 Theoretical Review

Theories are made to help to understand a phenomenon. Accordingly, the relationship between open innovation and organizational performance is buttressed by the following theories:

2.6 Inbound Open Innovation Theory

This refers to the use of strategies within a firm to embrace external sources of innovation. Example of inbound innovation model is when a firm in – licenses and integrates a technology developed by another firm into its business instead of seeking to develop same technology. Thus, inbound open innovation theory encourages a firm to embrace innovations of other firms.

2.7 Outbound Open Innovation Theory

This theory was proposed by Chesbrough & Crowther in 2006. Under outbound innovation model, firms use external sources to develop and commercialize their innovations. Example of outbound innovation theory is when a firm out – licenses its product to another firm to further help develop it by obtaining necessary regulatory approvals for distribution. This theory however, allows firms to give out their innovations to other firms.

2.8 Combination Process Theory

This theory was proposed by Gassmann & Enkel in 2004. Here firms combine the inbound and outbound dimensions together to develop new knowledge and solutions rather than embracing either inbound or outbound theory. This theory supports knowledge management and allows firms to affiliate or embrace joint venture strategy.

2.9 Empirical Review

Dodourova and Bevis, (2014) were of the opinion that lack of corresponding assets in terms of manufacturing equipment, marketing capabilities, efficient product channels and global contacts drive many firms to experiment on in-bound innovation openness. According to (Wynarczyk, 2013) limited financial resources, inadequate investment in in-house R&D capabilities, and the lack of relevant knowledge and technologies constitute major reasons why firms seek opportunities for external innovation through collaboration. In addition, no one is a monopoly of knowledge and good ideas are sometimes widely circulated with no one firm claiming its monopoly. Even in the presence of established complementary assets/resources, big multinational enterprises still find the need to leverage to their advantage, external knowledge in the form start-up university grants, suppliers-relations and inter-organizational network to achieve competitive edge and remain stable (Ebersberger et al, 2012).

In a study of 156 large Dutch innovating corporations, Little, Herstatt, and Gemuenden, (2006) found that the pursuit of corporate renewal (the propensity to manufacture products in a fast and more effective manner, or to integrate new technologies in the current product); focus on firm's activities; possibility for cost reduction and process efficiency; increased profit potentials; counterbalance lack of capacity; the need to be up to speed with market development; management policy and conviction; and the optimal utilization of talent domicile amongst employees were the major motivators of open innovation adoption. In summary, it is not hard to state that both small and large-size firms are motivated by a variety of factors to adopt and practice open innovation.

METHODOLOGY

3.1 Research design: A survey research design was used for the study.

3.2 Study area: This study was conducted in selected firms - AIRTEL, GLOBACOM and MTN in Akwa Ibom State, Nigeria. The State is in the South-South zone of Nigeria with its capital in Uyo. Akwa Ibom State is the largest oil producing state in Nigeria. The population of the State is estimated at about 309, 573 as of 2006 (NPC, 2006 report). It has an area of 95 km² (36. 7sq.ml) and a land area of 95km² (36.

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

7sq.ml), Wikipedia encyclopedia (2007). The people in the area are predominantly Ibibio, others include Annang, Oron, Eket, Obolo, Ibeno and other speaking tribes in Nigeria. Akwa Ibom State is inhabited by people of different walks of life such as teachers, businessmen, students, traders, civil servants and unemployed youths among others. The choice of this study area was driven by the relevance of the research topic.

3.3 Population of the study

The population of the study consisted of 30 staff of the selected firms: Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited all in Akwa Ibom State.

3.4 Sample size/Sampling technique

In this study, a sample of 28 respondents were selected out of 30 respondents using stratified random sampling technique.

3.5 Sources of data collection

Primary data were obtained through structured questionnaire and interviews with the staff of the selected firms. The interview method was adopted to enable detailed and independent information not covered by the questionnaire to be expressed by the respondents. Secondary data were obtained from published reports, books, internet, journals, newspapers and magazines.

3.6 Instrument for data collection

Data were collected through questionnaire carefully designed and administered to the respondents, as well as through personal interviews. The questionnaire contains sectioned A and B. Section A contained personal information about the respondents. Section B was the main body of the questionnaire. This section contained twelve (12) close ended questions using a four-point Likert scale instrument ranging from Strongly Agree [SA], Agree [A], Strongly Disagree [SD] and Disagree [D].

3.7 Validity of the instrument

The validity of the instrument was assessed by the research experts in the School of Management Sciences of the Akwa Ibom State University. These experts assessed the relevance of each item in relation to the objectives of the study, the hypotheses to be tested and language used in developing the items as well as the comprehensibility of each item in relation to the cognitive level of the respondents. They validated the instrument by effecting necessary corrections, examining the contents and ascertaining clarification of ideas as well as appropriateness of the items. The final instrument is reflected on the appendix.

3.8 Reliability of the instrument

The instrument was further subjected to reliability test using 10 staff from ETISALAT Nigeria Limited, Uyo, Akwa Ibom State. The data collected were tested using Cronbach Alpha Formula. The result of the test showed that, all the items tested, scored above .80 - meaning that the instrument was reliable as seen below:

Table1. Reliability Statistics

| | |
|------------------|------------|
| Cronbach's Alpha | N of Items |
| .980 | 4 |

Source: SPSS version 23 outputs

3.9 Procedure of data collection/Administration of the instrument:

Data collection was done in the sampled firms in the study area. The researcher visited the selected firms with letter from the supervisor to obtain permission from the selected firms and clarified the motivation behind the study to them. Relevant information for the study was gathered by the researcher with the assistance of the operations managers in each of the firms. The staff were informed of the activity and the need to give honest responses to the instructions that data collected would be used and treated confidentially for academic research purposes only. After this, the researcher undertook the administration of the questionnaire to respondents with the help of research assistant in each of the selected firms used for the study.

3.10 Methods of Data Analysis

Considering the nature of data collected, the statistical methods adopted for data analysis was the regression. The data were analyzed with the help of a statistical tool using Statistical Package for Social Sciences (SPSS).

4.1 DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

The data gathered using the questionnaire were presented below:

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

Table 4.1 Number of questionnaires returned

| Questionnaire | Frequency | Percent |
|----------------|-----------|---------|
| Valid Returned | 28 | 93.3 |
| Not Returned | 2 | 6.7 |
| Total | 30 | 100.0 |

Source: SPSS version 23 outputs

From the above table, it is depicted that out of 30 copies of questionnaires administered to staff of selected telecommunication firms in Uyo, Akwa Ibom State. 28 copies were returned in a useable form representing 93.3% while 2 copies were not returned, which represent only 6.7%. We therefore use 28 copies of returned questionnaires as the bases for the analysis.

Table 4.2. Gender distribution of respondents

| Gender | Frequency | Percent |
|------------|-----------|---------|
| Valid Male | 15 | 53.6 |
| Female | 13 | 46.4 |
| Total | 28 | 100.0 |

Source: SPSS version 23 outputs

Table 4.2 above depicts the gender distribution of the respondent. From the table, out of 28 questionnaires returned, 15 were male representing 53.6%, while 13 respondents were female representing 46.4%. This implies that the majority of the respondents were male.

Table 4.3. Age distribution of respondents

| Age range | Frequency | Percent |
|-------------|-----------|---------|
| Valid 25-30 | 9 | 32.1 |
| 31-35 | 12 | 42.9 |
| 36-40 | 5 | 17.9 |
| 41 - above | 2 | 7.1 |
| Total | 28 | 100.0 |

Source: SPSS version 23 outputs

The table above depicts that 32.1% of the sampled respondents are within the age bracket of 25-30 years, 42.9% are within the age bracket of 31-35 years while 17.9% of the respondents are within the age bracket of 36-40 years, 7.1% of the respondents are within the age bracket of 41 above years.

Table 4.4. Marital status of respondents

| Marital status | Frequency | Percent |
|----------------|-----------|---------|
| Valid Single | 10 | 35.7 |
| Married | 11 | 39.3 |
| Divorced | 3 | 10.7 |
| Widowed | 4 | 14.3 |
| Total | 28 | 100.0 |

Source: SPSS version 23 outputs

The above table shows that 10 respondents were single representing 35.7% while 11 respondents were married representing 39.3%. Also, 3 respondents were divorced representing 10.7% and another 4 respondents were widowed representing 14.3%.

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

Table 4.5. Educational qualification distribution of respondents

| Qualification | Frequency | Percent |
|---------------|-----------|---------|
| SSCE OND/NCE | 4 | 14.3 |
| | 5 | 17.9 |
| HND/BSC | 13 | 46.4 |
| MBA/MSC | 4 | 14.3 |
| PHD | 2 | 7.1 |
| Total | 28 | 100.0 |

Source: SPSS version 23 outputs

The above table shows that out of 28 questionnaires correctly filled and returned, 4 respondents representing 14.3% were holders of SSCE while OND/NCE holders were 5 representing 17.9% and 13 respondents representing 46.4% were holders of HND/B.Sc and 4 respondents representing 14.3% were MBA/M.Sc holders. Also, only 2 respondents representing 7.1% were holders of P.hD educational qualifications.

Table 4.6. Working experience distribution of respondents

| Experience | Frequency | Percent |
|------------|-----------|---------|
| Valid 0-5 | 6 | 21.4 |
| 6-10 | 8 | 28.6 |
| 11-16 | 9 | 32.1 |
| 17-above | 5 | 17.9 |
| Total | 28 | 100.0 |

Source: SPSS version 23 outputs

Table 4.6 above shows that 6 respondents representing 21.4% have 0-5 years working experience, 8 respondents representing 28.6% have 6-10 years working experience. Also, 9 respondents (32.1%) have years of working experience between 11-16 years and 5 respondents representing 17.9% have 17 years and above working experience.

Table 4.7. Rank distribution of respondents

| Rank | Frequency | Percent |
|--------------------|-----------|---------|
| Valid Junior Staff | 12 | 42.9 |
| Senior Staff | 10 | 35.7 |
| Management Staff | 6 | 21.4 |
| Total | 28 | 100.0 |

Source: SPSS version 23 outputs

The above table depicts rank distribution of respondents. The table revealed that 12 respondents representing 42.9% are junior staff, 10 respondents (35.7%) are senior staff while 6 respondents representing 21.4% were management staff.

RESEARCH QUESTION ONE

What is the relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State?

Table 4.8. Responses on the relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State

| OPTIONS | SA | A | SD | D | TOTAL |
|---|----|---|----|---|------------------------|
| My organization does not adopt open innovation due to lack of corresponding assets. | 3 | 3 | 2 | 2 | 10 (35.71%) |
| Poor performance in my organization is due to lack of corresponding assets. | 2 | 3 | 1 | 1 | 7 (25.00%) |

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

| | | | | | |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Failures to meet targets in my organization may be attributed to lack of open innovation. | 1 | 2 | 2 | 1 | 6 (21.43%) |
| My organizational innovative strategies are very effective. | 2 | 1 | 1 | 1 | 5 (17.86%) |
| Total | 8 (28.57%) | 9 (32.14%) | 6 (21.43%) | 5 (17.86%) | 28 (100%) |

Source: Field Survey, 2020

Table 4.8 above reveals that 8 respondents representing 28.57% strongly agreed that there is a relationship between corresponding assets and organizational performance in selected firms in Akwa Ibom State while 9 respondents (32.14%) agreed to the claim. However, 6 respondents (21.43%) strongly disagreed to the claim while 5 respondents (17.86%) disagreed. We therefore conclude that there is a relationship between corresponding assets and organizational performance in selected firms in Akwa Ibom State.

RESEARCH QUESTION TWO

What is the relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State?

Table 4.9: Responses on the relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State

| OPTIONS | SA | A | SD | D | TOTAL |
|---|------------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|
| Limited financial resources are one of the core factors impeding open innovation in my organization. | 5 | 5 | 3 | 2 | 15 (53.57%) |
| Limited financial resources hinder my organization from implementing policies aim at encouraging innovative ventures among the employees. | 4 | 1 | 2 | 1 | 8 (28.57%) |
| My organizational performance is not determined by the limited financial resources. | 1 | 1 | 0 | 0 | 2 (7.14%) |
| My organization lacks management efficiency in allocating limited financial resources towards innovation. | 1 | 1 | 1 | 0 | 3 (10.71%) |
| Total | 11 (39.29%) | 8 (28.57%) | 6 (21.43%) | 3 (10.71%) | 28 (100%) |

Source: Field Survey, 2020

Table 4.9 above shows that out of 28 respondents, 11 respondents representing 39.29% strongly agreed that there is a relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State while 8 respondents (28.57%) agreed to the claim. The analysis further shows that 6 respondents (21.43%) strongly disagreed to the claim while only 3 respondents (10.71%) disagreed. We therefore conclude that there is a relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State.

RESEARCH QUESTION THREE

What is the relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State?

Table 4.10. Responses on whether there is a relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State

| OPTIONS | SA | A | SD | D | TOTAL |
|---|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Technological changes have affected the performance of my organization positively. | 4 | 3 | 1 | 1 | 9 (32.14%) |
| Employees in my organization are resistance to technological changes. | 2 | 1 | 1 | 0 | 4 (14.29%) |
| Lack of relevant technologies in my organization has hindered innovative practices among employees. | 5 | 2 | 0 | 1 | 8 (28.57%) |
| Staff engagement in open innovation in my organization is unbiased. | 2 | 3 | 1 | 1 | 7 (25.00%) |
| Total | 13 (46.43%) | 9 (32.14%) | 3 (10.71%) | 3 (10.71%) | 28 (100%) |

Source: Field Survey, 2020

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

Table 4.10 above shows that out of 28 respondents, 13 respondents representing 46.43% strongly agreed that there is a relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State. Also, 9 respondents (32.14%) agreed to the claim. Also, 3 respondents (10.71%) strongly disagreed to the claim. Similarly, 3 respondents representing 10.71% disagreed. We therefore conclude that there is a relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State.

RESEARCH QUESTION FOUR

What is the organizational performance in selected telecommunication firms in Akwa Ibom State?

Table 4.11. Responses on the organizational performance in selected telecommunication firms in Akwa Ibom State

| OPTIONS | SA | A | SD | D | TOTAL |
|--|------------------------|-----------------------|-----------------------|-----------------------|-------------------|
| My organization always attain superior performance index due to open innovation. | 3 | 2 | 2 | 1 | 8 (28.57%) |
| My organization has good innovative strategies. | 1 | 2 | 1 | 1 | 5 (17.86%) |
| My organization is always known to be innovative. | 2 | 3 | 1 | 1 | 7 (25.00%) |
| My organization has competitive advantage due as a result of open innovation. | 4 | 2 | 1 | 1 | 8 (28.57%) |
| Total | 10 (35.71%) | 9 (32.14%) | 5 (17.86%) | 4 (14.29%) | 28 (100%) |

Source: Field Survey, 2020

Table 4.11 above depicts that 10 respondents representing 35.71% strongly agreed that there is a good organizational performance in selected telecommunication firms in Akwa Ibom State while 9 respondents (32.14%) agreed to the claim. Also, 5 respondents (17.86%) strongly disagreed to the claim while 4 respondents (14.29%) disagreed. We therefore conclude that there is a good organizational performance in selected telecommunication firms in Akwa Ibom State.

4.2 Descriptive Statistics Results

Table 4.2.1 Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | | Kurtosis | |
|--------------------|-----------|-----------|-----------|-----------|----------------|-----------|------------|-----------|------------|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| ORGP | 28 | 1 | 4 | 2.89 | 1.066 | -.563 | .441 | -.872 | .858 |
| LACOAS | 28 | 1 | 4 | 3.14 | 1.008 | -1.006 | .441 | .016 | .858 |
| LTFIR | 28 | 1 | 4 | 2.96 | 1.036 | -.571 | .441 | -.851 | .858 |
| LTRETEC | 28 | 1 | 4 | 2.71 | 1.084 | -.318 | .441 | -1.129 | .858 |
| Valid N (listwise) | 28 | | | | | | | | |

Source: Researcher's computation via SPSS version 23

Table 4.2.1 above shows that ORGP has a mean score of 2.89; this implies that the average score of organizational performance in selected telecommunication firms in Akwa Ibom State in this domain is 2.89. ORGP has a standard deviation of 1.066, showing that the deviation from the mean is high hence; the data are clustered around the mean. The minimum value of ORGP is 1 and a maximum value of 4 was recorded. These statistics reveal that the level of deviation of the minimum from the maximum value is high. Thus, indicating much disparity in the level of organizational performance in selected telecommunication firms in Akwa Ibom State.

The average value for lack of corresponding assets (LACOAS) is 3.14 with a standard deviation of 1.008. Therefore, there exists very significance variation among the values of lack of corresponding assets under study. The minimum value is 1 while the maximum value is 4. The statistics reveal that the level of deviation of the minimum from the maximum value is high. Thus, indicating a high disparity in lack of corresponding assets in selected telecommunication firms in Akwa Ibom State. Limited

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

financial resources (LTDFIR) maintained the mean value of 2.96 and the value of the standard deviation is 1.036 which implies high variations in career training. The maximum and minimum values were 1 and 4 percent respectively. From the descriptive statistics results, it was further revealed that lack of relevant technologies (LRETEC) showed much disparity in the level of lack of relevant technologies adopted in selected telecommunication firms in Akwa Ibom State as evidenced in the mean scores and standard deviation.

4.3 Test of Research Hypotheses Hypothesis one

H₀: There is no significant relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State.

H₁: There is a significant relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State.

The extracted data from tables 4.8 and 4.11 were used for the analysis while the model adopted is stated below:

$$ORGPER = \beta_0 + \beta_1 LACOAS + u_t$$

Table 4.3.1 Regression Results for hypothesis one

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .934 ^a | .873 | .868 | .387 |

a. Predictors: (Constant), LACOAS

ANOVA^a

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|----|-------------|---------|-------------------|
| 1 Regression | 26.780 | 1 | 26.780 | 178.595 | .000 ^b |
| Residual | 3.899 | 26 | .150 | | |
| Total | 30.679 | 27 | | | |

a. Dependent Variable: ORGPER

b. Predictors: (Constant), LACOAS

c.

Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .399 | .200 | | 1.989 | .057 |
| | LACOAS | .919 | .069 | .934 | 13.364 | .000 |

a. Dependent Variable: ORGPER

Source: Researcher's computation via SPSS version 23

Decision

Since the calculated probability (Sig.) of 0.000 was less than the p-value of 0.05, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a significant relationship between lack of corresponding assets and organizational performance in selected firms in Akwa Ibom State.

Hypothesis Two

H₀: There is no significant relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State.

H₁: There is a significant relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State.

The extracted data from tables 4.9 and 4.11 were used for the analysis while the model adopted is stated below:

$$ORGPER = \beta_0 + \beta_1 LTDFIR + u_t$$

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

Table 4.3.2 Regression Results for hypothesis two

Model Summary

| Model | R | R Square | Adjusted Square | R | Std. Error of the Estimate |
|-------|-------------------|----------|-----------------|---|----------------------------|
| 1 | .969 ^a | .939 | .937 | | .267 |

a. Predictors: (Constant), LTDFIR

ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|---------|-------------------|
| 1 | Regression | 28.822 | 1 | 28.822 | 403.541 | .000 ^b |
| | Residual | 1.857 | 26 | .071 | | |
| | Total | 30.679 | 27 | | | |

a. Dependent Variable: ORGPER

b. Predictors: (Constant), LTDFIR

Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | T | |
| (Constant) | .064 | .156 | | .412 | .684 |
| LTDFIR | .998 | .050 | .969 | 20.088 | .000 |

a. Dependent Variable: ORGPER

Source: Researcher's computation via SPSS version 23

Decision

Since the calculated probability (Sig.) of 0.000 was less than the p-value of 0.05, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a significant relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State.

Hypothesis Three

H₀: There is no significant relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State.

H₁: There is a significant relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State.

The extracted data from tables 4.10 and 4.11 were used for the analysis while the model adopted is stated below:

$$ORGPER = \beta_0 + \beta_1 LRETEC + u_t$$

Table 4.3.3 Regression Results for hypothesis three

Model Summary

| Model | R | R Square | Adjusted Square | R | Std. Error of the Estimate |
|-------|-------------------|----------|-----------------|---|----------------------------|
| 1 | .911 ^a | .830 | .824 | | .448 |

a. Predictors: (Constant), LRETEC

ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|---------|-------------------|
| 1 | Regression | 25.465 | 1 | 25.465 | 126.994 | .000 ^b |
| | Residual | 5.214 | 26 | .201 | | |
| | Total | 30.679 | 27 | | | |

a. Dependent Variable: ORGPER

b. Predictors: (Constant), LRETEC

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|--------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| 1 (Constant) | .135 | .282 | | .481 | .635 |
| LRETEC | .964 | .086 | .911 | 11.269 | .000 |

a. Dependent Variable: ORGPER

Source: Researcher's computation via SPSS version 23

Decision

Since the calculated probability (Sig.) of 0.000 was less than the p-value of 0.05, we reject the null hypothesis and accept the alternative hypothesis, which states that there is a significant relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State.

4.4 Discussion of the Findings

The three hypotheses tested revealed consistent results. In the first hypotheses tested, the regression results reveal that a regression coefficient of 0.399 in Table 4.3.1 indicates a positive relationship between corresponding assets and organizational performance in selected firms in Akwa Ibom State. The R Square (R^2) of 0.873 in table 4.3.1 implies that about 87.3% variations in the organizational performance in selected firms in Akwa Ibom State are caused by lack of corresponding assets while the remaining 12.7% are caused by other variables not captured by the model. However, in the first hypothesis, since the calculated probability (Sig.) of 0.000 was less than the p-value of 0.05, we concluded that there is a significant relationship between corresponding assets and organizational performance in selected firms in Akwa Ibom State. This finding is consistent with the finding of Dodourova and Bevis, (2014) that lack of corresponding assets in terms of manufacturing equipment, marketing capabilities, efficient product channels and global contacts drive many firms to experiment on in-bound innovation openness.

In the second hypothesis, the regression coefficient of 0.064 indicates that there is a positive relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State. The R Square (R^2) of 0.939 in table 4.3.2 implies that about 93.9% variations in the organizational performance in selected firms in Akwa Ibom State are caused by limited financial resources while the remaining 6.1% are caused by other variables not captured by the model. However, since the calculated probability (Sig.) of 0.000 was less than the p-value of 0.05, we concluded that there is a significant relationship between limited financial resources and organizational performance in selected firms in Akwa Ibom State. This finding is consistent with the finding of Wynarczyk, (2013) that limited financial resources, inadequate investment in inhouse R&D capabilities, and the lack of relevant knowledge and technologies constitute major reasons why firms seek opportunities for external innovation through collaboration. Furthermore, in the third hypotheses tested, the regression results reveal that a regression coefficient of 0.135 in Table 4.3.3 indicates a positive relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State. The R Square (R^2) of 0.830 in table 4.3.3 implies that about 83% variations in the organizational performance in selected firms in Akwa Ibom State are caused by lack of relevant technologies while the remaining 17% are caused by other variables not captured by the model. However, in the third hypothesis, since the calculated probability (Sig.) of 0.000 was less than the p-value of 0.05, we concluded that there is a significant relationship between lack of relevant technologies and organizational performance in selected firms in Akwa Ibom State. The finding is consistent with the finding of Little, Herstatt, and Gemuenden, (2006) that the pursuit of corporate renewal (the propensity to manufacture products in a fast and more effective manner, or to integrate new technologies in the current product); focus on firm's activities; possibility for cost reduction and process efficiency; increased profit potentials; counterbalance lack of capacity; the need to be up to speed with market development; management policy and conviction; and the optimal utilization of talent domicile amongst employees were the major motivators of open innovation adoption.

5.1 SUMMARY

The study was designed to examine the relationship between Open Innovation and Organizational Performance in selected firms in Akwa Ibom State. To achieve this objective, a survey research design was utilized. The population of the study consisted 30 staff of the selected firms: Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited Akwa Ibom State using stratified random sampling technique. Data were collected through questionnaire titled "Open Innovation and Organizational Performance Questionnaire (OIOPQ)" carefully designed and administered to the respondents.

The data collected were tested using Cronbach's Alpha Formula. A total of 30 copies of questionnaire were distributed to respondents, out of which 28 copies were returned and found to be correctly filled. This gave a response rate of about 97%. Both descriptive and inferential statistics were used to analyze the collected data. Specifically, descriptive statistics were used to analyze the collated data while ANOVA regression analysis was used to test the research hypotheses. Descriptive analysis was used to

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

produce mean, range of scores (Minimum & Maximum), standard deviation, skewness and kurtosis for each variable of the study. The ANOVA regression analysis was conducted to examine the strength of the relationship between each of the dependent and independent variables. The reported t-statistics or p-values would be used to test the significance of the stated research hypotheses. The ANOVA regression technique was adopted to specify the relationship between the variables in the hypotheses of the study. The result of the study showed that there is a positive significant relationship between open innovation and organizational performance in selected firms: Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited Akwa Ibom State.

5.2 CONCLUSION

In conclusion, there is a positive significant relationship between open innovation and organizational performance in selected

5.3 RECOMMENDATIONS

firms: Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited Akwa Ibom state.

From the findings of this study, the following recommendations were made:

- i. Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited Akwa Ibom State should be more proactive in the provision of modern technologies to encourage rapid knowledge sharing.
- ii. Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited Akwa Ibom State should pay attention to the provision of required financial resources to reduce the level of firms seeking opportunities for external innovation through collaboration.
- iii. Airtel Nigeria Limited, Globacom Nigeria Limited and MTN Nigeria Limited Akwa Ibom State should be more concerned with personnel training to encourage employees' effectiveness and improved performance.

REFERENCES

- 1) Akpinar, A. T., & Akdemir, A. (1999). Intellectual capital. In *In Third European Conference* (pp. 332– 340).
- 2) Bassellier, G., Reich & Benbasat. (2001). Information technology competence of business managers: A definition and research model. *Journal of Management Information Systems*. Armonk: Spring 2001. Vol. 17, Iss. 4; p. 159.
- 3) Bontis, N., Keow, W. C. C., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital*, 1(1), 85–100. doi:10.1108/14691930010324188
- 4) Chesbrough, H., Vanhaverbeke, W. and West, J. eds., (2006). Open innovation: Researching a new paradigm. *Oxford University Press on Demand*.
- 5) Chesbrough HW, Crowther AK (2006) Beyond hightech: early adopters of open innovation in other industries. *R&D Management* 36, 229-236.
- 6) Cho, H., & Pucik, V. (2005). Relationship between innovativeness, quality, growth, profitability, and market value. *Strategic Management Journal*, 26(6), 555.
- 7) Dilworth, J.B. (1989). *Production and Operations Management: Manufacturing and Nonmanufacturing*, Fourth Edition, Random House Business Division, New York.
- 8) Dodourova, M. and Bevis, K., (2014). Networking innovation in the European car industry: Does the Open Innovation model fit? *Transportation Research Part A: Policy and Practice*, 69, pp.252-271.
- 9) Ebersberger, B., Bloch, C., Herstad, S.J. and Van De Velde, E.L.S., (2012). Open innovation practices and their effect on innovation performance. *International Journal of Innovation and Technology Management*, 9(06), p.1250040.
- 10) Foss, N.J., Laursen, K. and Pedersen, T., (2011). Linking customer interaction and innovation: The mediating role of new organizational practices. *Organization Science*, 22(4), pp.980-999.
- 11) Gassmann H, Enkel E (2004) Implementing the open innovation approach: three core process archetypes. In: Proceedings of the R&D Management Conference, Lisbon, Portugal, 6th-9th June 2004.
- 12) Grootaert, C., & Bastelaer, T. van. (2001). *Understanding and Measuring Social Capital: A Synthesis of Findings and Recommendations from the Social Capital Initiative*. Center for Institutional Reform and the Informal Sector University of Maryland (Vol. 250). doi:10.1227/00006123-197907010-00058.
- 13) Harhoff, D., Henkel, J. and Von Hippel, E., (2003). Profiting from voluntary information spillovers: how users benefit by freely revealing their innovations. *Research policy*, 32(10), pp.1753-1769.
- 14) Helena, A. (2013). Co-creation and innovation in public Services. *The service industry journal* 33(2), pp.734-748.
- 15) Herman, J.L., and Herman, J.J. (1995). Total Quality Management (TQM) for education. *Educational Technology*, 35(3), 14-18.
- 16) Hilgers, D. and Ihl, C., (2010). Citizensourcing: Applying the concept of open innovation to the public sector. *International Journal of Public Participation*, 4(1), pp.298-304
- 17) Huston, L. and Sakkab, N., 2006. Connect and develop. *Harvard business review*, 84(3), pp.58-66.

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

- 18) Kale, P. and Singh, H., (2007). Building firm capabilities through learning: the role of the alliance learning process in alliance capability and firm_level alliance success. *Strategic management journal*, 28(10), pp.981-1000.
- 19) Kirschbaum, R., (2005). Open innovation in practice. *Research-Technology Management*, 48(4), pp.2428.
- 20) Kosgei, J.M. (2014). Challenges Facing the Implementation of Total Quality Management in Secondary Schools: A Case of Eldoret East District, Kenya, *Global Journal of Human Resource Management*, 3 (1), 12-18 [14].
- 21) Laursen, K. and Salter, A., (2006). Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms. *Strategic management journal*, 27(2), pp.131-150.
- 22) Lee, S.M., Hwang, T. and Choi, D., (2012). Open innovation in the public sector of leading countries. *Management Decision*. 50(1), 147-161
- 23) Lee, S., Park, G., Yoon, B. and Park, J., (2010). Open innovation in SMEs—An intermediated network model. *Research policy*, 39(2), pp.290-300.
- 24) Lettl, C., Herstatt, C., Gemuenden, H.G., (2006). Users' contributions to radical innovation: evidence from four cases in the field of medical equipment technology. *R&D Management* 36, 251-272.
- 25) Lin, P. (2007). Profiting from Uncertainty: Strategies for Succeeding No Matter What the Future Brings. *Free Press*, New York.
- 26) Nigeria Populations Commission (NPC), 2006 report.
- 27) Mellander, K. (2001). Engaging the Human Spirit: A Knowledge Evolution Demands the Right Conditions for Learning. *Journal of Intellectual Capital*, 2, 2; p. 165-171.
- 28) Mujtaba, B. (2003). Ethical Implications of Employee Monitoring: What Leaders Should Consider! *Journal of Applied Management and Entrepreneurship*. Vol. 8, No. 3, p. 22-47; July/August.
- 29) Oakland, J. (1989). Total quality management. Oxford, UK: Heinemann.
- 30) Oke, A., Burke, G. and Myers, A., (2007). Innovation types and performance in growing UK SMEs. *International Journal of Operations & Production Management*. 12(3), pp. 146157
- 32) Padilla-Meléndez, A. and Garrido-Moreno, A., (2012). Open innovation in universities: What motivates researchers to engage in knowledge transfer exchanges? *International Journal of Entrepreneurial Behaviour and Research*, 18(4), pp.417-439.
- 33) Rothwell, R., (2009). External networking and innovation in small and medium-sized manufacturing firms in Europe. *Technovation*, 11(2), pp.93-112.
- 34) Spithoven, A., Vanhaverbeke, W. and Roijackers, N., (2013). Open innovation practices in SMEs and large enterprises. *Small business economics*, 41(3), pp.537-562.
- 35) Svetlik, I., Stavrou_Costea, E. and Lin, H.F., 2007. Knowledge sharing and firm innovation capability: an empirical study. *International Journal of manpower*, 13(2), pp.237-262.
- 36) Theyel, N., (2013). Extending open innovation throughout the value chain by small and medium-sized manufacturers. *International Small Business Journal*, 31(3), pp.256-274.
- 37) Valkokari, K., (2015). Q&A. In the Innovation Game, Why Do So Many Companies Stay on the Sidelines?. *Technology Innovation Management Review*, 5(11).
- 38) Vanhaverbeke, W. Vareska, V, and Cheabrough, H., (2008). Choosing governance modes for external technology sourcing. *Management*, 36(3), pp.347-363.
- 39) Veer, T., Lorenz, A. and Blind, K., (2013). How open is too open? The 'dark side' of openness along the innovation value chain. The 'Dark Side' of Openness Along the Innovation Value Chain (September 5, 2012).
- 40) Wang, Z. and Wang, N., (2012). Knowledge sharing, innovation and firm performance. *Expert systems with applications*, 39(10), pp. 8899-8908.
- 41) Wikipedia encyclopedia (2007)
- 42) Wynarczyk, P., (2013). Open innovation in SMEs: A dynamic approach to modern entrepreneurship in the twenty-first century. *Journal of Small Business and Enterprise Development*, 20(2), pp.258-278.
- 43) Yeh, Y.M.C. (2005). Knowledge Management Implementation Model in Higher Education Industry: A Case Study in Taiwan. *Proceedings of College Teaching and Learning Conference*.

Open Innovation and Organizational Performance in Selected Firms in Akwa Ibom State, Nigeria

APPENDIX I

Open Innovation and Organizational Performance in in Selected Firms in Akwa Ibom State

| S/N | CORRESPONDING ASSETS | SA | A | SD | D |
|------------|---|-----------|----------|-----------|----------|
| A | | | | | |
| 7 | My organization does not adopt open innovation due to lack of corresponding assets. | | | | |
| 8 | Poor performance in my organization is due to lack of corresponding assets. | | | | |
| 9 | Failures to meet targets in organization may be attributed to lack of open innovation - knowledge. | | | | |
| 10 | My organizational innovative strategies are very effective. | | | | |
| B | FINANCIAL RESOURCES | SA | A | SD | D |
| 11 | Limited financial resources are one of the core factors impeding open innovation in my organization. | | | | |
| 12 | Limited financial resources hinder my organization from implementing policies aim at encouraging innovative ventures among the employees. | | | | |
| 13 | My organizational performance is not determined by the limited financial resources. | | | | |
| 14 | My organization lacks management efficiency in allocating limited financial resources towards innovation. | | | | |
| C | TECHNOLOGIES | SA | A | SD | D |
| 15 | Technological changes have affected the performance of my organization positively. | | | | |
| 16 | Employees in my organization are resistance to technological changes. | | | | |
| 17 | Lack of relevant technologies in my organization has hindered innovative practices among employees. | | | | |
| 18 | Staff engagement in open innovation in my organization is unbiased. | | | | |
| D | ORGANIZATIONAL PERFORMANCE | SA | A | SD | D |
| 19 | My organization always attain superior performance index due to open innovation. | | | | |
| 20 | My organization has good innovative strategies. | | | | |
| 21 | My organization is always known to be innovative and productive. | | | | |
| 22 | My organization has a high level of collaboration with others. | | | | |