# ORGANISATIONAL KNOWLEDGE AND ORIENTATION: IMPLICATIONS FOR THE PERFORMANCE OF SELECTED NIGERIAN TELECOMMUNICATION FIRMS

**BY**

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**Matriculation Number: CUGP100303**

**JULY, 2017**

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**A THESIS SUBMITTED TO THE DEPARTMENT OF BUSINESS MANAGEMENT, COLLEGE OF BUSINESS AND SOCIAL SCIENCES, COVENANT UNIVERSITY, OTA, OGUN STATE, NIGERIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY (Ph.D) IN BUSINESS ADMINISTRATION**

**JULY, 2017**

## Acceptance

This is to attest that this Thesis is accepted in partial fulfilment of the requirements for the award of the degree of the Doctor of Philosophy in Business Administration in the Department of Business Management, College of Business and Social Sciences, Covenant University, Ota.

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(Dean, School of Post Graduate Studies)                        Signature & Date

## Declaration

I, IBIDUNNI, AYODOTUN STEPHEN, (CUGP100303), declared that this research work was carried out by me under the supervision of Dr Chinonye Love Moses and Dr. Omotayo Adeniyi Adegbuyi of the Department of Business Management, Covenant University, Ota, Ogun State. I attest that the thesis has not been presented either wholly or partly for the award of any degree elsewhere. All sources of data and scholarly information used in this thesis are duly acknowledge.


IBIDUNNI, AYODOTUN STEPHEN                    …………..………………..
                                                              Signature & Date

# Certification

We certify that this thesis titled "Organisational Knowledge and Orientation: Implications for the Performance of Selected Nigerian Telecommunication Firms" is based on original research carried out by Ibidunni, Ayodotun Stephen under our supervision and that it has not been submitted for the award of any degree in this or any other University.


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**Professor Samuel Tita Wara** ……..…………………………
(Dean, School of Post Graduate Studies)    Signature & Date

# Dedication

This study is dedicated to my Lord and Saviour who has made this research work a success and has provided the means to complete the work. To Him alone be all the glory. It is also dedicated to my loving wife (Mrs. Ibidunni, Oyebisi Mary) and my parents (Rev. Prof. Samson O. and Pastor Mrs. Mopelola M. Ibidunni) for their support and unwavering commitment to the success of the research work.

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# List of Abbreviations

**BCC**: Banker, Charnes and Cooper

**CCR**: Charnes, Cooper and Rhodes

**CRR**: Constant returns to scale

**CSC**: Customer Service Center

**DEA**: Data envelopment analysis

**DMU**: Decision making unit

**DRS**: Decreasing returns to scale

**GEK**: Group-explicit knowledge

**GTK**: Group-tacit knowledge

**ITK**: Individual-tacit knowledge

**IEK**: Individual-explicit knowledge

**VRS**: Variable returns to scale

**IRS**: Increasing returns to scale

**RBV**: Resource Based View

**KBV**: Knowledge Based View

**CI**: Competitive Intelligence

**VRIO**: Valuable, rare, inimitable and non-substitutability

**GSM**: Global System for Mobile Communications

**NCC**: Nigerian Communications Commission

**CRS**: Constant Returns to Scale

**OECD**: Organisation for Economic Cooperation and Development

**KBO**: Knowledge-based Organisations

**ICT**: Information and Communication Technology

**WACS**: West Africa Cable System

**GDP**: Gross Domestic Product

**USA**: United States of America

**R&D**: Research and Development

**FCT**: Federal Capital Territory

**MTN**: Mobile Telephone Network

**CRM**: Customer Relationship Management

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# Abstract

The role of individuals' and group tacit and explicit knowledge in driving performance of telecommunication firms, especially in Nigeria, has received very little empirical research attention in existing literature. Therefore, this study examined the relationships between organisational knowledge, orientation and performance of telecommunication firms in Nigeria. Mixed method approach was employed using the structured questionnaire and semi-structured interview as the instruments for data collection. Copies of questionnaire were administered to the employees of telecommunication organisations both at MTN headquarters and customer service centers of MTN, Globacom, Airtel and Etisalat; and customers in Lagos State and Federal Capital Territory, Abuja Nigeria. A total of 980 copies of the questionnaire was administered to the employees in the four Telecommunication firm, while 600 copies of questionnaire was administered to customers. The analyses of the quantitative data collected were performed using Pearson's correlation, simple linear regression analysis, hierarchical multiple regression and Data Envelopment Analysis. The qualitative data was analyzed and interpreted using thematic analysis. Results of data analysis showed that there exists positive relationship between individual-tacit knowledge and customer satisfaction ($r^2 = 0.015$, $p \leq 0.1$). Group-tacit knowledge also had significant influence on organisational effectiveness ($r^2 = 0.28$, $p \leq 0.001$). Moreover, the results from data envelopment analysis showed that 20 decision making units achieved operational efficiency with the individual-explicit knowledge of employees in the firm, while the results from 15 decision making units showed that group-explicit knowledge enhanced the firms' productivity. More so, dimensions of organisational orientation, such as: entrepreneurial, learning and market orientation had first order ($r^2 = 0.033$, $p \leq 0.01$) and second order ($r^2 = 0.051$, $p \leq 0.01$) moderating influences on the relationship between organisational knowledge and performance. Based on the findings, the study recommended that employees should be encouraged at regular intervals to document their experiences about their most prominent challenges encountered on the job and how they were able to resolve it. It was also recommended that employees of telecommunication firms should be encouraged to use their individual-tacit knowledge, such as intuition and experience, where possible to resolve customer complaints. This would save time, costs and efforts involved with long hours of solving customers' queries.

*Keywords:* Organisational knowledge, organisational orientation, performance, telecommunication firms, Nigeria

# CHAPTER ONE

# INTRODUCTION

## 1.1    Background to the Study

Global business economies consisit of organisations having different sizes, cultural setting and a wide spread of resource base. Nonetheless, these organisations are binded by common objectives that include: the drive to achieve high performing systems that optimise efficiency, effectiveness, productivity and fulfil stakeholders' satisfaction (Fontrodona & Sison, 2006). Although, the means of achieving these objectives change with environmental issues, early existence of business undertakings witnessed mechanised and industrial methods to achieving organisational objectives, promotion of knowledge as the most strategic resource to attaining these objectives has become more pronounced in recent times. The implication of knowledge as organisations' most strategic resource is that human cognition must be applied to all organisational resources and processes to attain performance objectives (Martín-de-Castro, Delgado-Verde, López-Sáez & Navas-López, 2011).

Knowledge is, therefore, regarded as an important part of designing organisational strategies, ensuring survival and sustaining competitiveness in the context of the global business environment (Barney, Ketchen & Wright, 2011). Organisational managers are expected to identify and manage the different stocks of knowledge resident in the firm, and link it with organisational strategies in order to achieve high performing organisations. Knowledge exist in both tacit and explicit forms, and it is usually utilized by individuals and groups to achieve organisational objectives.

Tacit knowledge possessed by individuals and groups involve intuitive ideas which the possessors find it difficult to explain and sometimes are not even aware that they possess it. The difficulty involved with explaining tacit knowledge demands that those with a desire to capture and replicate it would have to pass through the same experiences as those who possess such tacit knowledge. For example, some people are better innovative thinkers than others, such that in organisations some employees naturally find it easier to

think innovatively and generate ideas more than others. The way to think innovatively is quite difficult to explain, thus making it tacit to those who possess the knowledge of innovations (Fong & Chu, 2006). In most cases, employees that possess tacit knowledge are retained in the organisation because of their relevance in the organisation (Pivar, Malbašic & Horvat, 2012).

On the other hand, explicit knowledge is codified knowledge possessed by individuals and groups in a firm which can be stored in its knowledge management infrastructure. Very often, organisations develop sustaining cultures and orientations based on the effective utilization of explicit knowledge. Across individual and group levels, explicit knowledge can be communicated through education, training programmes for communicating organisational work systems and policy programmes (Ohiorenoya & Eboreime, 2014)

Organisational knowledge whether tacit or explicit is dynamic in nature, having the capacity to increase with continuous dissemination or use (Mciver, Lengnick-Hall, Lengnick-Hall & Ramachandram, 2013). Thus, organisational managers must manage and apply the tacit and explicit knowledge of organisational members to achieve competitive performance. However, adaptability of such organisational knowledge to the strategic direction is equally vital to achieving and sustaining high performing organisations. One way of identifying organisational strategic direction is through its organisational orientation.

According to Iederan, Curşeu, Vermeulen and Geurts (2013) organisational orientation creates behaviours that helps Managers to adapt their organisations' knowledge in responding to its changing business environment. It serves as guide over the firm's work processes, competitive postures and decision making towards the fulfillment of strategic objectives. Entrepreneurial, market and learning orientations are organisational orientations that have been found, within different contexts to be utilizers of tacit and explicit knowledge within the organisation to achieve and sustain performance (Agbim, Owutuamor & Oriarewo, 2013; Ferraresi, Quandt, dos Santos & Frega, 2012). A combination of entrepreneurial, market and learning orientations reflects the capability of organisational members to use their knowledge to be innovative, predict industry changes, and develop new knowledge that enhance their performance.

Central to the theme of organisational knowledge and orientation in developing economies, such as Nigeria, is the telecommunications industry. This is because the

telecommunication industry is knowledge driven and contributes significantly to the nation's economy, especially in terms of Gross Domestic Product (GDP) (National Bureau of Statistics, 2016; Ogbo, Okechukwu & Ukpere, 2012).

Studies have shown that Managers within telecommunication firms in Nigeria acknowledge the importance of organisational knowledge on their firms' performance (Olunifesi & Isola, 2013). What has not been clearly established, however, is to what extent they are aware of the existence of different types of knowledge. For instance tacit and explicit knowledge, possessed and used by individuals and groups within these organisations. Studies, such as Suraj and Ajiferuke (2013) is also not clear about managers' awareness of the influence these different types of knowledge have on performance. The combined effect of organisational knowledge and orientation on performance of Telecommunication firms in Nigeria has received little empirical evidence. Consequently, it is important to show through empirical study to what extent this relationship exists and to explain how this relationship exists. This study, therefore, aims to examine the relationship between organisational knowledge, orientation and performance within the telecommunication industry in Nigeria.

## 1.2    Statement of the Research Problem

The telecommunication industry is globally recognised to be a major contributor to national economies (Oghojafor, Ladipo, Ighomerebo & Odunewu, 2014; Sedziuviene & Vveinhardt, 2010). Nonetheless, the situation in the Nigerian telecommunication industry reveal that there is a continuous decline in the industry's contribution to GDP since the third quarter of 2014 (Nigerian Communication Commission, 2016). Moreover, the Nigerian telecommunication industry has been noted to be associated with challenges, such as poor quality of service, long waiting hours in accessing customer care representatives, high rate of porting activities, call jamming and dropping, delay in or non-delivery of text messages after charges have been deducted, echoing of speech when making calls and unsolicited deductions from services which subscribers did not register for (Alabar, Egena & Gbande, 2014; CPC, 2010). These challenges have, therefore, given rise to poor performance of the telecommunication industry, especially in the areas of customer satisfaction, operational efficiency, organisational effectiveness and organisational productivity (Adi, 2015; Onuzuruike, 2009; Sanjo & Adeniyi, 2012). The bulk of these challenges result from the over reliance of telecommunication organisations

on technology based information as against organisational knowledge which reside in human expertise (Agbim, Owutuamor & Oriarewo, 2013; Sarkindaji, Hashim & Abdullateef, 2014). Therefore, empirical evidence on the role of individuals' and group tacit and explicit knowledge in driving performance, such as achieving organisational effectiveness, enhancing operational efficiency and resolving customers' complaints that are not captured in the firm's online knowledge base is clearly missing in organisational knowledge literature. In the real world, organisational knowledge resides in humans, proceeds from them and is largely utilized by the people in the organisation (Smith, 2001). Accordingly, this research argues that conceptualizing organisational knowledge based on a combination of people and technology would present a more holistic view of the knowledge utilization process in achieving high performing telecommunication firms.

According to Gebert, Geib, Kolbe and Brenner (2003) and Guchait, Namasivayam and Lei (2010), the influence of organisational knowledge on customer satisfaction can be explained by the capability of employees and management of the organisation to build relationship with customers. In their view, establishing relationships with customers can help the organisation develop a database that serve as reference to customer queries when needed. So, managing customer relationship has been viewed as a strategic pathway to achieving customer loyalty and retention (Suraj & Bontis, 2012). However, this school of thought has not adequately explained individual's tacit knowledge, in form of experience and skill, as a means of resolving unexpected customers' challenges that require on-the-spot solutions. For example, in the telecommunications industry where customers go through the firm's on-line knowledge base and yet cannot get their problems resolved, calling a direct attendant in the customer care becomes the last resort. Where the firm's attendant lacks the required problem-solving skill and knowledge regarding the customers' questions, an outcome of customer dissatisfaction might occur. From the foregoing, therefore, it is evident that there exist a gap in organisational knowledge literature regarding the relationship between individuals'-tacit knowledge, as a part of the firm's knowledge resource, and customer satisfaction.

Looking at the effect of organisational knowledge on operational efficiency, researchers such as Duygun-Fethi and Pasiouras (2009) and Paradi and Zhu (2013) were able to situate studies in the banking and hospitality industries. Few studies, for example Hu and Chu (2008) and Huang and Zhu (2009) in the telecommunication industry that have examined the relationship between organisational knowledge and efficiency were carried

out in developed economies. Thus, application of these research results to developing economies might not be proper because of differences in technological sophistication of knowledge-based facilities (Radwan and Pellegrini, 2010). There is, therefore, a need to empirically show, particularly within the Nigerian context, the relationship between operational efficiency and organisational knowledge in the Telecommunication industry.

Empirically, testing the relationship between organisational knowledge and effectiveness is not uncommon in the literature. Studies, such as Gold, Malhotra and Segars (2001) and Zheng, Yang and McLean (2010) explained the relationship between organisational knowledge and effectiveness from a perspective of knowledge infrastructure. In their opinion, organisational knowledge stored in the organisation's IT-base can be easily retrieved at any point-in-time and when required for resolving organisational challenges and enhance effectiveness. However, this approach has not demonstrated how tacit knowledge from a group of people can enhance organisational work process to achieve effectiveness. Thus the measurement of organisational effectiveness in existing literature have not adequately reflected the actual usage of group/collective knowledge, especially group-tacit knowledge. This research proposes, that a methodology of viewing organisational knowledge based on the actual usage of group-tacit knowledge to achieve organisational effectiveness should be adopted. Consequently, examining organisational effectiveness based on groups' engagement of actual use of their knowledge, especially their group-tacit knowledge, present a more real explanation to organisational outcomes.

Research on productivity of firms continues to gain the interest of practitioners and scholars (Kremp & Mairesse, 2004). This is because productivity measures the degree to which a firm can improve on the quantity of its output given a specific level of input (Phusavat, 2013). Existing research works, such as, Igbaekemen (2014) and Madsen and Mikkelsen (2012) have examined the role of labour hours and firm's capital on productivity. However, research is yet to relate, with empirical evidence, productivity gains that accrue to organisations as a direct function of knowledge work and the knowledge workers, especially with respect to group-explicit knowledge. It is also important to state that unlike existing productivity based research such relationship must be examined by objective rather than subjective means, in order to avoid chances of human bias. Within a high-tech industry, such as telecommunications, this research argues that there is a need to examine the impact of group-tacit knowledge on productivity.

Relating the organisation's knowledge base to orientation also makes an interesting research subject. Organisational knowledge capabilities and resources can successfully interact with its external environmental context given the intervention of the firm's strategic orientation (Zhou & Li, 2010). It is observed that the few available empirical works in this area have discussed this relationship by looking at individual strands of orientation. For example, Wiklund and Shepherd (2003) examined how entrepreneurial orientation enhances the relationship between knowledge-based resources and firm performance. This research argues that such individual configuration of orientation is insufficient to address firms' goal of satisfying a large range of stakeholder expectation. This research therefore examined the moderating effect of market, entrepreneurial and learning orientations on the relationship between organisational knowledge and performance. Upon this premise, this research work is focused on examining the relationship between organisational knowledge, orientation and performance in Nigeria's Telecommunication industry.

## 1.3    Research Objectives

The general objective of this research is to examine the relationship between organisational knowledge and orientation on the performance of Nigerian telecommunication firms with a view to improving their overall performance. The specific objectives are to:

i.   examine the effect of individual-tacit knowledge on customer satisfaction;

ii.  identify the extent of the relationship between individual-explicit knowledge and the operational efficiency of the organisation;

iii. explore the extent to which group-tacit Knowledge positively influence organisational effectiveness;

iv.  determine the influence of group-explicit knowledge on the productivity of the organisation; and

v.   examine the moderating effects of organisational orientation on the relationship between organisational knowledge and performance of the firm.

### 1.4    Research Questions

i.   What effect does individual-tacit knowledge have on customer satisfaction?

ii.  In what ways does a relationship exist between individual-explicit knowledge and Operational efficiency of the organisation?

iii. How does group-tacit Knowledge influence organisational effectiveness?

iv.  What effect does group-explicit knowledge have on organisational productivity?

v.   To what extent does organisational orientation moderate the relationship between organisational knowledge and performance of the firm?

### 1.5    Research Hypotheses

The following hypotheses were tested during the course of this research:

i.   $H_{01}$: Individual-tacit knowledge does not have any significant effect on customer satisfaction

ii.  $H_{02}$: There is no significant relationship between individual-explicit knowledge and operational efficiency of the organisation

iii. $H_{03}$: Group-tacit Knowledge does not have any significant influence on organisational effectiveness

iv.  $H_{04}$: Group-explicit knowledge does not have any significant effect on organisational productivity

v.   $H_{05}$: There is no moderating effect of organisational orientation on the relationship between organisational knowledge and performance of the firm

### 1.6    Significance of the Study

This research has the following areas of relevance:

**Telecommunications firms:** Firms can identify the importance of knowledge based resources and how to connect this to their competitive environment in the present knowledge economy. Consequently, they would be better poised on strategic positioning for securing competitive edge through the engagement of unique knowledge resources;

and exploit the knowledge-competitive orientation-performance interface. Moreover, the study's ability to expose firms to the gains of the present knowledge economy and their ability to build stronger competitiveness would impact on the industry's development.

**Services Industries:** Players in the service industries can avail themselves of the outcome of the study to identify a new approach to the engagement of organisational knowledge in their business processes.

**Consumers:** Consumers can expect to be better satisfied with products and services that match their expectations knowing that better awareness of their expectations are included in the production and delivery systems.

**Academics and Researchers:** The theoretical benefit of the study for academics and researchers is such that the unique conceptual model has the potential to serve as a guide to researchers with a platform for further investigation. In addition, the itemized organisational knowledge dimensions provide a dynamic approach towards investigating into the concept of organisational knowledge. The study is focused in filling a strategic gap in strategic management literatures as it provides evidence from a developing context.

**Government:** Expectedly, the results of the study could help government adjust policies to create suitable business environments that promote firm competitiveness in an ongoing global knowledge economy.

## 1.7    Scope of the Study

This study examined the relationship between organisational knowledge, orientation and performance of telecommunication firms in Nigeria. Telecommunication industry is of interest to this study because it has proven to be one of the fastest growing, with increasing impact on the nation's populace and overall economic development. The industry is also known to be highly knowledge driven, through its inclination to technological advancements.

This study examined the contributions of the Global System of Mobile Communication (GSM) sub-market to the Nigerian economy. Studying GSM segment of the telecommunication market is important because it is the highest value contributor to the Nigeria telecommunication industry accounting for 98.46 percent of the total market share in the telecommunication industry (Nigeria Communication Commission, 2015).

Therefore, this sub-market forms the largest part of the telecommunication industry where investment in knowledge resources are made.

Within the GSM sub-market, Nigeria Communication Comission (2016) identified four active operator firms. They are Mobile Telephone Network (MTN), Globacom, Airtel and Etisalat. These firms are regarded as active because they hold the largest market shares and make massive investments towards the activities of the sub-market. Studying these four firms was further divided into two platforms, namely: headquarters and Customer Service Centers. At the headquarters only the market leader, that is MTN, was included in the study. Studying MTN was advantageous to this study since it is the market leader in the GSM market of Nigeria's telecommunication industry. MTN accounts for the largest subscriber base of 57,042,721 (38.84%), while other firms in the industry have the following market share statistics: Globacom 34,608,793 (23.48%); Airtel 33,866,789 (22.98%) and Etisalat, 21,877,542 (14.84%) (Nigerian Communication Commission, 2016).

The scope of this study was extended to the Customer service centers (CSCs) of these four firms in Lagos State and the Federal Capital Territory (FCT). An important advantage of using CSCs is that it give easier access to the end-users, that is, respondents. Besides, it is believed that the CSCs represent the overall interests of the corporate headquarters, thus, gave much needed information for this research study. Lagos states and FCT are suitable locations for this study because: (i) these geographical areas have the highest number of GSM operators' CSCs; and (ii) the CSCs of all the four firms in the GSM sub-market are represented across the locations. Besides, Lagos state and FCT are known for their active engagement in commercial activities.

At the headquarters of MTN and the customer service centers of the four GSM telecommunication organisations, respondents for this study covered the employees of the four GSM firms. The employees of the firms studied included those in the managerial cadre and other technical and administrative employees. Other categories of technical and administrative employees included those who have formal educational training, excluding artisans. The technical and administrative employees are believed to have acquired years of experience and been exposed to strategic events both in the firm and within the telecommunications industry that inform their suitability to respond to the questions in the research instrument. Customers were included in the study because it was important to

identify their perceived satisfaction with the firms' knowledge based products and services. The scope of the study, therefore, covered customers of the four firms in Lagos State and FCT.

## 1.8 Limitations of the Study

The following are limitations identified in carrying out this study.

The use of only GSM sub-market of the telecommunication industry limited the possibility of generalizing results from this research work across all other sub-markets of the industry, such as code-division multiple access (CDMA), fixed wireless and fixed wired sub-markets; and indeed, across industries.

The research study made use of only one firm at the headquarters. It is therefore not possible to generalize results to other firms.

The research study was limited to examining the utilization of knowledge from a typological scale, but did not identify factors that can impede or facilitate organisational members' use of knowledge to achieve organisational objectives.

The location for the research was limited to only Nigeria. The study covered only two geographical locations in Nigeria, which are Lagos State and FCT, Abuja. Therefore, generalizing the results of this study from a cross-cultural and inter-country perspective is not feasible.

## 1.9 Operationalization of the Research Variables

The conceptualisation of organisational knowledge in this research work include: individual-tacit, individual-explicit, group-tacit and group-explicit dimensions.

Organisational orientation was measured using the following dimensions: entrepreneurial, market and learning orientation.

Performance, on the other hand, was measured based on variables like: customer satisfaction, operational efficiency, organisational effectiveness and productivity.

Therefore, the operationalization of the variables is represented as:

$Z = f(X)$ …………..…… 1

$Z = f(Y)$ ……….…….... 2

$Z = f(X) + f(Y)$ ..…….. 3

$Z = f(X + Y)$ ………… 4

Where,

X = Independent variable

Y = Moderating variable

Z = Dependent variable

Substituting for, X, Y and Z;

X = Organisational Knowledge (OK)

Y = Organisational Orientation (OO)

Z = Organisational Performance (OP)

The independent variable (X) can further be broken down into the following variables:

$x_1, x_2, x_3, \ldots\ldots x_n$

Where:

$x_1$ = Individual-tacit

$x_2$ = Individual-explicit

$x_3$ = Group-tacit

$x_4$ = Group-explicit

The dependent variable (Z) can be broken down into the following variables:

$z_1, z_2, z_3, \ldots\ldots y_n$

Where:

$z_1$ = Customer satisfaction

$z_2$ = Operational efficiency

$z_3$ = Organisational effectiveness

$z_4$ = Productivity

The Moderating Variable (Y) can be broken down into the following variables:

$y_1, y_2, y_3, \ldots\ldots y_n$

Where:

$y_1$ = Entrepreneurial orientation

$y_2$ = Market orientation

$y_3$ = Learning orientation

## 1.10 The Conceptual Model

This research seeks to measure organisational knowledge based on a typological scaling of knowledge that was developed by Fei, Chen and Chen (2009) to satisfy a necessary condition that each categorization of organisational knowledge should be treated independently since each type of knowledge can act in capacities that the other cannot. The categorization of organisational knowledge was based on two commonly discussed types of organisational knowledge: tacit and explicit knowledge along two organisational dimensions: individual and group. Therefore, organizational knowledge dimensions include individual-tacit, individual-explicit, group-tacit and group-explicit knowledge dimension.
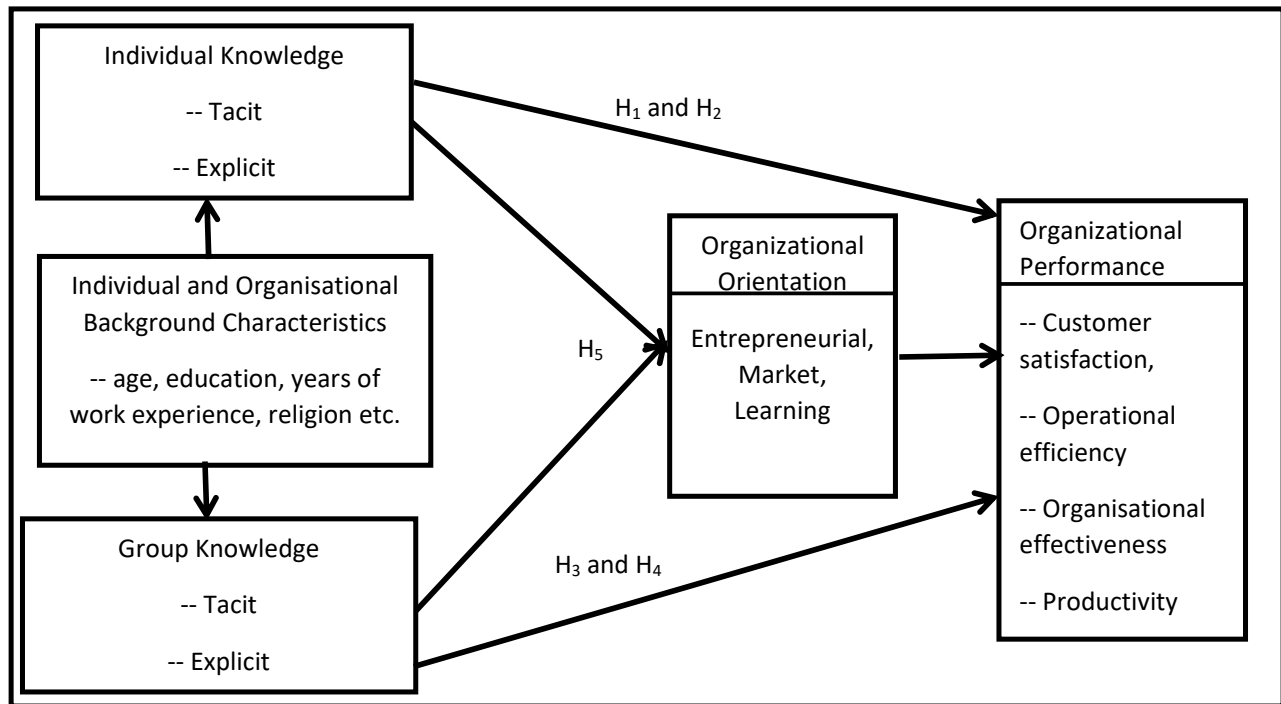


**Fig 1.1  Conceptual Model of the Study**
**Source: Adapted from Fei, Chen & Chen (2009); El- Mashaleh, Rababeh & Hyari (2010); Madsen & Mikkelson (2012); Phusavat (2013)**

Figure 1.1 depicts the conceptual model of the study. Individual and group knowledge consist of the tacit and explicit dimensions. These two categorisation of organisational knowledge are connected by individuals' and organisational background characteristics, such as, age, education, years of work experience and religion. Although, this research did not hypothesise the relationship between individual and organisational characteristics, it acknowledges that the possibilities of these social and demographic factors influencing the

ways that individuals and group members of the organisation put knowledge to work cannot be under estimated (Ng & Feldman, 2009).

The direct effect of individual tacit and explicit knowledge on organisational performance, such as, customer satisfaction and operational efficiency are represented in hypothesis one ($H_1$) and hypothesis two ($H_2$) respectively. Another direct relationship that was tested was the interconnectedness between group tacit and explicit knowledge and variables of rganisational performance, such as organisational effectiveness and productivity. These were represented by hypothesis three ($H_3$) and hypothesis four ($H_4$) respectively. Hypothesis five ($H_5$) shows the moderating effect of three organisational orientation variables, namely: entrepreneurial, market and learning orientations, on the relationship between individual and group tacit and explicit knowledge dimensions.

## 1.11 Overview of Nigeria's Telecommunication Industry

The historical evolution of Nigeria's telecommunication industry can be divided into the analogue (before the 1970s) and the digital (from 1970s to the present) era respectively. More precisely, the commencement of telecommunications in Nigeria dates back to 1886, under the Bristish colonial rule. Okonji (2013) observed that it was at this time that a British firm laid the first telegraphic submarine cable. This period witnessed the dominance of the Federal government-owned Nigeria Telecommunication Limited (NITEL) as the sole operator in the telecommunication industry. NITEL was floated in 1985 with the main objective of concretizing the planning and co-ordination of all the nation's telecommunications services. It was also expected to prioritize investments in telecommunications advancement and ensure the provision of accessible, efficient and affordable telecommunication based services. Following these prime years of telecommunications services in Nigeria and the establishment of NITEL were challenges such as availability of only few lines, very poor network connections, breaking calls and unreliable phone lines (Ndukwe, 2004).

Adi (2015) opined that these challenges were amongst the reasons that prompted the Federal government to consider competitive based reforms, which essentially marked the beginning of liberalizing the telecommunication industry. As part of its partial liberalization agenda, the Federal government established the Nigeria Communications Commission (NCC) in 1992, but actual operations in NCC commenced after its inauguration in 1993. The Nigeria Communications Commission's (NCC) main objectives were to:

i.    create a regulatory environment that enhances the distribution of telecommunication services and facilities;

ii.    stimulate the interest of private participation by independent entrepreneurs in the telecommunications industry; and

iii.    sustain a fairly competitive telecommunications market.

However, most part of the 1990s still remained under the dominance of NITEL. Between the period of independence in 1960 and the year 2000, Nigeria's telecommunication industry subscriber base increased to about 400,000 fixed lines (Adi, 2015). When compared to the nation's population of 120 million people at the time, the teledensity was still very low. Thus, most authors believe that the actual liberalization of Nigeria's telecommunications industry began in 2000 (Obayemi, 2014).

With the advent of a national telecommunications policy (NTP) in September 2000, the roles of the NCC was explicitly stated to include: serving as the independent regulator of the telecommunication industry, issuance of licenses, assign frequencies, and protection of telecommunication customers and perform every other regulatory functions that promote the development of Nigerian communication industry. Among the NCC's most prioritized responsibilities was to rapidly grow Nigeria's telecommunication infrastructure and achieve telecommunication market competitiveness, all in a bid to ensure enhanced service quality and easy access to telecommunication services (Ndukwe, 2011).

The new licensing process for mobile operators opened by mid-2000 and by January 2001 four operators: ECONET, MTN, Communications Investment Limited (CIL) and NITEL were acknowledged as successful bidders. However, CIL forfeited its license after failing to meet up with the deadline for making payment of the required fees. The challenge associated with the period was the seemingly duopoly practiced by MTN and ECONET. This was such that the industry was still characterized by high call rates and exploitative products and services (Andrey, 2011). Nonetheless, since 2000 when the telecommunication industry was liberalized, there has been growth in number of subscribers, more licenses have been issued and increased competitions among operators and vendors have been the hallmark of events in the industry (Sadiq, Oyelade & Ukechukwu, 2011).

On August 29, 2003, Globacom joined the cast of telecommunications business in Nigeria, launching its full service in most parts of the country. This was done in a way to help deepen competition among the operators, as the new entrant throwing up competitive challenges against the older operators—MTN and Econet (now Airtel). Among its major entry strategies was an aggressive cost-based, per-second billing introduced right on arrival as the unique selling proposition. With a population of more than 170 million, Nigeria's subscriber base represents a teledensity of 81.97%. Teledensity is a measure of the percentage of the population that owns or has access to a phone, measured per hundred people. With the coming of Etisalat as a fourth major player in the telecommunication industry, competitions have greatly increased, especially across the voice call and data services of the GSM sub-market.

Therefore, there are currently four dominant players, namely, Airtel, Etisalat, Globacom and MTN in GSM sub-market of the telecommunications industry, and while similar patterns of dominance by these 4 are observed in internet-related services, numerous opportunities exist especially in the other ICT subsectors, such as the development of 4G networks, cloud computing services, and the provision of faster-than-average internet speeds, using for instance fiber-optic cables. Nigeria already has fiber-optic links at its shores, namely Main One, Glo 1, and WACS, and numerous opportunities exist in providing the necessary infrastructure to ensure these cables are fully utilized.

It is worthy to note that in terms of sheer numbers, Nigeria is the largest telecommunications market in Africa and the Middle East. But even more interestingly, it still has the ability to increase its figures; there are roughly 50 million unserved Nigerians, and that is one of the reasons Nigeria's telecommunications industry is the fastest growing in Africa.

Nigeria's telecommunications industry currently contributes about 8.53% to the Gross Domestic Product (GDP), and is thus a major player in driving the Nigerian economy.
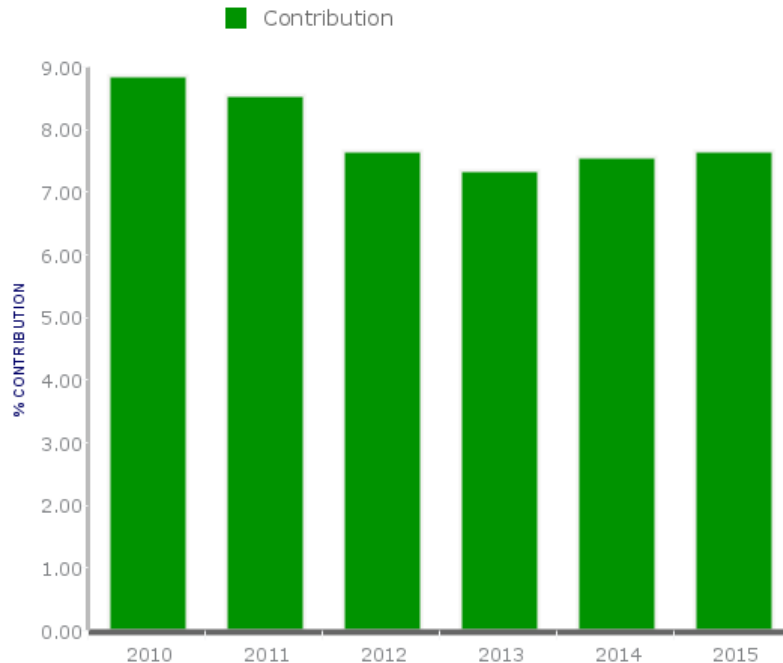
**Source: Nigeria Communications Commission (2016)**

**Fig. 1.2: Percentage Contribution of Telecommunication Industry to GDP**

## 1.12    Definition of Terms

The following terms are defined for the purpose of this study.

**Customer Satisfaction:** Extent to which customer derive utility from a firm's product/service and the attention offered by firms' representatives.

**Data Envelopment Analysis (DEA):** A linear programming technique which measures efficiency based on differences between units of a firm.

**Decision Making Unit (DMU):** Functional units or departments or strategic business units of an organisation which are used during a DEA investigation.

**Entrepreneurial Orientation:** It is the ability of the firm to organize its activities and decision making processes to reflect entrepreneurial characteristics such as proactiveness, competitive aggressiveness, autonomy, innovativeness and risk-taking attitude (Callaghan & Venter, 2011).

**Explicit Knowledge:** Codified or documented form of knowledge that can be found in corporate policies, repositories and organisational knowledge management infrastructure.

**Firm Performance:** Degree to which a firm is able to achieve its strategic goals and satisfy expectation of stakeholders (including customers).

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**Group-explicit Knowledge:** Represents codified knowledge which is contained in organisational policies, manual and repositories.

**Group-tacit Knowledge:** It involves the collective expertise and mental efforts members of the organisation.

**Individual-explicit Knowledge:** This include codified aspects of organisational members' personalised knowledge; such as knowledge gained from education and training.

**Individual-tacit Knowledge:** This include personalised knowledge to organisational members that is gained through skill, expertise and years of experience on the job.

**Knowledge:** Davenport and Prusak (1998) describe knowledge as "a fluid mix of framed experience, contextual information, values and expert insight that provides a framework for evaluating and incorporating new experiences and information."

**Knowledge Creation:** Refers to the manipulation of existing organisational knowledge to develop new knowledge.

**Knowledge Management:** It is the management activity that ensure that organisational knowledge resources are effectively integrated to achieve its goals (Mciver, Lengnick-Hall, Lengnick-Hall & Ramachandram, 2013).

**Knowledge Sharing:** It is the transference of organisational knowledge among individuals and groups in the firm.

**Knowledge Strategy:** It is the engagement of strategic dimensions that develop from possible interactions of a firm's knowledge-based resources and capabilities in relation to its organizational strategy as a means of achieving and sustaining competitiveness.

**Learning Orientation:** Overall disposition of the firm towards learning and gathering new knowledge as may be found relevant to its business operations.

**Market Orientation:** It reveals the firm's decision to provide value to its present and potential market through a blend of responsive actions that focus on customers, competitors' reactions and inter-organisational connectedness (Naver and Slater, 1990).

**Operational Efficiency:** A firm's ability to optimize resource output given a level of input.

**Organisational Effectiveness:** Organisational effectiveness implies the capability of the firm to attain its broad goals, cutting across internal and external stakeholders' requirements (Zoogah, Peng & Woldu, 2015).

**Organisational Knowledge:** It reflects the capability of members of the firm to work individually and as a team through the use of their intellectual assets and the firm's intelligence systems to achieve organisational objectives.

**Organisational Orientation:** Organisational Orientation is a concept that describes the "strategic directions implemented by a firm to create the proper behaviors for the continuous superior performance of the business" (Liu & Fu, 2011). It is an important managerial tool that aims at positioning firms for superior performance and competitive advantage.

**Strategy:** Strategy is the direction and scope of an organisation over the long term which achieves advantage for the organisation through its configuration of resources with a changing environment and to fulfill stakeholder's expectation (Johnson & Scholes, 2008).

**Strategic Management:** Strategic management is a set of decisions and actions that result in the formulation and implementation of plans designed to achieve a company's objectives (Pearce & Robinson, 2003).

**Tacit Knowledge:** Knowledge that is highly personal to individuals or to a group which is difficult to express through language, except when put into action

**Telecommunication Industry:** A collection of firms involves with oversight of the exchange of communication through electronic means.

# CHAPTER TWO

# LITERATURE REVIEW

**Preamble**

Chapter two focused on Literature review and is divided into the conceptual, theoretical and empirical frameworks. Concepts that were discussed in this research include the meaning of knowledge, typologies of organisational knowledge, the dimensionalities of organisational orientation that are considered in this study, and relevant aspects of organisational performance to this research work. Theories that are relevant to this study were also reviewed and properly discussed. The chapter includes empirical findings from earlier researches of scholars.

## 2.1    Conceptual Framework

## 2.1.1  The Concept of Knowledge

Defining knowledge as a concept has attracted a number of attention from researchers. According to Nonaka (1994), knowledge is justified true belief. This assertion is considered to be quite subjective, such that a person's justification about correctness of any subject depends on his or her individual perception (Hunt, 2003). Thus, there is no allowance for generalized validation of truth. Therefore, he suggests that the term 'truth' should be replaced with 'correct' so that whatever is being held as belief can be scientifically validated and more generally acceptable. Besides, whatever is described as knowledge will only fit to be so called when it is justified by experts/professionals in the concerned area(s).

In another view, Tsoukas and Vladimirou (2001) opined that knowledge is the capability a person has to "draw distinctions, within a domain of action, based on an appreciation of context or theory, or both". Their definition pulls attention to a number of important issues including the fact that knowledge is as much a productive resource which is embedded in people (Blakeley, Lewis & Mills, 2005). Spelke, Breinlinger, Macomber and Jacobson (1992) placed more emphasis on the individual origin of knowledge. In their research, the

engagement of young infants to detect early developing capacities of reasoning revealed that human cognitive abilities develop alongside perception and action. However, whatever conceptions a person has about a subject or object it is always likely to change with growth in knowledge. This characteristic of knowledge reflects organisational economics' view of the cumulative nature of knowledge.

The above discussions notwithstanding, rarely have we found in literature specific answers as to whether, and to what extent, knowledge is context free or context bound/specific (Greenhalgh, 2010). Gaining insight from Cheng's (1994) description of 'context-exclude' and 'context-embedded' universality of knowledge, one can relate that knowledge that is context-free is that which is generated or created from a person or organisation but can be applied beyond the boundaries of such organisation. Context-bound knowledge, on the other hand, relates specifically to the need of a person or organisation. Such knowledge is designed such that competing firms find it difficult to imitate and must need go through the same experiences that the possessor of such knowledge has been through (Zack, 1999).

## 2.1.2   Concept of Organisational Knowledge

The concept of organisational knowledge was popularised by Drucker (1993), and there has been increased research interest in its understanding and application. The assertions of Jackson, Hitt and Denison (2003) and Kai, Wei and Meng-Lin, (2014) suggest that the greatest transformations in the twenty-first century business environment largely depend on the creation, exploitation and management of knowledge. Therefore, organisational knowledge creates a platform for business managers to re-engineer their business processes to become knowledge driven. An advantage of knowledge driven processes in organisations is that it places the organisation in a vantage point where values are delivered and competitors find it difficult to adopt/imitate the organisation's initiatives. According to Sbaffoni (2010) competitive advantage is a function of the organisation's ability to be innovative in its business processes; and innovation is driven by organisational knowledge (David & Foray, 2003). Indeed knowledge determines organisations' efficient utilization of every other resources (Omezerel & Gulez, 2011). Studies on knowledge seem to present differing views of the exact meaning of organisational knowledge (Quintane, Caselman, Reiche & Nylund, 2011). According to Abrahamson and Goodman-Delahunty (2014) organisational knowledge represents what

is known by members of an organisation. This perception of organisational knowledge applies to a state of the consciousness of organisation's resources and capabilities within the framework of its defined environment to achieve and/or sustain optimal performance. De Brún (2005) on the other hand, perceived the act of knowing as a systematic pattern of familiarity, awareness and understanding gained through experience and through learning, and results from making comparisons, identifying consequences, and making connections.

Organisational knowledge is thus, the state of arriving at a consciousness over events, situations, objects and subjects through an experiential process. Organisational knowledge is the application of information to real life situations. Sbaffoni (2010) is of the opinion that organisational knowledge is information that changes a subject – either by becoming a basis for actions, by making an individual (or an institution) capable of different and more effective action. Indeed, organisational knowledge consists of the overall awareness that employees of a firm have about their operating environment, including customer expectations and experiences, competitors' present and intended strategies, technological advancements, government regulations, organisational resources, capabilities and competence.

Thus, management's attention should be focused on the intangible resource that is difficult to imitate than on physical resources which can be more easily duplicated. It is also important that such knowledge should be organised in ways that would permit the firm to achieve its strategic intent and performance strategies, thus ensuring that it becomes content specific and unique to the firm, making it difficult for imitation by competitors. Essentially, organisational knowledge is the appropriate engagement of information to achieve more effective organisational outcomes. Knowledgeable members of an organisation are therefore people who act in this manner. Organisational knowledge has become the most important strategic resource, which organisations engage for competitive advantages in the business environment (Nonaka & Toyama, 2003). Moreso, human cognitive processes have been identified as important elements in the transformation of information to organisational knowledge (Jeong, Chang & Ribarsky, 2008).

Davenport and Prusak (1998) describe knowledge as "a fluid mix of framed experience, contextual information, values and expert insight that provides a framework for evaluating and incorporating new experiences and information." This position identifies human perceptions, experiences and mental framework as major elements that define the scope of

how information translates into knowledge. Nonaka and Toyama (2003) identified that a major characteristic of organisational knowledge is that it is created as human engage in interactions or relationships. Its survival and continuous existence is ensured as it is disseminated and exchanged among a significant number of persons and across circumstances (Abhary, Adriansen, Begovac, Djukic, Qin, Spuzic, Wood & Xing, 2009). Although there exist several classification of organisational knowledge, the most frequently investigated classification is tacit and explicit knowledge (Kongpichayanond, 2009). Table 2.1 shows the typology of organisational knowledge as viewed by several authors and Scholars.

**Table 2.1: Typology of Organisational Knowledge**

| S/No | Source | Organisational Knowledge Type and Characteristic |
|------|--------|-------------------------------------------------|
| 1 | Jong and Ferguson-Hessler (1996) | - Situational knowledge: Knowledge about situations as they typically appear in a particular domain.<br>- Conceptual knowledge: Static knowledge about facts, concepts, and principles that apply within a certain domain.<br>- Procedural knowledge: Actions or manipulations that are valid within a domain.<br>- Strategic knowledge: Organizes problem-solving processes into stages that direct its users into reaching a solution. |
| 2 | Nonaka (1997) | - Tacit: Subjective and experience based knowledge that cannot be expressed in words, sentences, or figures. It is context specific.<br>- Explicit: Objective and rational knowledge that is not context bound. It includes theoretical approaches, problem-solving manuals and database. |
| 3 | Berge and Hezewijke (1999) | - Procedural: Knowledge of how to do things. It also involves skills that are difficult to express verbally but can be shown by means of performance.<br>- Declarative: It is symbolic knowledge. It involves knowledge that can be thought and spoken about explicitly. |
| 4 | Ardelt (2000) | - Intellectual Knowledge: Quantitative kind of wisdom that suggests that knowledge is limitless. It is concerned about individualistic and particularistic issues.<br>- Wisdom-related Knowledge: Qualitative in approach and accepts the limits of knowledge for human beings. It is concerned about collective and universal issues. |
| 5 | Jorna (2001) | - Tacit or Perceptual: Knowledge gained from experience; very detailed about certain specific domain<br>- Coded Knowledge: Emerge as a result of the relationship between two events (known as two-dimensional signs).<br>- Theoretical Knowledge: Emerge on the basis of a logical or formal relation between the perceptual difference and codification. |
| 6 | Anderson and David | - Factual Knowledge: Knowledge of terminology, |

| | | |
|---|---|---|
| | (2001) | - specific details and elements.<br>- Conceptual Knowledge: Knowledge of theories, models, structures, principles, generalizations, classifications and categories.<br>- Procedural Knowledge: Knowledge of specific skills and procedures, methods and use of procedures.<br>- Meta-Cognitive Knowledge: Self-knowledge, strategic knowledge and knowledge of cognitive tasks. |
| 7 | Pawson, Boaz, Grayson, Long and Barnes (2003) | - Organisational Knowledge: gained from organizing social care.<br>- Practitioner Knowledge: gained from doing social care.<br>- Policy Community Knowledge: gained from wider policy context.<br>- Research Knowledge: gathered systematically with a planned design.<br>- User and Career Knowledge: gained from experience of and reflection on service use. |
| 8 | Morten, Björn, Edward and Bengt (2007) | - Explicit versus Implicit: Explicit knowledge is written down, can be passed on to others and absorbed by those who can read and understand it.<br>- Local versus global knowledge. |
| 9 | Fueston (2008) | - Revealed Knowledge: Knowledge infused by God through His prophets and words of Jesus Christ.<br>- Scientific Empirical Knowledge: Results of disciplined, or scientific, investigations of empirical reality-directly accessible to human perceptions and directly understandable by the human mind.<br>- Speculative Knowledge: The result of human contemplations upon revealed knowledge or scientific empirical knowledge or practical empirical knowledge.<br>- Practical Empirical Knowledge: Composed of habits and procedures. |
| 10 | Arnd-Caddigan and Pozzuto (2008) | - Socal work Knowledge.<br>- Professional Knowledge.<br>- Practice Knowledge.<br>- Technical-rational Knowledge.<br>- Knowledge in Action. |
| 11 | Andreu, Baiget and Canals (2008) | - General purpose knowledge: knowledge based on the standard requirements.<br>- Firm specific knowledge: knowledge that is unique to a firm and difficult to imitate by other firms. |
| 12 | Rittle-Johnson and Schneider (2015) | - Conceptual Knowledge: Knowledge about what is known (concepts) relating to facts and principles.<br>- Procedural Knowledge: Knowledge about series of steps, or actions, done to accomplish a goal. |

**Source: Ardelt (2000), Arnd-Caddigan & Pozzuto (2008) and Rittle-Johnson and Schneider (2015)**

Table 2.1 above describe different types of organisational knowledge that exist. These types of knowledge outlined are as described in existing literature, such as Berge and Hezewijke (1999) and Ardelt (2000). Jong and Ferguson-Hessler (1996) described four

types of organisational knowledge, namely: situational knowledge, conceptual knowledge, procedural knowledge and strategic knowledge. Situational knowledge is knowledge which organisational managers have about events that surround the organisation's existence. Conceptual knowledge is knowledge of principles, theories or facts that derive solutions for organisational existence. Procedural knowledge include actions and the use of expert skills that can help to drive organisational objectives. Strategic knowledge is knowledge that can give direction to the vision and overall strategic path of the orgaisation.

Arnd-Caddigan and Pozzuto (2008) described the types of knowledge based on individual skill and professional expertise. Social work knowledge include knowledge that is necessary for executing social tasks, such as humanitarian endeavor. Professional knowledge is knowledge needed to carry out expert services, such as knowledge gained from formal education. Practice knowledge is hand-on knowledge, which relate to exercising formal knowledge on the job. Technical-relational knowledge is knowledge that is gained from technical skills and can be useful to the professional knowledge. Knowledge in action is the application of all kind of knowledge to practical use.

All kinds of organisational knowledge have been argued to be embedded in the major types, namely: tacit and explicit knowledge (Nonaka 1997). Tacit knowledge is knowledge that is embedded in human minds. It is subjective to situations that require its expression and it is context specific. Explicit knowledge, on the other hand, is objective knowledge which is contained in organiisational manuals, policies and information technology infrastructure. Since Nonaka (1997) conceptualized organisational knowledge as tacit and conceptual knowledge, researchers, such as, Yang and Farn (2009) and Zheng, Yang and McLean (2010) have embrased it and examined it within different global context. Moreso, Cook and Brown (1999), Lam (2000), Nonaka and Toyama (2003) and Fei, Chen and Chen (2009) have extended the tacit and explicit knowledge to individual and group dimensions in the organisation. These views attempted to examine organisational knowledge as an organisational resources that is embedded in human minds and that can be translated to visible documents that sustain culture and achieve organisational objectives.

### 2.1.3 Measuring Organisational Knowledge

A large number of studies on organisational knowledge can be traced to Polanyi's (1958) and Wittgenstein's (1953) works on the individualism and collectivism of knowledge. The measurement of organisational knowledge has been diverse and inconsistent in organisational knowledge-based research. Spender (1994) examined organisational knowledge by developing a two by two matrix using the explicit-implicit and individual-social distinctions. Their combination gave rise to four different types of organisational knowledge: conscious knowledge, which is explicitly practiced by individuals; automatic knowledge, which are implicit and at the individual level; objective knowledge, which is implicit at the social level; and collective knowledge, which is implicit at the social level. Tsoukas and Vladimirou (2001), on the other hand, view organisations as a collection of knowledge assets. This view suggests that organisational knowledge is rather collective than individualistic. Their opinion indicates that contrary to Spender's (1994) construct of collective knowledge, organisational knowledge is itself collective.

Nonaka's (1994) research on organisational knowledge creation brought a new turn into knowledge-based research. The aim of the research centered more on exploring generation and application of knowledge in organisations rather than attempting to further understand the concept. In other words, measuring organisational knowledge might be linked to identifying how it is generated and applied. Other researches have followed suit but with distinct forms and topics, such as knowledge sharing, knowledge transfer, investigations into knowledge types and the likes (Garrido-Moreno & Padilla-Meléndez, 2011; Moore, 2012; Shamsie & Mannor, 2013; Routley, Phaal, Anthanassopoulou & Probert, 2013; Zheng, Yang & McLean, 2010). Authors like Cook and Brown (1999) and Tsoukas and Vladimirou (2001) suggest that attention is still needed in the areas of exploring and developing constructs that adequately measure organisational knowledge.

The limitation identified with previous works on organisational knowledge is that they portray one type or classification of knowledge as being superior to others. For instance, viewing explicit knowledge to be of higher impact than tacit knowledge may be bias. In fact, such view does not provide a true measure to knowledge. The role of knowledge in stimulating customer interest in an organisation's products and services, for instance, might not always be achieved through explicit knowledge. A sales man on the field might require more than what is documented in the organisation's repository to win a customer under certain conditions; his/her expertise might be a better alternative. Therefore, for the

purpose of this research work, all knowledge have the same importance (Cook & Brown, 1999).

### 2.1.4 Organisational Knowledge as a Strategic Resource

Within the last two decades, there has been increasing awareness among firms across global cultures about the importance of knowledge in achieving and sustaining organisational competitive performance. Knowledge as a strategic resource within the organisational context has been examined in literature, such as, Garrido-Moreno and Padilla-Meléndez (2011); Moore (2012); Routley, Phaal, Anthanassopoulou and Probert (2013). Proponents of the resource based view of the firm have argued that knowledge is an important resource of the firm and which the firm has control over (Wernerfelt, 1984; Barney 1991). According to Sbaffoni (2010), whereas innovation drives organisational competitiveness, but innovation is actually driven by knowledge.

Wiklund and Shephered (2003) suggested that an organisation's ability to discover and exploit competitive opportunities depends on its knowledge resource. Omezerel and Gulez (2011) asserted that organisational knowledge is the most important intangible resource of any organisation because it is the most difficult to imitate. Knowledge has the ability to acquire and sustain a unique competitive position for the organisation. To achieve this, Sharma and Mishra (2007) opined that successful firms do acknowledge the need for applying knowledge across their range of resources.

As a source of creating a competitive advantage that is hard to imitate across industry and by other firms, the resource based view suggests that an organisation's knowledge resource must be homogenous and inaccessible by competitors (Barney, 1991). Abdollahi, Rezaeian and Mohseni (2008) identified that such kind of knowledge is embedded in the tacit knowledge of the organisation's human resources, it is enclosed in the organisational routines and developed from learning. An attempt of competitors to imitate and acquire this knowledge requires that they engage in such experiences, which could be pains taking and time demanding.

Zack (1999) further observed that in an industry where resources are closely identical, an organisation with a unique knowledge about how to combine and manipulate these resources will stand out. Therefore, it is important to suggest that an organisation's level of industry competitiveness is linked to its knowledge, that is, the quality and degree of

knowledge about the internal and external contexts that surround its operations and the modalities involved. Information gathered through organisational mechanisms, especially from employees, must be translated into knowledge to be viable and unique (Kok, 2004). This is achieved through an assessment process in which top management and their team filter available information to fit into the unique strategic intents of the firm. Then it must be imparted into the human resource and every other business process of the organisation to make it unique to the firm and a competitive knowledge resource.

Organisational knowledge reflects in its business processes and be driven by the human, processes, infrastructural and technological resources of the organization (Kok, 2004). Donnellan and Bruss (2004) also agreed that incorporating knowledge into business activities can result in higher returns for the organisation. In his own argument, Zack (2005) suggested that for knowledge to act effectively as a competitive resource, it should yield advantageous outcomes which help in achieving the organisation's competitive strategy. Also, Venkitachalam, Scheepers and Gibbs (2003) opined that competitive knowledge as a strategic resource should present the organisation's activities as unique and value adding apart from those of its competitors.

## 2.1.5 Dimensions of Organisational Knowledge

Cook and Brown (1999) proposed a typological scaling of organisational knowledge. In their model two types of knowledge: tacit and explicit, are grouped along human based dimensions: individuals and groups. One of the remarkable feats of this means to measuring organisational knowledge is its inclusion of humans as the central possessors of knowledge. Indeed organisational knowledge resides in humans and is only provable by action (Nonaka & Toyama, 2003). Lam (2000) while agreeing with the typological measurement of organisational knowledge suggested that it reveal the collective mindset of organisational members and the state of storing and sharing knowledge through informational technology based devices and through human forms. Consequently, Fei, Chen and Chen (2009) conceptually itemized important components of the organisational knowledge matrix. This is depicted in Table 2.2 (see page 28).

**Table 2.2: Organisational Knowledge Dimensions**

| | Individual | Group |
|---|---|---|
| **Tacit** | Individual Tacit<br>- Skills/expertise<br>- Experience<br>- Attitude | Group Tacit<br>- Image<br>- Culture<br>- Customer and Supplier relationships<br>- Other external relationships |
| **Explicit** | Individual Explicit<br>- Education<br>- Training | Group Explicit<br>- Technologies and information systems<br>- Process manuals<br>- Intellectual property<br>- Corporate policies |

**Source: Fei, Chen and Chen (2009); Cook and Brown (1999)**

**i.      Individual Tacit Knowledge**

According to Smith (2001) tacit knowledge is personalized knowledge to organisational members especially when "high-level strategic problems" are involved such as handling uncommon customer queries which the firm's information bank cannot readily answer. Wright and McMahan (2011) suggested that it is vital to examine organisational knowledge as an individual organisational asset before considering the aggregate impact it could have on the organisation. Their argument derives from Ployhart and Moliterno's (2011) view that simply aggregating the knowledge found in a unit will fail to help decision makers to identify and measure how individuals are contributing to the overall performance of the organisation, using their knowledge.

Individual-tacit knowledge can be captured based on skill and expertise, experience and attitude (Fei, Chen and Chen, 2009). Goodall and Baker (2015) argued that individuals who possess expert knowledge are experienced both in their industry's operations and their core areas of business. In their view, possessors of this kind of knowledge should be allowed to serve in leadership capacity of knowledge intensive organisations. Marie-Line (2006) asserted that individuals who are experts demonstrate attributes such as applying knowledge to dynamic processes and deliberately get involved in practices that enhance organisational performance. Lengnick-Hall, Beck and Lengnick-Hall (2011) opined that expertise is an important dimension of an organisation's resilience which enhances

individuals' ability to take decisions that are consistent with the organisation's core values and help it respond to changing environmental conditions.

In a study by Milana and Maldaon (2015) on the effect of managerial characteristics, such as years of experience, on the performance of Syrian based public organisations, findings showed that managers of public instiututions are able to use tacit knowledge gained from years of experience to deal with issues revolving their job tasks to yield higher performance levels for their organisation. In another study that was comparative in nature, Kotur and Anbazhagan (2014) revealed that individuals with more years of experience on their job were better committed to delivering quality outputs than those who were not. However, they also showed that with time, employees who have more than twenty years of experience seemed to be less productive, especially when their job tasks are perceived to be boring.

## ii.    Individual Explicit Knowledge

Individual explicit knowledge consists of codified aspects of personalized knowledge. It includes education and trainings which are not necessarily unique to individuals and are yet very essential to the fulfilment of organisational tasks (Fei *et al.,* 2009). According to Lam (2000) it could also include individual's conceptual skill. Kotur and Anbazhagan (2014) observed that education as a form of individual explicit knowledge does not simply consist in the fact that an employee has earned some sorts of certificate from a formal institution, but that they have undergone the basic training that enhances mental capacity for effective and efficient delivery of job tasks.

Odhon'g and Omolo (2015) studied the importance of investment in human capital on organisational performance. Their study reported that specifically, training and educational background of individual employees in the firm are vital to the organisation's industry performance. In their view, these two dimensions have a strong influence on the rate with which organisational members are able to express the use of knowledge and skill on their job tasks.

Ng and Feldman (2009) suggested that the extent to which individuals engage their explicit knowledge dimensions, such as educational levels, could impact on their effectiveness in executing fundamental job tasks for which they were recruited, their openness to demonstrating organisational citizenship behaviours and avoidance of practices which could be detrimental to the success and overall productivity of the

organisation. The view points to the fact that individuals' engagement of explicit knowledge at the work place can benefit the firms internal and external interests, such that customers derive optimal benefit in transacting with the organisation through its employees and at the same time, the organisation's strategic objectives are being pursued with a common positive interest. In a comparative analysis carried out by Kotur and Anbazhagan (2014), employees with superior levels of education have a higher passion to deliver quality outputs on their job than individuals with lower levels of education.

Scholars have also argued about training as an indicator of individual's explicit knowledge and the extent to which the overall organisation encourages its members to continuously engage in learning (Niazi, 2011; Norashikin, Amnah, Fauziah & Noormala, 2014).

Consequently, Bulut and Culha (2010) suggested that organisational managers should approach the training needs of individual employees of the organisation from a multi-dimensional perspective. These include: ensuring that strategies are in place to motivate employees to participate in, and easily access training opportunities; employees should be encouraged to realize, in practical terms, the benefits attached to training exercises. They also argued that organisations should support employees' willingness for training. Shaheen, Naqvi and Khan (2013), in their research demonstrated the importance of training, as an individual explicit knowledge, on the performance of teachers in public schools. Salas, Tannebaum, Kraiger and Smith-Jentsch (2012) opined that the way organisations go about designing, communicating and implementing training programmes are very significant aspects to focus on. This claim was in their support of the fact that the explicit knowledge derived and expressed by individual employees through training can have a major effect on organisational outcomes, In their opinion, training programmes should be skillfully planned and monitored before, during and after the training exercise.

iii.     **Group Tacit Knowledge**

Group tacit knowledge is collectively shared firm's image, culture and patterns of relationships with the external environment (Fei, Chen & Chen, 2009). Erden, von Krogh, and Nonaka (2008) opined that a firm's group tacit knowledge could reflect in the capacity of its members to execute agreed upon tasks with their collective mind in the case where explicit means are not available.  This view presents group tacit knowledge in organisations as a substitute for explicit knowledge such that where one is present the other might not be of necessity. However, there are organisational tasks which by

necessity require the expertise of tacit knowledge of collective mental efforts from more than one individual in the organisation (Swart & Pye, 2003). Much about Orlikowski's (2002) empirical study on "knowing in practice" can be captured by the group tacit dimension of organisational knowledge. Thus, firm's shared identity, face-to-face interactions and alignment of efforts through the use of common models would be essential means of transmitting tacit knowledge among members of an organisation.

According to Urbancová (2013) organisations can benefit from the knowledge sharing process of their knowledge workers to enhance innovation and thus achieve high performing firms. Vital to this process is the ability of these knowledge workers to exploit their collective experiences as a means of creating value-adding products/services for the firm and its customers. Often, we speak of community of practice which involve the flow of knowledge among experts in the same or similar profession. Group tacit knowledge utilisation can be discussed in two forms: a state where organisations attempt to extract tacit knowledge of individuals or groups and transform it into explicit forms that can be reused at any point of the organisation's existence and need. The other means include the use of group tacit knowledge in its tacit form to create value for the organisation. Swart and Pye (2003) acknowledge the possibility of the latter case.

Alwis and Hartmann (2008) and Goffin and Koners (2011) opined that the complex process of developing new products and innovative projects within organisations very often require this form of group-tacit knowledge interactions which are highly personal and informal in nature. In their view, organisation's management must facilitate the sharing of tacit knowledge among groups by ensuring that there are mechanisms put in place to motivate employees, secure their commitment and reward them for sharing their knowledge. Also, organisational structures, should be one that support tacit knowledge transfer in the easiest possible way.

According to Mahroeian and Forozia (2012), organisational management must be mindful of dealing with length of time, value, perception and language, and distance, as critical factors when considering tacit knowledge sharing among groups. In their view, these factors could pose as barriers to the knowledge sharing process if not adequately addressed. Hostle and Fields (2010) also share that trust issues could hinder tacit knowledge utilization among groups. They revealed that two major types of trust must be concentrated on, they are: affect based trust and cognition based trust. It is therefore

important that organisation's management ensure that employees create relationships based on mutual interactions (affect based trust) and that they place recognition on one another's expertise (cognition based trust) during the knowledge sharing process.

Pivar, Malbašic and Horvat (2012) examined the role of personality and attitude of employees on group tacit knowledge use in organisations. They therefore, emphasized the importance of mentoring and coaching as means of group tacit knowledge sharing. However, Kothari, Rudman, Dobbins, Rouse, Sibbald and Edwards (2012) posited that mentoring will be more effective within groups with a composition of people that act, think and agree together. In other words, group composition must consist of like minds. They also shared the importance of story-telling by mentors, coaches and group members as strategies of tacit knowledge sharing among groups.

## iv. Group Explicit Knowledge

Group-explicit knowledge represent codified forms of knowledge which are contained in firms' policies and procedures and most often passed through signs and symbols (Lam, 2000). It also reflects what organisations have in their database, process manuals and produce through intellectual property (Fei, Chen & Chen, 2009). A common characteristic of the group explicit knowledge is that behavioural outcomes of organizaions when dwelling of this knowledge are highly predictable (Lam, 2000). Group-explicit knowledge has been described in organisations in form of internal organisational memory. According to Englis, Englis, Solomon, Valentine, Bieak and Turner (2006), organisational memory is the store of information and knowledge which the firm can retrieve and replicate among organisational members. The importance of such communised knowledge among organisational members is to foster unified understanding of organisation's strategic directions and ensure that every member of the firm is pursuing that common objective. Enhancing team work and effectiveness among employee groups can be achieved through group-explicit knowledge.

Most of the discussions in existing literature about group-explicit knowledge reflect the capability of organisational members of share and utilize knowledge that is stored in the organisation's informational technological systems (Madhoushi, Sadati & Delavari, 2011). López-Nicolás and Merono-Cerdán (2011) observed that explicit knowledge of groups in the organisation influences on its financial, process and internal performance. Alegre,

Sengupta and Lapiedra (2011) posited that knowledge storage and dissemination among groups can enhance innovative performance in the organisation.

## 2.1.6 Individual and Collective Knowledge in Organisations

Organisations are made up of individuals who are saddled with responsibilities that are targeted at achieving the overall organisational objectives. In pursuance of the overall organisational objectives, managers often rely on the capabilities, such as knowledge, of employees either individually or as a team or group (Chakravorti, 2011). Among strategic management scholars, arguments abound on the need to identify the influence of both individual employees and group of employees on organisational performance (Takeuchi, 2013). According to Kimmerle, Cress, Held and Moskalink (2010), the understanding of organisational knowledge should be based on intertwine of cognitive skills of individuals and the collective knowledge of organisational members.

Individual knowledge is the capacity of organisational members to use their personal experiences, values, believes and discretions to analyze their organisational environment and enhance performance (Cecez-Kecmanovic, Jerram, Treleaven & Sykes, 2002). Bhatt (2002) suggested that the need for individuals' knowledge to be utilized in the workplace is evidenced by the prevailing dynamism that characterizes the business environment. In this view, individuals are believed to be confronted with situations that are dynamic and challenging, such that organisational routines and procedures might not be capable to speedily provide solutions to the dynamic situations confronting customers. The importance of organisational culture in guiding and enhancing the use of individual knowledge was also mentioned (Bhatt, 2002). Burton, Wu and Prybutok (2010), suggested that where complex organisational situations, demanding interdisciplinary knowledge arise individual knowledge might not be a viable alternative to solving such issues, thus group knowledge will be a basic requirement.

One of the most prominent organisational means of enhancing group knowledge utilization in organisations is boundary spanning. Behavioural management research suggest that boundary spanning involves organizational members' influence over their workplace performance by creating and sustaining relationships with other individuals or units (Cross & Cummings, 2004). Zhao and Anand (2012) proposed a collective bridge pattern that demonstrates how individual and group knowledge interactions within organisations can take place. In their view, the collective bridge occurs during the

interaction of sharing and transfer of complex knowledge between the source and receiving units. Knowledge complexity is defined by the extent to which there are interdependencies among units of expertise in the overall knowledge community.

More prominently, group knowledge sharing have been discussed in literature through the concept of communities of practice (Fang & Chiu, 2010). Wenger (2011) described communities of practice as a collection of experts who engage in knowledge based interactions on subjects of interest with a view of finding better ways of doing things. The understanding of communities of practice was further extended by Oborn and Dawson (2010), to include multidisciplinary knowledge sharing. In their argument, communities of practice include the cross fertilization of ideas, reasoning and knowledge from specialists in different fields that relate to the execution of a particular project of interest. Within organisational context, communities of practice research works have covered prominent fields such as primary health care (Soubhi, Bayliss, Fortin, Hudon, van den Akker, Posel & Fleiszer, 2010), virtual communities of practice (Fang & Chiu, 2010), and professional education (Polin, 2010).

### 2.1.7   Tacit and Explicit Knowledge Sharing in Organisations

Resulting from the possibilities of experts and professionals leaving the firm, management science scholars consider it necessary that firms should have a strategy in place that can capture and retain knowledge from these experts. Knowledge management practices have thus become a common means through which organisational managers capture and share valuable knowledge from and among organisational members. Knowledge management, according to Halawi, Aronson and McCarthy (2005), is the deliberate attempt of the firm to use processes, structures and technology to capture or generate, store and retrieve knowledge of organisational members for the actualization of organisational objectives. Knowledge management ensures that the right knowledge to execute and achieve organisational strategies and objectives are made available to the right employees through the practice of knowledge sharing or transfer. However, knowledge management can only create competitive performance for the organisation when it is modeled to fit the organisational context (Zheng, Yang & McLean, 2010). This implies that organisations' knowledge management technologies would differ depending on their strategy, culture and structural peculiarities.  It is important to state that although several authors have discussed the knowledge management, sharing and transfer as independent concepts, there is a strong interconnection that tie them together (Alavi & Leidner, 2001).

In a bid to achieve knowledge retention in the organisation, the subject of knowledge sharing has become one of strategic concern for strategic management scholars and practitioners (Lawson, Petersen, Cousins & Handfield, 2009). Knowledge sharing is the process of acquiring, adapting and transferring expert knowledge from experienced professional members of the organisation to other members of the firm for the purpose of achieving organisational objectives (Ngah & Jusoff, 2009). According to Bhirud, Rodrigues and Desai (2005) organisations are increasingly appreciating the practice of knowledge sharing because knowledge shared increases the value of such knowledge. However, the major challenge facing most organisations relates to how they can go about motivating organisational members to share their knowledge (Gupta, Iyer & Aronso 2000; Quigley, Tesluk, Locke & Bartol, 2007). This is a major area of concern, especially since it has been shown that shared value among organisational members does not necessarily enhance their willingness for knowledge sharing (Yang & Farn, 2009). Therefore, in order to achieve maximum benefits for the organisation, managers should ensure proper management of the knowledge sharing process, such that employees who have agreed to share their knowledge would not become discouraged at some latter time.

Managing the knowledge sharing process involve identifying the two common steams of knowledge that exist in organisations. It was Polanyi (1958) who first identified and explained the comprehensive classification of organisational knowledge to include tacit and explicit knowledge. Since then organisational science scholars, such as Nonaka (1994) have proposed the SECI model that attempted to examine knowledge creation and sharing within organisational based on how knowledge continuously flows between the tacit and explicit interactions. In their view of the SECI model tacit and explicit knowledge can be shared through the processes of socialization, externalization, internalization and combination, at the different points within the spiral of knowledge. Based on these conceptualizations recent scholars have advanced reasoning about managing the knowledge sharing processes in organisations (Erden, von Krogh & Nonaka, 2008).

Sharing and creating tacit knowledge through direct experience

**Tacit** **Tacit**

Articulating tacit knowledge through dialogue and reflection

Tacit

Socialization · Externalization

Explicit

Environment

*Individual* *Group*

1. walking around inside the company
2. walking around outside the company
3. accumulating tacit knowledge
4. transferring of tacit knowledge

5. articulating tacit knowledge
6. translating tacit knowledge

Systemizing and applying explicit knowledge and information

Learning and acquiring new tacit knowledge in practice

Tacit

Internalization · Combination

Explicit

*Org*

7. gathering and integrating explicit knowledge
8. transferring and diffusing explicit knowledge
9. editing explicit knowledge

10. embodying explicit knowledge through action and practice
11. Using simulation and experiments

**Explicit** **Explicit**

I = Individual, G = Group, O = Organization, E = Environment

**Figure 2.1: Organisational Knowledge Creation and Sharing Model**
**Source: Nonaka & Toyama (2003)**

Socialisation is the process of converting tacit knowledge among organisational members through social interactions. It is considered to be greatly important to the organisation because it involves knowledge at the individual level. As such, knowledge sharing always occurs from one individual to the other and largely depends on the rate at which the learner is able to partake in the experiences of the knowledge possessor (Nonaka & Toyama, 2003). Tacit knowledge sharing through the socialisation process is commonly displayed through observations and imitation that occur when apprentices learn from the experiences and skillfulness of their masters. Apprentices are not often exposed to spoken words of guidance and written materials from their masters, rather they are made to learn and acquire knowledge by observing and practicing. Organisational members also gain tacit knowledge from relationships that they maintain with customers and suppliers.

Externalisation is the process of converting tacit knowledge to explicit knowledge among organisational members. The purpose for externalising tacit knowledge is to enhance accessability of such knowledge by other members of the organisation. Nonaka and Toyama (2003) observed that using dialogues with holders of tacit knowledge is a viable means to articulate and document their tacit knowledge in explicit forms. However, regardless of the efforts put in by managers to transform tacit to explicit knowledge, Smith (2001) opined that only about twenty percent of all knowledge that exist in the

organisation is actually utilized. According to Bratianu and Orzea (2010) organisational managers can enhance the knowledge externalization process through education and motivation of employees. They emphasized that tacit knowledge holders are always particular about a justification for sharing their knowledge through the transformation of their tacit knowledge into explicit forms.

Combination is the process of gathering explicit knowledge from within and outside the organisation and the processing of same to suit the organisation's purpose. Fernhaber, Mcdougall-Covin and Shepherd (2009) opined that organisations use combinative method of knowledge sharing and transfer through alliance partnerships and networking with other organisations. In order to gain from a newly established relationship of knowledge sharing, they established that organisations should enhance their absorptive capacity, that is, the extent to which an organisation is able to assimilate and develop new knowledge. According to Zahra and George (2002), absorptive capacity is developed through prior experiences and putting in place of relevant knowledge facilitators, for example information technology that aid learning and knowledge storage. This implies that organisations can either gain or lose in the combination process of explicit-to-explicit knowledge sharing and transfer process, depending on their existing knowledge capability (Nielsen, 2005). Bratianu and Orzea (2010) opined that knowledge sharing during combination can only occur from a higher order of knowing to a lower level of knowing. Such that, there is no knowledge transfer when an organisational member brings knowledge that a recipient is already aware of.

Internalisation is the process of individuals in the organisation converting the explicit knowledge that have been transmitted into tacit knowledge. According to Nonaka and Toyama (2003), internalisation occurs through individual's practical engagement with explicit knowledge such that as they adapt to and with the explicit knowledge, it becomes highly personalized. The process of individual employees, adapting explicit knowledge in innovative ways to organisational tasks makes it to develop into tacit knowledge that becomes an individual asset. The internalisation of knowledge demands a continuous process of commitment to practice and experimentation with existing explicit knowledge to create new knowledge; in some cases the new knowledge might need to disrupt the old knowledge to enlarge the individual's knowledge absorptive capacity and learning experience.

In a study that examined the effect of multiple dimensions of motivation on knowledge sharing, Quigley, Tesluk, Locke and Bartol (2007) observed that incentives alone have a weak influence on employees' willingness to share knowledge but with the interaction of norms relating to providers' willingness to share knowledge and the receivers' perception of relevance of the knowledge, a stronger relationship was found between incentives and knowledge sharing practices. In another study, Choi, Lee and Yoo (2010) found that team performance is not simply enhanced just because of knowledge sharing practices. They opined that the application of the knowledge shared was important for team performance to be improved. Thus, the engagement of transactive memory systems (TMS) and information technology in organisations must be such that the knowledge acquired from team interactions during project execution should be relevant to the needs of the tasks and enhance their ability to apply the shared knowledge to the need at hand. Besides all these, Yang and Farn (2009) suggested that management of organisations can motivate experts to share knowledge by ensuring that opportunities and resources are established within the system to facilitate this purpose.

## 2.1.8    Key Areas of Organisational Knowledge Gathering/Creation

According to Smith (2001) organisational knowledge should span across all aspects of the organisation's internal and external environment, its operations, and employee related issues. This holistic perspective to organizational knowledge is noted to enhance its competitiveness in the present business economy as it helps managers take informed decisions and build essential relationships based on their awareness of these surrounding environments (Ferreira & Pilatti, 2011). Therefore, it is pertinent that individuals and groups in the organization should gather knowledge on the following aspects/functions, among many others: knowledge of internal operating environment, customer-based knowledge, employee-related knowledge, competition-based knowledge, knowledge-based strategy, IT knowledge.

The internal operating environment of the organisation is a part of its business environment where it has dominant influence. It consist of factors such as its culture, management and operational structure and management styles. Gaining knowledge in these aspects implies that management of organisations are aware of diverse dimensions and catagorisations within which internal environment can occur. This awareness is vital to the way organisations design work systems and relationship patterns to aid effective

communication and knowledge sharing among members of the organisation (Chen & Mohamed, 2008). It reflects the way in which managers are beginning to transform highly formalised and structure organisational decision making processes to become nore dynamic, flexible and participatory, thus stimulating cross fertilization of knowledge at all levels of the organisation (Ferreira & Pilatti, 2011). Knowledge of internal operating environment enhances overall organisational competitiveness as it makes the organisation better responsive to customer demands.

Consequently, management and all members of organisations ought to be knowledgeable about customer in their chosen product market domain. Their knowledge about customers will have to include in-depth understanding of the personality type of customers and their preferences (Guchait, Namasivayam & Lei, 2010). It must include their awareness of their background and, to some extent, their family details. The essence of gathering this knowledge about customers is to establish a personal relationship with their customers, so as to meet their unique and specific needs (Bose & Sugumaran, 2003). More so, organisations' customer-based knowledge should also attempt to gain knowledge from customers (Gebert, Geib, Kolbe & Brenner, 2003). This implies gaining insight from customers' about their perception, for example, about how they are being served by the organisation and their level of satisfaction with the organisation's products and services. Eventually, customer-based knowledge enhances the organisation's customer orientation, in ways that make it more competitive in its chosen product market.

Employee related knowledge is also necessary to help organisational managers sustain mutually beneficial relationships with employees, build their confidence about the organisation and satisfy their needs more effectively (Katcher & Synder, 2007). The importance of knowledge in managing all levels of employees have also been emphasized (Urbancova & Linhartova, 2012). This is particularly important because all levels of employees fall into the category of either lower level, middle or top level management and thus are utilizers of some level of knowledge or the other in effective functioning on the job. Added to this, managing employees based on already acquired knowledge about them is an effective means of reducing retention rate in the organisation.

Competition-based knowledge is another key area of knowledge that organisational members must possess. This implies not just been aware of the competitors but of their competitive strategies and keeping up with industry best practices. More so competition-

based knowledge require that organisations encourage their members to build higher absorptive capacities by gaining wider scope of industry based learning and exploiting new prospects about their industry through interactions with employees in related organisations (Ferreira & Pilatti, 2013).

Knowledge-based strategy involves determining how the organisation designs its strategy around its present knowledge resource. It relates to determining how to go about exploiting or exploring its present knowledge as a means of achieving its strategic pursuits, identifying internal and external sources of knowledge that are necessary to achieve organisational strategies and specifying what knowledge type (tacit, explicit or both) is suitable for specific actions that needs to be carried out in the organisation at each given time. The knowledge-based strategy of an organisation emphasises knowledge and continuous learning as essential ingredients that must be linked to executing its strategic drives (Nicolescu, 2011).

Organisations should also have knowledge of IT that is suitable to their knowledge management objectives. This is because they must choose the approiate IT infrastructure that can achieve their knowledge generation/gathering, storage, distribution and sharing activities (Alavi & Leidner, 2001). The needed knowledge should be available at the right time and to the right persons to keep work processes on-going (Tippins and Sohi, 2003).

### 2.1.9 Performance Indicators in Organisational Research

Evidence from successful firms indicate that knowledge is a strategic resource that can achieve superior performance in the present complex business environment (Fang, Wade, Delios & Beamish, 2007; Sharma & Mishra, 2007). Knowledge engagement in business processes is considered a key variable in generating value and achieving superior performance (Martín-de-Castro, Delgado-Verde, López-Sáez & Navas-López, 2011). Organisational knowledge closely knits all strategic decisions of the organisation to its knowledge management systems as a way of achieving the organisational strategy (Kasten, 2007).

In line with Sin, Tse, Yau, Lee and Chow's (2004) and Wiklund and Shepherd's (2003) suggestions, the subjective approach to performance measurement which investigates organisation or firm specific attributes relative to that of competitors over a period of time is adopted in this study. According to Wang, Chich-Jen and Mei-Ling's (2010), research

performance can be measured in terms of financial, business and organisational effectiveness.

Financial resources contribute greatly to the company's success. Key performance measures to identifying the financial position of the firm include the following:

Total Assets: It is the total volume of the firm's financial capacity in terms of overall plant capacity. It measures the market value of all financial and capital resources of the enterprise as reflected in the annual balance sheet.

Total Liability: It is the total claim of all lenders, suppliers and other input stakeholders of the business. It measures the total debt owed to such parties as stated in the annual balance sheet.

Owners' Equity: Is defined as the financial stake of the firm owners. Thus, it measures the financial claims that are liable to the owners. This is calculated by subtracting the total liabilities from total assets.

Gross Revenue: This involves the total income from sales and all other sources, and is available to run various expenses. It includes the total production made by the firm, regardless of those sold or those held in inventory.

Total Expenses: It is the total fixed and variable cost incurred during the year.

Net Income: It is the basic measure of profitability for most small businesses. The Net income is the total amount left after all expenses have been deducted. For a business to ensure profitability it must control expenses in such a way that achieves higher income than expenses.

A determination of the financial performance of a firm is efficiently done through the use of ratios (Häcker, 2013). Ratios show the existing relationship between two financial balances thereby helping the firm understand its financial performance (Evans, 2000). The yardstick and technicalities involved in measuring financial ratio is unique with individual businesses (Alvarado, 2011). This therefore makes it imperative that the first step to measuring financial ration is an identification of key ratios that are peculiar to a business and those required for lending purpose. Farm Financial Standard Council (2011) has recommended a guideline which farmers can use to measure financial performance. These financial performance ratios which are grouped into five categories are: liquidity, solvency ratio, profitability, repayment capacity, and financial efficiency. Liquidity measures a

company's ability to pay off its debts without disrupting operations. Common liquidity measures include: current capital and working capital ratios. Solvency ratio shows the extent to which an enterprise is being leveraged by equity finance. It measures the ability of the firm to pay off financial obligations if all assets were sold. Solvency ratios include: debt to assets, debt to equity, and equity to assets ratios. Profitability measures revenues in relation to expenses. In the long term the financial success of the firm will depend on its profitability (that is, income must be higher than expenses). Profitability ratios include rate of return ratios, operating profit margin, and net income ratios. Repayment Capacity measures the firm's ability to repay its debts. Repayment capacity ratios include the debt service coverage ratio. Financial Efficiency measures the relationship between inputs and outputs. The asset turnover ratio, operating expenses, depreciation expense, interest expense, and net income ratios are major measures of financial efficiency.

Business performance represents non-financial aspects of performance measures including company's image, its ability to sustain high employee morale and the firm's attraction to professionals.

Corporate image describes the perception the environment (e.g. clients, partners, the market and investors) has about the organisation (Karadeniz, 2009; Żaba-Nieroda, 2011). It is the mental picture and consciousness that crops up when a person comes in contact with the name, logo, and any other symbol that relates to any particular organisation. This is distinct from corporate identity, which relates to management perception about the firm's philosophy, conceptions, communication, behaviour, brands, its features, the resulting benefits and the values that differentiate the firm from competitors. The image of the firm consists of three factors: corporate designs, corporate communication, and corporate behaviour (Karadeniz, 2009). The process of building such image cannot be left to the design aspects alone (Such as logo, colours, interior design forms, graphics, etc) but must be well supplemented with communication and acceptable corporate behaviour (Żaba-Nieroda, 2011). This is specifically important since the image of the firm only becomes a reality as customers get to come in contact with the products, services and employees of the firm. The gains that can be gathered from a positive image cuts across the strategic benefit of serving as a source of competitive edge to financial gains of adding value to the firm through the creation of positive goodwill.

The aspects of achieving high employee morale can possibly be tightly linked to issues that surround employee motivation. Motivation is, without doubt, an important means by

which managers analyze, understand, and influence employee behaviour towards accomplishing corporate goals. It can be described to be a process through which a person's intensity, direction, and persistence of efforts towards goal accomplishment is being understood (Yudhvir & Sunita, 2012). The role of influence is particularly important because genuine motivation is rather more intrinsic than it is extrinsic. That means, high morale that result in efficiency, effectiveness and productivity of workers is generated through the influence of a leading manager rather than a forceful exertion of power. The concept of motivation has been studied by many scholars with significant theories revolving over the years (e.g. Taylor, 1856-1917; Maslow 1954; Herzberg 1959; McGregor 1960; Vroom 1964). Perhaps the most prominent and widely known of these theories is the Maslow's hierarchy of needs theory.

Maslow in 1954 opined on the identification and satisfaction of human needs as a good means to motivating them. He postulated the five levels of human needs, including: physiological needs, safety needs, belonging needs, esteem needs and self-actualisation needs.

## 2.1.10 Linking Organisational Knowledge to Performance

Performance improvement and sustenance form the crowning point of all business objectives and strategic decisions of every organisation. In other to achieve this, Managers, over the years, largely depended on organisational physical resources and capabilities. Thus, most firms based their competitive efforts and strategies on price mechanisms, human resources, technology and the likes. Competitions that are merely based on such strategies might not be sufficient in the present knowledge economy (Grant, 1996). Since they are more easily prone to imitation by competitors, their long term competitive advantage is in doubt (Barney *et al.,* 2011). Therefore, top management of organisations as a matter of necessity must begin considering competing based on knowledge. In this way, firms are faced with the opportunities of competing, for example, not just on technology, but on the knowledge that ensures superior technology; not just on recruiting talents but talents that have the knowledge (in terms of know-what and know-how) required to fulfill organisational objectives and strategic intent. Organisational knowledge has thus become a crucial element for achieving and sustaining superior performance. Consequently, based on existing knowledge based research works, such as Chakravorti (2011), Simpson (2012), Gold, Malhotra and Segars (2001) and Antonelli, Patrucco and Quatraro (2011) the indicators of performance which this research linked to

performance include: customer satisfaction, organisational efficiency, organisational effectiveness and productivity of the organisation.

**(i)    Organisational Knowledge and Customer Satisfaction**

Customer satisfaction occupies an important position in the organisation's drive for success (Ilieska, 2011). Satisfying customers' unique needs require that management understand what makes each category of customer distinct, establishing and sustaining relationship with them and maintaining a knowledge system that aids problem-solving. Within the marketing literature, the influence of organisational knowledge over customer experience and by extension their loyalty has been predicted (Chakravorti, 2011). There are also indications from Moses (2013) that a sound knowledge based culture would enhance organisational ability to compete in its product based market.

Some existing literature, such as Gebert, Geib, Kolbe and Brenner (2003) and Guchait, Namasivayam and Lei (2010), view the firm's customer satisfaction objective from a relationship building perspective. In this sense, they argue that knowledge gained from customers and included into the firm's knowledge management system will facilitate the design of products and services to achieve customer satisfaction (Bose & Sugumaran, 2003). They also suggest that possessing knowledge about customers (such as knowledge about their histories, motives and social preferences) will be necessary in creating value adding products and services that enhance customer satisfaction (Gibbert, Leibold & Probst, 2002).

The relationship between organisational knowledge and customer satisfaction can also be viewed from three perspectives: knowledge for customers, knowledge from customers and knowledge about customers (Gebert *et al.,* 2003). Knowledge for the customers is the flow of knowledge from the organisation to its customers. It consist of knowledge about the organisation's products, services and markets (García-Murillo & Annabi, 2002).

Very often, organisational employees share knowledge of their organisation's products, services and market operations when they have contact with prospective customers and clients. This knowledge sharing activity is an expression of knowledge for customers. It is essential to propelling customers' perception about product/service quality, interest and eventual decision to trade with the organisation (Salomann, Dous, Kolbe, & Brenner, 2005). Knowledge from customers involves identifying customers' opinion about the organisation's products and services with the intention of enhancing innovation with

respect to product/service offerings, customer relationship and effectiveness in the customer service process.

As a means of being innovative, knowledge from customers does not merely ensure that the organization continues to change how they serve customers but that they continually improve upon the customer service process, with a view of enhancing customer experience. Consequently, organisations consider that customers' perception about product/service alternatives, interests in specific means of product/service delivery, understanding about market trends and suppliers are important knowledge that can enhance the organisational value (Gibbert *et al.*, 2002). Knowledge about customers is an organizational activity that gives managers better exposure about their customers' requirements and personality. It brings the organisation into the known about the past, present and future directions of its customers' needs, purchase behavior, taste pattern and financial capability (Salomann *et al.*, 2005). Collectively, knowledge for, from and about customers have been closely linked the organisations' customer relations management activity.

Customer relationship management (CRM) has been described as an information technology enabled means to managing customer related knowledge for the benefit of the organisation. CRM emphasizes that organisations can enhance their profit levels and overall effectiveness by building long term relationships with existing customers, rather than incurring heavy budgets of incurring new customers (Garrido-Moreno & Padilla-Meléndez, 2011). With the intention of gaining more knowledge about the customers and satisfying their personal needs, CRM uses IT infrastructure to design products and services that meet their personal requirements. Although, the practice of CRM seem to present overwhelming benefits for the organisation, there are chances that it would fail when it is not properly linked to the organisational strategy and/or there are poor interconnections that translates it to an organisational activity that guide its processes.

CRM can also be viewed from a tacit knowledge based perspective, for example the experience of customers with organisational attendants during the service relationship (Guchait, Namasivayam and Lei, 2010). This view suggest that customers, especially loyal customers, often expect that the service providers show some level of identification to them, in terms of identifying them by name or some more direct personal attention. The believe is that, this gesture shown by the service attendant, creates a relationship building

perspective in the mind of customers and could stimulate them into further confidence and loyalty with the organisation and its products/services.

Consequently, there have been indications that organisations can enforce effective CRM initiative by placing priority on IT skills, using popular information technologies, focusing on IT spending, leveraging on shared knowledge and putting in place flexible IT infrastructure (Ray, Muhanna & Barney, 2005). IT skills involves possessing technical skills on IT, for example programming, that enhances the employees' ability to use IT infrastructure with expertise. General IT infrastructure that must be used should be customer-focused, having the ability to gather information about the organisation's customers, their personality and preferences, such that management can easily make decisions about them. In achieving this, management of organisations should also be willing to have sufficient budget that is committed to IT. This should relate with sourcing for hardware and software IT infrastructure that can help the organisation achieve effective CRM systems and fulfil its strategic objectives, especially that of customer satisfaction.

There is also emphasis on the role of shared knowledge in CRM effectiveness. Shared knowledge in this sense is the extent to which IT managers are able to understand the suitable IT infrastructure that can achieve customer service effectiveness. On the other hand, customer service managers must also be acquainted with the use of the organisation's IT infrastructure. Therefore, there must be a synchronisation of knowledge between the IT manager and customer service manager, to have an effective CRM or IT infrastructure. IT infrastructure flexibility is also required to ensure that the organization can easily adapt its IT to take opportunity of industry opportunities, while at the same time avoiding situations that can pose threats.

**(ii)    Organisational Knowledge and Operational Efficiency**

Operational efficiency is a common objective with every firm, regardless of what industry it belongs. The tenet attached to operational efficiency is such that management aims at reducing production/operations costs while yet utilizing input resources to generate proportionate outputs (Kuo, Huang & Wu, 2011; Simpson, 2012). This implies that at every decision making unit the firm attempts to optimise operations based on cost, quality, labour and other related input and output measures.

Operational efficiency is a firm's ability to optimise resource output given a level of input. Firms' pursuit for operational efficiency could be evidenced by their departure from manual processes to continuous investment in automated-based processes that increase the speed, save cost and enhance the quality of operations procedures (Simpson, 2012). There is a need for telecommunications providers in Nigeria to be aware of the operational best practices of leading firms in the industry, and indeed globally, so that they can serve customers in the most efficient manner. The examination of operational efficiency relate with a broad set of organisational activities across the organisational value chain. This has resulted in researchers engaging a number of valuable means to the measurement of organisations' operational efficiency.

Arvind, Sanjay and Omar (2005) perceive a firm to be operationally efficient as long as it is capable of responding to the day to day requirements of members of its supply chain in an efficient manner. Absorptive capacity is considered to be relevant in influencing the degree of operational efficiency which includes the firm's ability to cut down on costs and the degree of speed with which products move from the point of production to the customers. Lee, Kim, Choi and Lee (2009) followed a balanced scorecard framework to the measurement of operational efficiency. Their measure engaged dimensions of customer, process and financial performance. Operational efficiency gains major concern in the mind of management whose goal is to ensure customer satisfaction (Chung, Ahn, Jeon & Thai, 2015). Fugate, Stank and Mentzer (2009) reported that there is a strong relationship between organisational knowledge and the firm's operational performance. In a survey of operational personnel of a logistics operations firm, their research found that shared interpretation of knowledge among employees influence the way knowledge is disseminated and engaged among workers to design and implement tasks in line with such knowledge.

A couple of studies have also engaged a Data Envelopment Analysis (DEA) non parametric techniques to identify the input-output productivity analysis as a measure to operational efficiency (for example, Kuo, Huang & Wu, 2011 and Xiuqing & Xiaoli, 2009). In light of this, El-Mashaleh, Rababeh and Hyari (2010) examined operational efficiency in the Jordanian construction industry.

The present study anticipates identifying the relationship of organisational knowledge on operational efficiency of the Nigerian telecommunication sector. It has observed that there

is no known study that reflects such relationship. The Telecommunications industry is among the fastest growing industries of Nigeria's economy, yet the scarceness of empirical research that links if operational procedures to customer requirements and indeeds satisfaction reflects an important gap that should be filled.

**(iii)   Organisational Knowledge and Effectiveness**

Organisational effectiveness is defined by the firm's ability to realise its goals (Daft, 1995). Thus, it reflects the extent to which organisational members collectively engage the firm's tangible and intangible resources, including their knowledge about firm's processes and environment, to produce significant results. Linking organisational knowledge and effectiveness has to do with how well knowledge is managed and organized to achieve organisational goals. Empirically testing the relationship between organisational knowledge and effectiveness is not uncommon in literature.

Yang (2015) observed the importance of knowledge management in the internal marketing field. The study aimed at investigating the effect of internal marketing on knowledge sharing and organisational effectiveness. Findings revealed that knowledge acquired from conversations help the company to provide customers with the right offerings, thus also resulting in enhanced organisational effectiveness and marketing competitiveness. In another study, Hsin-Kuang, Chun-Hsiung and Battogtokh (2012) suggested that knowledge management tools and initiatives positively contribute to organisational effectiveness. Also, managers who create new knowledge and innovatively apply them in the market tend to be more effective in influencing organisational effectiveness. Table 2.3 (see page 49) shows a series of measures which have been adopted for the measurement of organisational effectiveness.

**Table 2.3: Measuring Organisational Effectiveness**

| Author(s) | Measures of Organisational Effectiveness | Context of Study |
|---|---|---|
| Matthews (2011) | Multidimensional Approach based on performance models | |
| Zheng, Yang and McLean (2010) | Organisational members' perceptions of the degree of the overall success, market share, profitability, growth rate, and innovativeness of the organisation in comparison with key competitors | HR professionals of two organisations |
| Kroeger and Weber (2015) | Multidimensional Approach that constitutes three types of models: goal models, system resource models, and functional models | Not-for-profit and social enterprises |
| Zoogah, Peng and Woldu (2015) | Multidimensional Approach based on internal and external factors that reflect long and short term periods | African context |
| Gold, Malhotra and Segars (2001) | A multidimensional Approach that draws on innovation, responsiveness to market demands, proactive dispositions, continuous improvement on internal processes, and so on | Senior Executives of Knowledge Management activities |
| Giti and Suhaida (2012) | Multidimensional approach that reflects both organisational and customer perceptions | Dominant coalition members in six institutions of Higher education |
| Cunningham (1977) | Multidimensional approaches based on rational goal, system resource, managerial process, organisational development, bargaining, structural functional and functional | |

**Source: Author's Compilation (2017)**

Identifying which criteria is most appropriate for evaluating organisational effectiveness has been a major issue of contention in literature. However, most authors argue that a multidimensional approach is most appropriate since it captures a wider scope of organisational elements and presents a more accurate view of organisational effectiveness (Giti & Suhaida, 2012; Matthews, 2011; Sowa, Selden & Sandfort, 2004).

**(iv) Organisational Knowledge and Productivity**

Firm's objective to achieve/improve productivity is not new. In fact, it has been a major organisational concern for almost a century. Organisational and behavioural theorists such as Fredrick Taylor (Scientific Management theorists), Abraham Maslow (Hierarch of needs), Victor Vroom, Elton Mayo, Fredrick Herzberg (Motivator-Hygiene theory), Peter Drucker (Management by Objective) and others are typical examples of researchers who have attempted to enhance organisational, or say workplace, productivity through theoretical innovations. Productivity refers to the increase in value of an organisation overtime (Phipps, Priento & Ndinguri, 2013). As such, measuring productivity will involve identifying human and non-human factors that contribute to organisational success.

Also, productivity, according to Syverson (2011) is the degree of efficiency with which a firm transfers input to output. One way of measuring productivity is by examining capital and labour inputs in relation to their gross output or value adding capability (Schreyer & Pilat, 2001). This approach measure productivity based on single-factors. The limitation identified with such approach is that it does not explain for the collective strength of input measures. Thus, decision makers stand at risk of misinterpreting the weighted average effect of productive factors (Syverson, 2011). Therefore, most empirical literature take a multifactor analysis/approach to the measurement of productivity (for example, Antonelli, Patrucco & Quatraro, 2011; Del Gatto, Di Liberto, & Petraglia, 2011). This implies therefore that the measurement of productivity in empirical literature follows a more objective approach.

Chang and Gurbaxani (2012) empirically tested the impact of an IT provider's organisational knowledge on productivity of client firms. Their study proposed that vendor's IT-related knowledge could be a major determinant of productivity for client firms. Knowledge-productivity relationship has also been tested by Das (2003). Using a context of technical support work, productivity is tested through call resolution time and extent of call escalation. Knowledge of technical support was measured through problem-solving tasks and moves dimensions. Their results indicated that along different activity lines of technical work the relationship is significant. Musolesi and Huiban (2010) examined the relationship between the sources of knowledge, innovation and productivity in knowledge intensive business services. It was reported that internal and external

sources of knowledge such as patents and R&D. Knowledge and innovation has a strong and positive effect on productivity. They also compared their findings with existing literature that based on investigations in the manufacturing industry, revealed reports showed consistency in findings.

The relationship between productivity and transference of knowledge between organisations is also an important area of research in strategic management. Darr, Argote and Epple (1995) investigated the acquisition, transfer and depreciation of knowledge on productivity of thrity-six pizza stores in the USA. They reported that increased experience in production resulted in unit cost decline. Also, unless productivity continue, the knowledge of production is likely to depreciate significantly within a short period of less than a year. Whereas knowledge transfer was found to be possible between stores of the same franchise, but inversely related across stores controlled by different franchisees.

The insight revealed in literature shows significant effect of various forms, sources and applications of knowledge to organisational productivity.

## 2.1.11 Efficiency Based Measurement for Organisational Knowledge

Efficiency objective is a major concern for business managers, especially because it determines largely how well they are able to create and sustain market competitiveness hinged on product quality, cost reduction and value-added prepositions. Basically, efficiency objective is about the extent to which firms' managers are able to coordinate input resources and the entire production process to maximize output. This is such that the output derived by the firm surpasses input to a very considerable degree, yet leaving customer expectations uncompromised.

According to Fugate, Mentzer and Stank (2010) efficiency is measured by the extent to which the firm's resources are utilized. In order to achieve this, the firm's internal processes such as the logistics required during product conversion processes, it strategy, structure and culture must be designed and implemented to satisfy such objective. The firm would also have to lay major emphasis on cost saving strategies, waste reduction/elimination, avoidance of redundancy in business processes, increased speed, elimination of equipment failures and engage the services of knowledgeable experts during production/service process (Bartuševiciene & Šakalyte, 2013).

Knowledge engagement in achieving organisational efficiency will require that the firm uses experienced experts to set up production objectives, determine input resources and design and implement production processes. In addition, the firm must lay strong emphasis on the role of research and development. This is important because both the firm's environment and organisational knowledge work is largely susceptible to change. Thus, continuous or ongoing research and development initiative keeps the firm prompt and open as to such dynamism and indeed, knowledge creation is made possible.

## 2.1.12 Data Envelopment Analysis as a Measure of Organisational Knowledge Efficiency

Overtime, scholars in the field of operations research have argued that efficiency of firms' operations can be determined using either data envelopment analysis (DEA), stochastic frontier evaluation (SFE) or regression analysis on direct attributes of performance. In the literature, most authors favour the use of data envelopment analysis because it is a more easy mathematical technique that examines how firms achieve efficiency objective when using multiple inputs to turn out multiple outputs (Mecit & Alp, 2014). Therefore, because in reality organisations, especially medium and large firms, like in the telecommunications industry, are generally characterized multiple input and outputs systems data envelopment analysis is an appropriate means of determining their operational efficiency.

Data Envelopment Analysis (DEA) is a mathematical, linear programming technique that measures the efficiency performance of functional units of organisations, which are known are Decision Making Units (DMUs). In 1978, Charnes, Cooper and Rhodes (CCR) suggested that efficiency of Decision making units (DMU) can be measured based on their constant returns to scale (CRS). Decision making units are independent functional units, departments or whole organizations that form part of the elements of study in the data envelopment analysis (El-Mashaleh, Rababeh & Hyari, 2010). The constant returns to scale of a DMU implies that it is operating at an optimal scale. This is such that the outputs from the DMU is proportionate to its inputs. But practically, this might not always be the case. Therefore, in 1984, Banker, Charnes and Cooper (BCC) proposed that efficiency of organizations should consist of technical and scale dimensions, measured by the variable returns to scale (VRS). VRS suggest that the level of output derivable from inputs in a production or conversion process will depend on technical factors involved with the organization.

Returns to scale is determined by the proportionate increase in outputs caused by an increase in input resources (Samuelson & Nordhaus, 2005). In the DEA, an organization can have three situations of returns to scale. They are: increasing returns to scale (IRS), decreasing returns to scale (DRS) and the constant returns to scale. This implies that organisatonal effort to increase input may yield either constant, increasing or decreasing returns in its output level (El-Mashaleh, Rababeh & Hyari, 2010). Increasing returns to scale (IRS) results when an increase in input leads to a more than proportionate increase in output. But when increasing inputs results in a downward slope of the production curve, such that there is a lower rate of output, then there is a decreasing returns to scale (DRS) situation. Constant returns to scale (CRS) occurs when an increase in input result in an exact or proportionate increase in output. Therefore, graphically the CRS, IRS and DRS can be depicted as follows:



(a) CRS                (b) IRS                (c) DRS
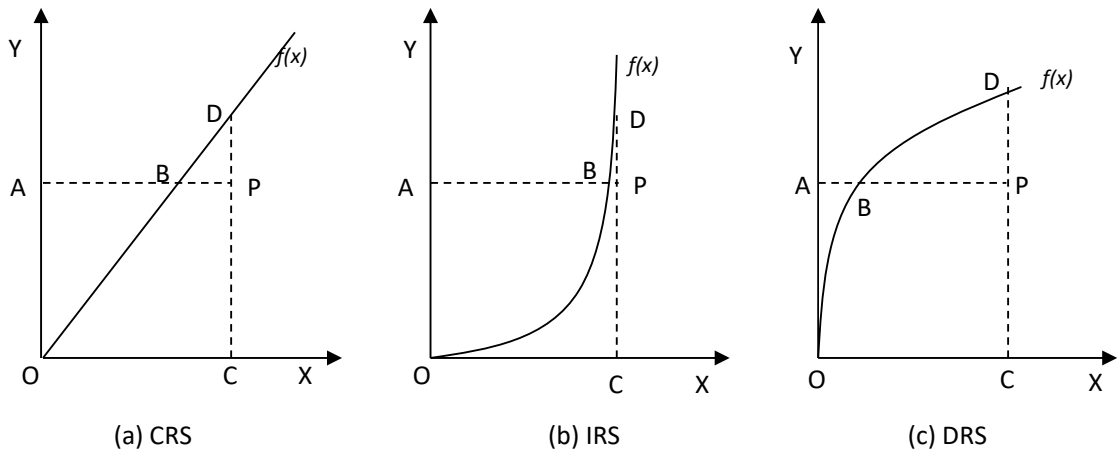
**Fig. 2.2: Returns to Scale**

Mecit and Alp (2014) suggested that the CRS and VRS can have their input and output orientations. Thus for simplicity, the table 2.4 illustrates this:

**Table 2.4: Measures of Technical Efficiency Based on the CCR and BCC Models**

|  | Constant Returns to Scale (CRS) | Variable Returns to Scale (VRS) |
|---|---|---|
| **Input Orientation** | Input-oriented CRS | Input-oriented VRS |
| **Output Orientation** | Output-oriented CRS | Output-oriented VRS |

**Source: Author's Compilation (2017)**

The input-oriented measure of technical efficiency is sensitive to resources inputted into the production process. It reflects the extent to which inputs can be reduced without it necessarily affecting the level of output of the organisation. On the other hand, the output-oriented measure reflects the degree to which output can be expanded without changing the quantity of input resources utilized by the organisation. These two dimensions have been engaged by researchers to examine the efficiency and productivity performances of organisations across a wide range of industries.

Chen and Delmas (2010) followed the data envelopment analysis perspective to examine corporate social responsibility performance. Using a large sample of firms in three major industries, namely: manufacturing, finance and services, they reported that only few organisations were found to be technically efficient. Fugate *et al.,* (2010) examined logistics performance based on the efficiency of three hundred and thirty-six (336) firms. Results from the research showed logistics efficiency strongly correlated with logistics performance. As such, logistics performance can be regarded as a second order construct consisting of logistics efficiency. Blose, Tankersley and Flynn (2005) measured service quality using data envelopment analysis. Based on data collected from customers of various grocery outlets in the USA. Evidence from the research suggested that DEA technique is a useful tool that help mangers to identify service quality components that achieve optimal performance outcomes for the organisation. However, there is dearth of empirical research, especially within Nigeria, that used data evelopment analysis, to show organisational knowledge efficiency in the telecommunication industry.

Efficiency of organisational knowledge is determined by the ability of management to use the firm's knowledge based resources to create outputs that maximize the firm's efficiency objectives. This means, by the principles of operational efficiency, the organisation's

management is able to use tacit and explicit knowledge of individuals and groups in the firm to maximise outputs.

## 2.1.13 Knowledge-Based Customer Satisfaction

In recognition of the strategic role of customers towards the success of organisations, management continually consider it a priority to achieve customer satisfaction at all cost. One of the ways organisational managers attempt to achieve customer satisfaction is by a knowledge based approach which incorporates customer knowledge into the firm's customer relationship management initiative (Gebert, Geib, Kolbe & Brener, 2003; Meihami & Meihami, 2014). According to Garcia-Murillo and Annabi (2002) a proper way for accessing customer knowledge of products and service is through a social interaction that brings together firm employees with prospective customers. However, Garrido-Moreno and Padilla-Melendez (2011) opined that the relationship between organisations' acquisition of customer knowledge and relationship building with customers is not as much direct. They suggested that customer relationship and satisfaction can only be achieved through knowledge management with the support of organisational factors such as strategy, structure, top management and other human resources possessed by the organisation.

Customer satisfaction is very strategic to knowledge based research in the Nigerian telecommunication industry. The high rate of porting activities in the telecommunication industry as reported by the National Bureau of Statistics (2016)   raises an alarm as to the way industry players utilise knowledge to achieve performance. For example, the report revealed the four telecommunication firms had the following porting data as at March 2016: MTN (361), Globacom (1,446), Airtel (8,177) and Etisalat (11,136). In a sense, the data seem to reflect the level of buyer power in the industry, thus accounting for the subscribers' freedom to switch among telecommunication operators at little or no cost. However, a closer analysis revealed that the high porting rate could point to the fact that issues relating to knowledge utilisation in relation to customer satisfaction and operational efficiencies, among other performance indicators are lacking among industry players.

According to Suraj and Ajiferuke (2013), telecommunication firms must manage customer knowledge, such as those which come through suggestions from customers, by incorporating such views in their customer service initiatives, especially when such suggestions apply directly to their need. This could greatly influence customer experience

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during service encounters and thus result in repurchase behaviours, customer retention and loyalty. In another context, Plumb and Zamfir (2009) showed that service quality that drive customer satisfaction must emphasize employees' continuous development and collaborative efforts of sharing ideas and knowledge.

Despite the evidences shown existing literature about the linkages between organisational knowledge and customer satisfaction, there is little known about how individual employees can use their tacit knowledge to achieve customer satisfaction in situations where customer complaints are not documented explicitly in the firms' online knowledge base. Therefore, this research attempts to investigate on the relationship between individual-tacit knowledge and customer satisfaction in the telecommunication industry.

## 2.1.14 Organisational Knowledge and Orientation

Organisational orientations represent the firm's strategic decisions over alternative means of achieving superior positions over its competitors. In other to enhance the role of organisational knowledge in optimizing performance, the firm's orientation must be properly understood. This is because orientation is a pointer to the firm's strategic and competitive patterns that examine relationships between the firm and its environment. Organisational knowledge and orientation are closely linked because what the firm knows, shares among its people, stores and applies depends on how it has decided to compete.

Despite the acclaimed importance of organisational knowledge to performance of a firm, the risk of assuming direct relationships exist between the two might be an unrewarding one. This is because firms are basically surrounded by an environment that influences their behaviours and response patterns, even as they attempt to attain strategic objectives. Therefore, this research study suggests an organisational knowledge-orientation-performance (K-O-P) model to test this relationship. Only a few studies have attempted to study the relationship of behavioural elements that can explain for the relationship between organisational knowledge and performance, thereby limiting ability to generalise across national boundaries.

Again, it is observed that the few available empirical works in this area have discussed this relationship by looking at individual strands of orientation. For example, Wiklund and Shepherd (2003) examined how entrepreneurial orientation enhances the relationship between knowledge-based resources and firm performance. This research argues that such individual configuration of orientation will be insufficient to address firms' goals to

satisfy a large range of stakeholder expectation. The overall aim of orientations is to achieve/improve firm competitiveness, promote dynamism and innovativeness with work processes, and repositions the firm for superior performance (Iederan, Curşeu, Vermeulen & Geurts, 2013). Therefore, in this study, a more rigorous examination of this relationship is adopted. This includes the engagement of a number of orientations that cut across stakeholders of the firm thereby presenting a more elaborate view of the Knowledge-Orientation-Performance relationship that is suitable for effective and rational judgment and decision making by management.

The dynamism and competitiveness of the operating environment in which firms are situated cause them to have perceptions about designing their business processes, resources and internal environment in ways that subdue external challenges. Such is the position of the firm's orientation. Kim, Im and Slater (2013) identified the possibilities of a relationship between organisational orientation and organisational knowledge. A firm's internal strategic knowledge capabilities and resources can successfully interact with its external environmental context given the intervention of the firm's strategic orientation (Zhou & Li, 2010). This research takes of examining three key orientations that relate to the firm's knowledge. They are market orientation, entrepreneurial orientation and technological orientation.

### (i)     Market Orientation

Market orientation commits the firm to focus on customers and competitors with the aim of offering products and services of value to customers, while monitoring competitors (Slater & Naver, 1995). This is achieved through a continuous learning process that instigates conformable behaviours in the organisation. Firms tend to be dynamic in their behaviour and marketing strategies based on how much knowledge they possess of their competitive market environment (Sinkula, Baker & Noordewier, 1997; Nobel, Sinha & Kumar, 2002). Hurley and Hult (1998) argued in favour of a link between innovative capacity of a firm and its market orientation. Their study suggests that firms tend to develop better market responsiveness and deeper learning through their desposition to innovation and the capacity to implement such.

Siguaw, Simpson and Enz (2006) argued that innovation orientation should rather be regarded an important part of the organisational system, than an element of the firm's market orientation. Their definition which states that innovation orientation is a "multidimensional knowledge structure composed of a learning philosophy, strategic

direction, and transfunctional beliefs" (Siguaw, Simpson and Enz, 2006) reveals the tie between organisational knowledge, its perceptions about innovation and its actual innovative capability. Singh (2011) view organisational innovation as the engagement of expert knowledge to create valuable products and services, which surpasses existing offerings, to customers. Such knowledge cuts across the technical and administrative boundaries and the innovative drive of an organisation largely relies on what these professionals know. This view forms the basis for organisations with an innovation orientation (Knight & Cavusgil, 2004; Jiménez-Jiménez & Sanz-Valle, 2011).

Liao and Wu (2010) introduced the technological perspective to the Knowledge-innovation research when they investigated the effect of knowledge management on organisational innovation with learning as a moderator. Their research found knowledge management to be an effective determinant of organisational innovation. Knowledge management principally engages technological sophistication as a means of gathering, storing and recovering organisational knowledge. It is also helpful for knowledge application and processes. The important role of organisation's positive inclination and dispositions towards the use of technology as a competitive means for superior performance has been broadly studied by different researchers, such as, Mishra and Agarwal (2010); Chen, Chang and Hung (2011); Li (2012); Voola, Casimir, Carlson and Agnihotri (2012).

**(ii)    Entrepreneurial Orientation**

Entrepreneurial orientation is the ability of the firm to organize its activities and decision making processes to reflect entrepreneurial characteristics such as proactiveness, competitive aggressiveness, autonomy, innovativeness and risk-taking attitude (Lumpkin & Dess, 1996).   Wiklund and Shepherd (2003) observed that three dimensions of entrepreneurial orientation: innovativeness, proactiveness and risk taking ability of managers positively enhances the relationship between the firm's stock of knowledge resources and performance.

Organisational knowledge has been found to have strong influence on entrepreneurial orientation (Li, Huang & Tsai, 2008; Madhoushi, Sadati, Delavari, Mehdivand & Mihandost, 2011). The relationship between organisational knowledge and entrepreneurial orientation can be explained based on each dimension of entrepreneurial orientation. Proactive organisations align their knowledge based resources and capabilities to take

advantage of market opportunities that put them in the first mover vantage position (Wiklund & Shepherd, 2003). Such firms emphasise gathering, retaining and utilizing organisational knowledge that is future based and that can achieve higher performance. This is such that they attempt to define the trend of events in the industry through the instrumentality of foresight.

The relationship between organisational knowledge and competitive aggressiveness dimension depend on the extent to which management is willing to build a more knowledgeable workforce, work processes and outputs that is distinct from, and hard for competitors to imitate. The organisation in this sense must emphasise competing based on its knowledge-based resources. Tacit knowledge for example has been identified as a highly individualised knowledge which is hard to transfer or copy by another (Nonaka, Toyama & Konno, 2000). Thus organisations can resort to acquiring employees who can build a distinct brand based on unique products, marketing skills and strategies, customer relationships, and a fore-sight about future oriented and competitive work processes that enhance the organisation's industry value and places it in a position of its own right. Knowledge based competitiveness will require building an insightful organisation that understands the details of its industry policies, customers and competitors in a way that its competitors, most probably do not.

Knowledge-based organisational autonomy relates to the extent that employees of the organisation are given freedom to think and develop new knowledge that enhances the performance of the organisation. Knowledgeable empowered employees will likely influence organisational success in no small measure (Lumpkin & Dess, 1996). Knowledge based autonomy enhances the chances of identifying opportunities and making quick decisions towards new markets and novel products/services (Li *et al.,* 2008). Risk-taking is the extent to which the organisation is willing to invest in projects, even though the tendency of failing could be high or that there is no clear certainty about profitable returns (Wiklund & Shepherd, 2003). However, this suggests that the organisation is willing to establish new paths that can improve its competitive positioning in the industry. Therefore, enquiries that help the organisation gather new knowledge about its new venture or project could enhance its chances of profitable investment.

Innovativeness dimension reflects the extent to which organisations experiment with new ideas to create products and/or services. Organisations depend on the tacit and explicit

knowledge of individuals and groups as major inputs in the development of new products, services and processes. In doing this, employees interact and brainstorm over diverse alternative ideas and activities that can lead to profitable innovations for the organisation (Li, Huang & Tsai, 2008). As part of its strategy to enhance innovativeness, organisations can adopt the knowledge acquisition strategy. Knowledge acquisition is the systematic practice of using knowledge that presently exist in the organization, and gathering new knowledge to enhance innovations in the organisation. Thus, the target of the organisation lies in a continuous flow of knowledge that keeps its innovation cycle in motion. This process requires that organizational members adopt a culture of knowledge sharing (Madhoushi, Sadati, Delavari, Mehdivand & Mihandost, 2011). Knowledge sharing is the process of distributing knowledge among organisational members and translates innovation from individuals to become an organisational asset, such as the outcome (products or services) that result from efforts of knowledge activities. Thus, there are indications that organisational knowledge and entrepreneurial orientation play complementary roles in the enhancement of firm performance (Lee & Sukoco, 2007).

**(iii)     Learning Orientation**

Organisational learning is the Overall disposition of the firm towards learning and gathering new knowledge as may be found relevant to its business operations. According to Sinkula, Baker and Noordewier (1997) organisational learning occurs when groups and individual members of the firm are exposed to a committed attitude of learning, unified/shared vision and open-mindedness. Commitment to learning as an organisational attribute demonstrates the extent to which management emphasises the need for organisational members to get involved with acquiring new knowledge about issues and processes that relate to their job, industry, customers, stakeholders at large and the organisation itself. Not only do they emphasise on learning but they also establish mechanisms that motivate employees to get involved with learning.

The relationship between any organisation's knowledge and its commitment to learning would reflect the degree to which the organisational members are encouraged to develop their tacit and explicit knowledge to enhance organisational value (Calantone, Cavusgil & Zhao, 2002). Therefore, the role of absorptive capacity must be brought to view. Absorptive capacity is the capacity that individuals and or groups have to learn (Tsai, 2001). This translates to the need for management and employees in the organisation to

continuously pursue increased capacity to gather, assimilate and apply knowledge within and without their industry, with a view of enhancing their organisation's competitiveness.

Shared vision among organisational members is also perceived to be a vital part of the organizational learning process. As, Wang (2008) opined that strategic planning of the learning process is a vital requirement for it to lead to higher organisational performance. Shared vision infuses into organisational members a sense of common purpose and definite courses of action that are necessary to pursue their collective goal. Therefore, the possibilities of conflicting interest is largely minimized. There is a strong link between shared vision and organisational knowledge since, by commonality of interest employees clearly understand areas of interest to the organisation's knowledge gathering/creation activities. Knowledge sharing in the organisation will, by this, be clearly directed along areas of strategic importance to the organisation. Calantone *et al.,* (2002) suggest that organisational knowledge can become a strength to the organisational especially where learning is organized and directed towards commong goals that are clearly understood by members of the organisation.

Open-mindedness is the practice of organisational members' willingness to critically examine their patterns of operations and pursue a course for change or adaptation to modern trends and technologies where necessary. The global business economy is experiencing fast paced dynamism informed by the creation of new knowledge, updating of technologies and greater speed in business processes. Thus, organisatonal survival and, competitiveness depend on the rate at which organisational members and systems are willing and able to adapt to this contemporary models. Organisational knowledge-based open-mindedness, therefore, mean the ability of managers and all employees of the firm to update knowledge (Wang, 2008). They might need to unlearn, in some cases, in other to learn new and more contemporary ways of operating in their business environment.

In another argument, Calantone *et al.,* (2002) opined that the firm's practice of knowledge sharing among functional departments and units is in itself a dimension of organisational learning. Very importantly is the fact that knowledge sharing enhances the sustenance of knowledge gathered from different sources and could be relevant for future references. Organizational knowledge gathering, integration and utilisation within organizational work processes is significant to its learning orientation (Pilar, Jose & Ramon, 2005). Thus,

learning orientation is enhanced when knowledge sharing is emphasized among individuals and groups in the organisation.

## 2.1.15 Organisational Orientation and Performance

Organisational orientation effectively relates with organisational performance because it determines the strategic directions of the organization (Iederan, Curşeu, Vermeulen & Geurts, 2013). Several empirical evidences on the study of strategic orientation and performance have shown mixed results. Liu and Fu (2011) studied strategic orientation in a holistic pattern across the entrepreneurial orientation, marketing orientation and learning orientation. Their studies aimed at explaining the inconsistencies in the results of strategic orientations under different circumstances. Therefore, the main line for their research examined the 'direct, moderating and mediating effect that occur among the constructs. Based on a list of selected criteria seven articles out of one hundred and one samples were selected for their study. The results showed that the relationship between strategic orientation and organisational performance in born global organisations showed either direct relationship or indirect relationship intervened by moderator and mediator.

The opinion of Choy and Mula (2008) was not too different from that of Liu and Fu (2011) as to the mixed evidences gathered from empirical studies on strategic orientation dimensions and performance. The work carried out by Choy and Mula (2008) utilised the Venkatraman (1989) typology of business level strategic orientation dimension over the performance of different geographical subsidiaries of a single multinational firm. The result of the study showed that some of these dimensions are dominant and that certain patterns of these dimensions associate closely with strong business performance. Abiodun, Osibanjo and Oyeniyi (2011) also supported variations in the results of strategic orientation dimensions when they tested the significant relationship between technology and strategic orientation dimensions. After engaging the Venkatraman (1989) dimensionality upon their hypothesis they found that differentiation and futurity strategy dimensions were marginally dominant in the managerial practices of the two banks studied. Futurity orientation was found not to be significantly related with most of the technology policy dimensions investigated. In addition, their results showed that technology could be used to foster defensive behaviours rather than enforcing a competitive edge.

As a means of viewing strategy design and implementation from the organisational and the business or market level, existing literature have discussed the relationship between

strategic orientation and performance (Liao & Wu, 2010). As such managers can better understand, adapt and strategise according to their organisational peculiarities and operating environments. Consequently, most strategy based authors describe strategic orientation based on entrepreneurial, market, learning, technological, innovation orientations and so on (Liu & Fu, 2011). Therefore, this present research adopts this broader perspective by discussing three multidimensional organisational orientation, namely: entrepreneurial, learning and market orientations.

The propensity for organisations in transition economies to practice entrepreneurial orientation very often proves to be high. This is because of changes that demand them to become more competitive in their industry, the need to design proactive strategies, take risks and enhance their learning about contemporary business processes (Zhou, Yim & Tse, 2005; Zhao, Li, Lee and Chen, 2009). More so, in industries where change is happening fast and dynamism characterizes most business operations, organisations survive and stay competitive by exploring and exploiting opportunities and creating novelty. Thus entrepreneurial orientation serve as a viable part of their strategy process. According to Rauch, Wiklund, Lumpkin and Frese (2004), a meta analysis carried out to show the magnitude of relationship between entrepreneurial orientation and performance showed that the correlation between them is moderately large, and internal and external organizational factors exist to moderate that relationship.

Although, innovation of organisations is valuable to staying competitive in the competitive and dynamic global business economy, yet there is the need for both small, medium and large organisations to continuously leverage on learning orientation to remain competitive in their industry (Eshlaghy & Maatofi, 2011). Learning orientation can create enhanced performance in organisations through the expansion of knowledge which gives the organization and its members' awareness above that of competitors, creation of new ideas and processes for new product development. Thus strategic flexibility and prompt responsiveness are important characteristics of organisations which are given to learning orientation (Jiménez-Jiménez & Sanz-Valle, 2011). With learning orientation, organisations are more sensitive to changing trends and opportunities in the market, than competitors. Evidences abound about the relationship between learning orientation and organizational performance. For example, Liao and Wu (2010) found that learning orientation stimulates organisations to be more innovative, thus enhancing their ability to create new products and identify better ways of carrying out business operations. Also,

Calantone, Cavusgil and Zhao (2002) suggest the second order relationship between learning orientation and organisational performance.

More so, market orientation is an important part of organisational orientation that describes the extent to which organisations respond to customers' needs, competitors' strategic moves in the industry and how functional units of the organisation collectively function to achieve organisational objectives and higher performance. As part of its marketing orientation practices, organisations engage in continuous environmental scanning so that they can be proactive and design strategies that enhance their market-based competitiveness (Balasundatam, 2009). Hussain, Ismail and Akhtar (2015) showed a siginificant relationship between first and second order market orientation and organizational performance of small and medium enterprises. Besides, the relationship between market orientation and business performance was found significant among knowledge-intensive organisations (Protcko & Dornberger, 2014).

## 2.1.16 Organisational Knowledge as a Strategy

Figure 2.3 (see page 65) below shows a proposed framework for implementing organisational knowledge strategy. The framework identifies the importance of existent organisational knowledge responding to the organisation's attempt to use its strategic drive to achieve competitive advantage. Therefore, effective knowledge strategy derives from organisational strategy (Zack, 2005; Kasten, 2007). The model portrays the importance of human cognitive knowledge being reflected all through basic elements of organisational strategy vis-à-vis internal and external environmental factors, knowledge facilitators, business processes, core knowledge dimensions, business strategy and business competitiveness as shown in figure 2.3 (see page 65).

Knowledge Facilitators
(People, IT,
Infrastructure)

Organisational
Strategy

Environment

Firm
Competitiveness

Infusing
Knowledge into
internal
business
processes

Infusing
knowledge to
basic operations
with the external
environment

Knowledge Strategy
Dimensions
- Broad/Narrow
- Aggressive/Conservative
- Internal/External
- Immediate/Future
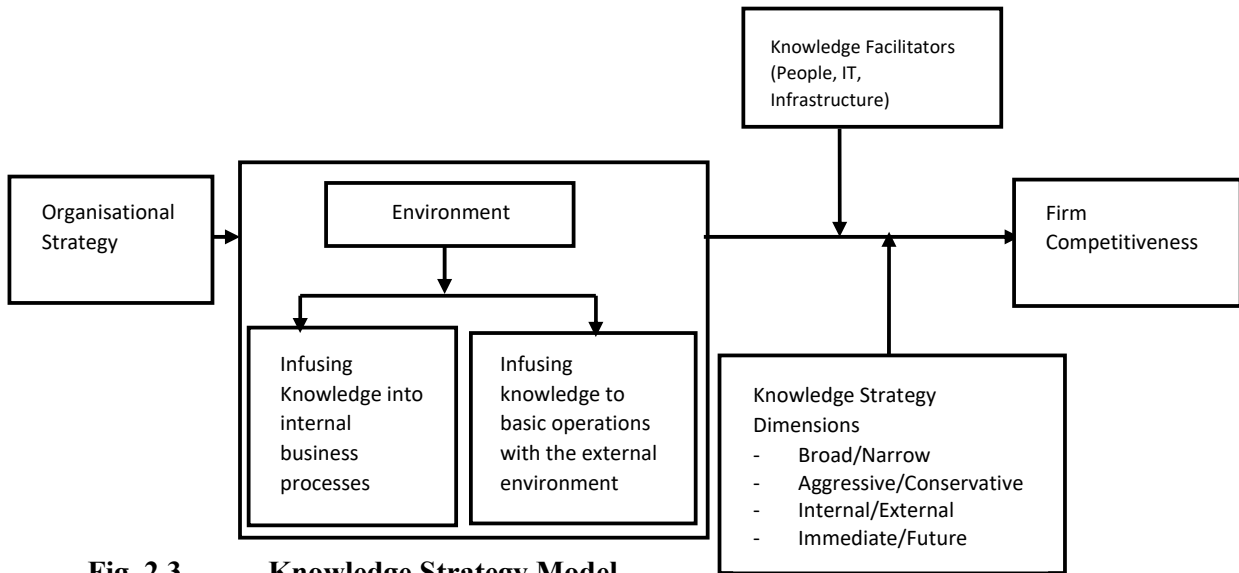
**Fig. 2.3        Knowledge Strategy Model**
**Source: Zack, 2005; Kasten, 2007**

Basically, the knowledge strategy domain resides and is implemented around the realms of the business environment, properly managed and controlled by facilitating agents and strategically influenced to fit into dimensions that can result in knowledge strategy postures. The effective role of knowledge strategy reflects the inculcation of knowledge across the entire organisational system and how it carries on its business. As suggested by Kasten (2007) knowledge strategy can effectively support the actualization of business strategies. This indicates that significantly, the organisation must organize its knowledge base into its business processes. Sharma and Mishra (2007) conceptualized that organisational knowledge base form a broader perspective to include "the data, information, intuition, knowledge (know-how), understanding (know why), and wisdom, residing throughout the organisation and in areas of overlap with partnered customers". This view creates a platform for the visualization of knowledge across the internal and external contexts of the organisation. In other words, there is a need to establish a relationship between the need for knowledge surrounding the internal and external organisational operational environments. Moreso, Bierly and Chakrabarti (1996) and Kasten (2007) have opined that knowledge strategy has the following dimensions:

**(i)    Scope of Knowledge**

This dimension describes the extent to which organisational knowledge needs to be either broad or narrow to result in superior performance. Knowledge resides in every organisation but in varying degrees. Broad knowledge describes the organisation's interest in extending its knowledge to cover several domain while it is narrow when the

organisational knowledge is more focused on a single aspect (Bierly & Chakrabarti, 1996). Porter's (1980) differentiation and focus strategy imply that the firm narrows down its knowledge to compete based on, for example its technological expertise or on its understanding on specific gender market characteristics. Noble, Sinha and Kumar (2002) are of the opinion that competing on a broad range of relevant knowledge domain in the served market has positive performance implications. Leiponen (2005) agree that broad information sourcing and the development of organisational knowledge based on this enhances innovativeness in knowledge-intensive business services.

**(ii)    Application of Knowledge**

This dimension explains the aggressive and conservative knowledge engagement of organisational knowledge and how they result in firm competitiveness. According to Zack (1999) aggressive and conservative knowledge dimensions have important strategic implications in the disposition of the firm. Aggressive knowledge engagers engage an internal exploitative and external explorative means of harnessing all available knowledge against competitors. Firms very often engage it where their knowledge lag behind that of competitors or where they attempt to defend a knowledge position. Conservative knowledge engaging firms on the other hand simply adopt an internal exploiting knowledge disposition, with the attempt of securing a niche.

**(iii)    Suitability of Knowledge**

This dimension examines the internal and external sources of acquiring knowledge that suits the firm's strategy. Internal knowledge dimensions are a result of the organisation's investment in R&D activities while external knowledge is acquired from consulting agencies or parties independent of the firm. There are mixed results surrounding internal and external sources of knowledge. Fernhaber, McDougall-Covin and Shepherd, (2009) found a substituting rather than complimentary relationship between internal and external sources of international knowledge for new ventures. Kotabe, Jiang and Murray (2011), however suggested that absorptive capacity of managers is a strong determinant of the usefulness of external knowledge to the organisation. A number of other scholars, such as Leiponen (2005); Cassiman and Veugelers (2006); Fletcher and Harris (2011), Garriga, von Krogh and Spaeth (2013); Foss, Lyngsie and Zahra (2013); Denicolai, Zucchella and Strange (2014) posit that both internal and external knowledge sources are relevant for organisational competitive advantage and performance.

**(iv)    Efficacy of Knowledge**

This dimension illustrates the immediate and future usefulness of organisational knowledge in achieving firm competitiveness. The argument of the futurity of organisational knowledge is supported by the fact that such knowledge must not only be relevant for immediate problem solving but is proactive to suit the continuous dynamic environment (Abrahamson & Goodman-Delahunty, 2014). In other words, Knowledge as a strategic resource of the organisation must satisfy short term and long term purpose of the firm (Takeuchi, 2013).

## 2.1.17 Organisational Knowledge, Organisational Characteristics and Performance

Specifically, firm age and size are considered as distinct firm attributes that could explain for performance variations. These characteristics are viewed as determining factors for organisational performance.

**(i)    Organisational Knowledge, Firm Size and Performance**

It is believed that as firms grow their value adding capacity grows to suit its present size of operation (Jayaraman, Khorana, Nelling & Covin, 2000). The operating capacity of Nigeria's telecommunications industry has increased from the time when they began full scale digital operation, especially with respect to the Global System for Communication (GSM). This size increase spans across the internal and external operational factors of the firms, in terms of subscriber (customer) base, services offered, functional base, and employee size. This makes it imperative for executives of these large firms to gather sufficient knowledge base that can help them cope with these issues.

Hatfield, Worrell, Davidson and Bland (1999) are of the opinion that turnover of experts from large firms might not necessarily lead to any breakdown since the firms operate by a formalized and decentralized structure. It means functional areas might still experience smooth operations especially where interdepartmental connectivity is an effective management mechanism. Although, most contemporary research in the field of Strategic Management and Organisation theory has paid less attention to the importance of firm size, it is considered an important factor in understanding organisational characteristics (Dobrev & Carroll, 2003). It is expected that firm size effectively explains the extent of

impact organisational knowledge has on performance of telecommunication firms in Nigeria.

**(ii)    Organisational Knowledge, Firm Age and Performance**

The most active firms in the Nigeria Telecommunications industry are relatively young. Although they seem to have longer histories in their home countries, except for Globacom Nigeria which is indigenous and started operation in September 2003. Etisalat is the latest entrant; it began operation in October 2008. The beginning years of telecommunication firms' operations in Nigeria was characterized by high levels of service inconsistencies, poor mobile network across the nation, high tariff plans and limited services in which only voice and SMS services were provided to subscribers (Adediran, 2003). As Park and Luo (2001) suggested, these challenges are common with new firms; operations are expected to be inconsistent as the firm gradually build up necessary links with the environment. However, over time telecommunications services operators have stabilized to a great extent. It is assumed that the firms have acquired and are still acquiring knowledge that enhances their operations, competitiveness and overall performance. Therefore, the premise of this research is that older firms, building on their years of experience and relationships with basic factors, stand a better chance of knowing more about the market situations, customer and competitive forces than latter entrants (Autio, Sapienza & Almeida, 2000).

## 2.1.18 Knowledge and Innovation in Organisations

Organisational innovation is the ability of its members to engage new technical and administrative knowledge to create and offer new products and services to customers and more generally improve stakeholders' worth (Singh, 2011). Liao and Marsillac (2015) reported that the transformation of organisational knowledge, especially those gathered from external sources, into innovation is largely influenced by the degree of flexibility in supply chain networks and information distribution structures. A similar research carried out by Feldman & Kogler (2010) revealed that whereas, large firms with their wealth of physical resources, knowledge based resources and technological sophistication can be individually innovative; small businesses, on the other hand, gain the advantage of innovation through externally sourced knowledge from research institutions and clusters of related firms. But Aslesen and Isaksen (2007) are of the opinion that knowledge from multiple sources play important roles to organisational innovation. For instance, internal

knowledge that flow from employees' on the job training could make them more innovative. Similarly, external knowledge gained from market relations also serve as important sources of firm innovative capability.

In a more comprehensive analysis, Hung (2015) observed that organisational knowledge networking, created and sustained with alliances, directly influences innovation. There is also an influential role which knowledge base (human and organisational capital) and knowledge strategies (exploration and exploitation) have on innovation performance of firms. Particular attention has been drawn to the most appropriate source of knowledge generation for industry-based organisations as they drive towards improving innovation performance. Herstad, Sandven and Ebersberger (2015) investigated how recruitments and knowledge integration influence innovation. Their study revealed that recruitments from universities, research institutions, and other higher education institutions result to increased technical inventions, while, most innovations are generated from recruitments from related industries. In support of this, Singh (2011) asserts that innovation at the organisational level, apart from being a positive contributor to organisational change and performance, is a strong determinant of effective knowledge engagement.

The existing research on organisational knowledge and innovation present beneficial insights and direction to researchers and practitioners. However, a number of deficiencies can be identified. It seems existing research operationalise organisational knowledge in a biased form that investigated only one or at most a select few dimensions of organisational knowledge. Research presents investigations of sources of organisational knowledge (that is, the internal and external dimensions) more than any other dimensions. Such research attempt cannot be adequately classified to meet the requirements of strategic management research. There is a failure to offer strategic directions to practitioners, since it does not even reflect dimensions that supply insights about the immediate and future relevance of such research to top management (Takeuchi, 2013). Also, they are limited in their validation across cultural boundaries and industry coverage. Thus, the Nigerian telecommunication industry with its peculiarity in terms of cultural orientation of the nation and its business economy requires empirically directed research to provide support or contrary opinions to existing research.

## 2.1.19 Environment as a Moderator of Organisational Knowledge and Orientation

Studies have shown that business environment significantly has an impact on organisational performance and effectiveness (Hibbets, Albright & Funk, 2003; Tan & Tan, 2005). More specifically, evidence from literature has shown that the external environment significantly impact on firms' performance (Jansen, Van Den Bosch & Volberda, 2006). Environmental characteristics can be in the form of competitiveness, dynamism, stability, turbulence and complexity.

**i. Environmental Dynamism, Organisational Knowledge and Performance**

Environmental dynamism explains the rate of change and instability of the business environment. It reflects in the degree of technological and social changes in the firm's market; the shift in customers' taste and degree of instability in policies and regulations that govern the firm's operating environment (Dess, Lumpkin & Taylor, 2005). Zhang (2006) studied how Information systems (IS) can improve the impact of strategic flexibility on performance. Environmental dynamism served as a moderating variable in the study. The results showed that although IS support for strategic flexibility did not necessarily improve performance in any direct way, but under situations of changes and instability from the external environment, positive relationships were discovered.

The Nigerian telecommunications industry is characterised by high level technological sophistication. This requires that firms in the industry are well knowledgeable about coping strategies to changes and instability that could arise in the industry. There may be indications that first entrants into the industry stand better chances of excelling within such dynamism. However, Street, Marble and Street (2011) indicated that it might not always be the case, depending on how firms integrate the technological and knowledge advantage. Also, as a way of maintaining competitiveness and performance, firms can adopt dynamic capabilities: a systematic way of refining existing resources and assets to sustain the firm's position (Shi & Wu, 2011). But dynamic capabilities in any organisation, largely depend on organisational knowledge (Grant, 1996). In the same vein, dynamic capabilities also reflect the firm's ability to engage new knowledge in the manipulation of resources and business process for superior performance. Therefore, environmental dynamism makes it necessary for firms to be continuous learners, possibly

by investing more in research and development, and dynamic rather than static in their approach (Uotila, Maula, keil & Zahra, 2009).

**ii.      Environmental Competitiveness, Organisational Knowledge and Performance**

Aside environmental dynamism, literature on strategic management and organisational theory also recognize the impact of environmental competitiveness on performance. It is the degree to which the external environment is characterized by intense competition, especially with respect to the number of competitors in the industry (Jasen *et al.,* 2006). The moderating effect of environmental competitiveness on organisational knowledge and performance is of importance to the present study because the Nigerian telecommunication industry is characterized by high levels of competition. Statistics from Nigeria Communication Commission (2016) revealed that MTN has the largest subscriber base of 57,042,721 (38.84%). Other players hold the following share of the market: Globacom 34,608,793 (23.48%), Airtel 33,866,789 (22.98%) and Etisalat 21,877,542 (14.84%). Though, the number of active firms in the industry is still relatively minute, the above statistics reflects a state of stiff competition in the industry. It may be that firms' ability to leverage on knowledge about market and competitive forces could enhance its market share and overall performance in the market.

In order to cope with their competitive environment firms develop strategic behaviours ranging from aggressive behaviours, prospective, defensive, future focus, analysis and risk taking behaviours (Miles, Snow, Meyer & Coleman, 1978; Venkatraman, 1989). Others, according to Porter (1980) take an overall lowered cost approach, decide to differentiate themselves in ways that offer unique benefits to customers or they simply carve out a niche of the market which they focus on.

## 2.1.20 Linking Organisational Knowledge, Orientation and Performance

Proponents of the Resource Based View of the firm identify that organisational intangible resources offer unique competitive advantages when they are differentiated and difficult to imitate (Barney, 1991). Strategic management scholars identify an extension of the Resource Based View of strategy: the Knowledge Based View (Grant, 1996). The Knowledge Based View suggests that within the scope of the knowledge economy, knowledge is considered as the most significant resource for firm competitiveness (Curado, 2006). Denicolai, Zucchella and Strange (2014) also identified the possibility of achieving firm competitiveness from knowledge applications on organisational physical assets. Abrahamson and Goodman-Delahunty (2014) asserted that effective knowledge

utilization in organisation largely depends on specific support systems such as policies on information, strategies, structures and technology. Knowledge engage humans in a dynamic social process that shapes/creates a desirable future (Takeuchi, 2013). Strategy is about creating a future, it may therefore, be implied that knowledge should be an issues of strategic choice in contemporary competitive business environment.

Knowledge engagement in business processes is considered a key variable in generating value and achieving enhanced performance (Martín-de-Castro, Delgado-Verde, López-Sáez & Navas-López, 2011). Linking organisational knowledge to performance requires business managers to identify their tacit and explicit forms of knowledge resources and strategically leveraging on them in business operations. Evidence from successful firms indicate that knowledge is a strategic resource for achieveing enhanced performance in complex business environment (Sharma & Mishra, 2007; Fang, Wade, Delios & Beamish, 2007). Meaning that, organisations perform excellently depending on the embodiment of what the organisational members know and what they do with what they know.

The importance of knowledge to organisational existence has been established. But organisations have a duty to tie-up knowledge resources and capabilities to their organisational strategy in order to achieve results that align with their business objectives. Competitive orientation plays a potentially influential role in connecting organisational knowledge with performance (Kim, Im & Slater, 2013). Through competitive orientations, firms significantly create platforms that link their knowledge strategy to their external environment (Zhou & Li, 2010). Competitive orientations represent the firm's strategic decisions over alternative means of achieving superior positions over its competitors. This is informed by pressures from the firm's competitors, technology, customers and overall environmental context (Iederan, Curşeu, Vermeulen & Geurts, 2013).

By implication, a firm's internal strategic knowledge capabilities and resources can successfully interact with its external environmental context given the intervention of the firm's competitive orientation. An example is the leverage of technological depth that firm's gain as they interact with their competitive environment and external technological and innovative environments. This means that, for example, have observed that knowledge about competitive areas of the firm and its environment can result in improved performance (Wiklund & Shepherd, 2003). Lyles and Schwenk (1992) affirmed that business strategy is inseparable from organisational knowledge.

## 2.1.21 Justification for Studying the Knowledge-Orientation-Performance (K-O-P) Relationship in Nigeria's Telecommunication Industry

The service sector is increasingly occupying the front line of economic activities in most industrialized economies across the globe (Tick & Oaxaca, 2010; Dejardin, 2011; Liu, 2012). The World Bank Report (1995) reveals that high-income countries operate economies that run on sixty-six percent services, while middle-income countries operate by fifty-two percent and only thirty-five percent services in low-income countries. This growth could be traceable to the increasing trends of technological advancements in these economies (OECD, 2000). However, Nigeria's service industry still lags behind as the least explored sector of the economy. Radwan and Pellegrini (2010) observed that, as in developed economies, Nigeria service sector must be empowered to take the lead in the midst of the ongoing knowledge economy.

Of particular interest is the telecommunications industry of the service sector. The Nigerian telecommunications industry broadly consists of three major sub-sectors, namely: global system for mobile communication (GSM), code division multiple access (CDMA), and fixed/fixed wireless operations. Among these, the GSM sub-sector is the largest consisting of four active operators: MTN, Etisalat, Globacom and Airtel. Statistics from Nigeria Communication Commission (2016) reveals that MTN has the largest subscriber base followed by Globacom, Airtel and Etisalat. This industry is knowledge based and driven by high levels of technology and innovation. Therefore, there is an increasing demand on telecommunications organisations to further invest in knowledge based resources and capabilities as a means of improving performance (Murmann, 2003; Sedziuviene & Vveinhardt, 2010; Dzunic, Boljanovic & Subotic, 2012; Liao & Luo, 2012). There is some level of looseness in the competition that exists in the industry. An important question of research interest is: could there be something the market leader knows and knows how to do that other competitors are not conscious about? An investigation on organisational knowledge and behavioural patterns on competition is necessary in the telecommunications industry.

There is a substantial body of research on possible areas of relationship between organisational knowledge and performance (for example, Zheng, Yang & McLean, 2010; Garrido-Moreno & Padilla-Meléndez, 2011; Moore, 2012; Shamsie & Mannor, 2013; Routley, Phaal, Anthanassopoulou & Probert, 2013). Proponents of the resource and

knowledge based views of the firm identify that organisational intangible resources, such as knowledge, offer unique competitive advantages when they are differentiated and difficult to imitate (Barney, 1991). However, within the existing body of literature on organisational knowledge, there is a gap in identifying how organisational knowledge must necessarily be linked to the business strategy as a means of improving performance (Davenport, 1999). In channeling corporate strength, organisational leadership must provide answers to the questions of: important factors/features of the environment (customers, competitors, and so on) to gain superior performance? Of interest is the source of strategic knowledge (internal or external sources)? These issues that aid the discretion of decisions makers are of concern in this research.

Furthermore, evidence of growth in Nigeria's telecommunications industry by GDP (growing from 1.06 percent in 2003 to 7.76 percent in 2013) (Nigeria Communications Commission, 2015) indicate that the industry is highly competitive. Besides, the mobile market is expected to hit a growth rate of over 10 billion by year 2020 with increase in number of users to about 182 million (Marketing Edge Mag, 2015). Knowledge Management researchers have, to a large extent, discussed the fundamentals of knowledge processes to business performance. But there is paucity of empirical evidence to show the link between knowledge and the growing success of the Nigerian telecommunications industry. Consequently, in practice this situation gives rise to information and knowledge resources in the organisation not being: a) vital for the strategic pursuit of the firm; and b) properly processed by the firms interconnected knowledge assets to achieve the desired competitive advantages. Thus, managers at the strategic level of the organisation are often misdirected about key knowledge areas to focus on in achieving their highest performance levels (Abdollahi, Rezaeian & Mohseni, 2008).

Just as strategy is not designed in isolation of the business environment, neither is knowledge generated and reproduced into innovative products and services without the environment (Hipp & Grupp, 2005; Koch & Strotmann, 2008). Very little is known by means of empirical research about how the nature of competitive and dynamic business environment influence the orientation and performance of the Nigeria telecommunications industry. Environmental competitiveness refers to the degree to which the external environment is characterized by intense competition while environmental dynamism explains the rate of change and instability of the environment (Dess, Lumpkin & Taylor

(2005); Jansen, Van Den Bosch & Volberda, 2006). This research finds these two environmental contexts relevant which major Telecommunication industry largely demonstrates both traits. However, do these traits significantly influence competitive strategies adopted by telecommunication firms. In addition, which patterns of competitive orientation best represents the industry's interest of attaining superior performance?

Another possible way of looking at the disparity in performance and competitive patterns among telecommunication firms is in the area of firm size and age. Gopalakrishnan and Bierly (2006) observed that firm size and firm age moderate the organisational knowledge and technological strength relationship. This research may not be automatically implied in Nigeria. Hence there exist a gap in how differences in size and age of telecommunication firms explain for their perspectives to competition and performance outcomes. The results that will be arrived at from this study will likely reflect important implications for knowledge strategy literature and practitioners. It will show how large and small firms with varying years of existence configure knowledge based processes, assets and capabilities along four important strategic knowledge dimensions to enhance organisational worth.

## 2.2    Theoretical Framework

The theories that underpin this research are: the resource based view (RBV), knowledge based view (KBV) and theory of collective intelligence. These theories are discussed in relation to their impact on organisational knowledge and performance. The choice of these theories is based on the fact that they suitably reflect the essence of firm based resources and knowledge in relation to firm competitiveness and performance.

### 2.2.1  Resource Based View (RBV)

The resource based view (RBV) was propounded by Barney (1991) to suggest that organisational competitiveness can be achieved and sustained based on the organisation's intangible resources. The RBV was suggested as an alternative to theories that established tangible organisational resources, such as machines and landed property acquisition, in the mechanized and industrial management era. The theory gained strong ground in the field of strategic management through Barney (1991) and has evolved from a mere perspective into a powerful theoretical discuss (Barney, Ketchen & Wright, 2011). The RBV is based upon the premise that organisational competitiveness is achieved and sustained when the firm's resources and capabilities are valuable, rare, inimitable and non-substitutable (Barney, 1991; Wenerfelt, 1995).

The tenet of the RBV directs the focus of managers to the inside-out view of the firm, where firm specific assets become a source of competitive advantage and subsequently improving organisational performance. More recent arguments have proven that organisations must constantly improve on such resources and capabilities to remain competitive (Helfat & Peteraf, 2003; Wu, 2010). Therefore, management has a responsibility to strategically channel the firm's resources across its business activities and to build the future resource base required to optimize performance (Erden, Klang, Sydler & Krough, 2014). Meanwhile, research based on the resource based view has gone beyond the shores of strategic management to gain wide interconnection with other field such as distinctive competences, organisational economics and theory of industrial organisation (Mahoney & Pandian, 1992).

According to the proponents of the resource based view, rent generation comes not just from the firm's resources, but the firm's unique capabilities and other strategic actions over such resources (Ketchen, Hult & Slater, 2007). In this sense, firm's dynamic capabilities, which are developed and experimented with over a period of time are identified as a source of competitive advantage (Helfat & Peteraf, 2003). Dynamic capabilities refers to manager's ability to acquire, integrate and implement resources under changing conditions to opportunities that create competitive advantages and subsequently improved performance for the firm. Accordingly, Verona (1999) linked the RBV to product development by identifying management's usage of technological and market capabilities evolving through internal and external integrative capabilities to sustain competitive advantage. Priem and Butler (2001) further re-emphasized the two basic assumptions of Barney's (1991) RBV saying: "(i) resources are distributed heterogeneously across firms, and (ii) these productive resources cannot be transferred from firm to firm without cost". Therefore, competitiveness of organisations depends on their unique resources and its capabilities over such resources.

Scholars, such as Chuang (2004) Nguyen, Neck and Nguyen (2009), have established the empirical link between propositions of the resource based view and organisational knowledge. Miller and Shamsie's (1996) study found knowledge-based resources such as production and coordinative talents and budgets a significant booster of financial performance of the Hollywood film studios. Knowledge as an organisational asset is perceived to add value to other resources owned by a firm and satisfies the valuable, rare, inimitable and non-substitutability (VRIN) conditions of the Resource Base Theory

(Halawi, Aronson & McCarthy, 2005). Looking beyond the RBT, authors such as Grant (1996) have singled out organisational knowledge as an important resource that could yield competitive advantage and subsequently higher performance for the firm. This argument has resulted in the Knowledge Based View (KBV) of the firm.

To suppose that knowledge, being one of firms' intangible resources, is considered the most strategic of every other organisational resource implies that managers must have a more robust knowing of their firms' tangible and intangible resources (Cook & Brown, 1999). For example, branding as an intangible organisational resource could result in competitive advantage (Ghodeswar, 2008). However, within the scope of the knowledge based economy, managers that have deeper knowledge and skills of building unique brand models are likely to outperform those that do not.

Firms in the telecommunication industry also understand the significance of competing based on intangible resources. Todeva and John (2001) identified some of these intangible resources to include technical and organisation specific skills possessed by employees in respective telecommunication organisations, alongside network capabilities of the organisations. In addition, the capability of senior management staff to influence and harness the support of team members through effective leadership skill can help achieve greater organisational creativity and innovation which could enhance organisational performance.

Although, the contributions of the resource based view cannot be denied, the theory is limited by its inability to explain how internal organisational resource must relate to achieve higher performance for the organisation. Besides, its inability to relate internal organisational resources with the organisation's external environment and challenges faced by the organisation in its product-market domain makes the theory assume that the organisation operates in a static or constant competitive market which in reality is not so (Priem & Butler, 2001). Although the resource based view supports the fact that organisational knowledge as an intangible organisational resource is suitable to organisational competitive performance, the necessary links to achieving this end has not enjoyed in-depth explanation. Also, there is no known fact, based on the theory about the role of organisational orientations; such as learning, entrepreneurial and market orientations, which shape the firm's strategic behaviours in response to the demands of its external environment and its performance.

## 2.2.2 Knowledge Based View (KBV)

The Knowledge based view (KBV) is seen as an extension of the resource based theory. The knowledge based view was promoted by Grant (1996), when he perceived that in an economy where employees mental capabilities (their know-what and know-how) is continually gaining dominance within organisational systems, organisational competitiveness is not simply shaped by a collection of intangible resources, but more specifically, knowledge has become the most significant resource of the organisation that generates superior advantage (von Krogh, Nonaka & Aben, 2001). KBV incorporates organisational dynamic capabilities in a way that potentially submerges the firm's internal and external contexts to jointly enhance organisational performance (Curado, 2006). In the present knowledge economy, what a firm knows is regarded as central to achieving competitive advantage and higher performance (Zheng, Yang & McLean, 2010). Thus, the issue of knowledge creation, utilization and transfer becomes central not only to managers but the overall organisational operations (Cabrera-Suárez, De Saá-Pérez & García-Almeida, 2001).

This might mean that in the present knowledge economy, the abundance of resources which a firm has control of, though satisfying the basic tenets of the RBV in the form of rareness, valuable, imperfect immutability and non-substitutability; might not be sufficient to achieve competitive advantage without the basic knowledge competence of the experts in the firm. By implication, the knowledge based view of the firm rests upon the fact that wealth of knowledge permeates every other tangible and intangible resources of the organisation to create and sustain organisational competitive advantage. For example, rather than competing based on mere physical structures, organisations now depend on the knowledge that sets up architectural designs and construction of office spaces that reflect a knowledge driven work environment. It is also now about the knowledge that drives technology in the work place. This also extends to the people in the organisation. Away from arguing about people as the most strategic resource in the organisation, arguments must now be based on acquiring, striving to retain and continuously training people that possess the requisite knowledge that can drive the organisation's strategic objectives. Essentially, superiority of knowledge defines the quality utilization of resources, thus requiring the integration of knowledge in all organisational processes. Holding on the view that top management is representative of the overall organisation, Bach, Judge and

Dean (2008) opined that top management knowledge reflects the overall wealth of knowledge in an organisation.

The KBV has been found to be significantly effective in the sphere of organisational operations. Blome, Schoenherr and Eckstein (2014) found that internal and external knowledge transfer significantly influence supply chain flexibility. Also, Zander and Zander (2010) discussed the knowledge based view of social communities and cultural influences among international acquisitions. The knowledge based view is essentially relevant to multinational enterprises (MNEs) since it offers a diversified view of the firm from the traditional transaction cost economics (TCE) that assumes firm's success is based on taking opportunities of market failures to a more renowned role of knowledge sophistication as the basis of competitive advantage (Fransson, Håkanson & Liesch, 2011). Further exploration of knowledge based research has brought to light what some refer to as knowledge strategy, which attempts to link a firm's knowledge based resources to its business strategy as a means of explaining its competitive advantage and performance (Kasten, 2007; Zack, 2002; 2003).

In his position about the value derivable from knowledge, Barney (1996) suggested the following characteristics of organisational knowledge: transferability, capacity to aggregate, appropriability, specialization in knowledge acquisition and the knowledge requirements of production. Transferability of knowledge refers to the ease of communication and sharing of knowledge among organisational members. Capacity for aggregation is the capacity of organisational members to absorb new knowledge that can be useful to existing knowledge. Appropriability is the extent to which knowledge is able to generate rent that is equal to the value it creates. Specialisation of knowledge relates to the identification of individuals with a particular field of knowledge in which they develop expertise. The knowledge requirement of production, and services, implies that the fundamental and most valuable input in the production process of any organisation is knowledge. The extent to which firms build on these knowledge based characteristics enhances their ability to relate their internal knowledge capabilities which external organisational orientations (Massa & Testa, 2009).

Sustaining the knowledge advantage demands a reflection on the typology and taxonomy of knowledge. Understanding knowledge types helps practitioners to properly relate with the people and knowledge infrastructure in the organisation. von Krogh, Nonaka and Aben

(2001) summarizes all form and types of knowledge under two major sub themes, namely: (i) explicit or articulable knowledge which is transferable at low cost; and (ii) tacit or applicable knowledge which is often difficult to transfer. According to Vinje and Nordkvelde (2011) telecommunication firms operate in the complex system that is characterized with a value chain that demands their continuous interaction with the external environment. According to this view, the knowledge of the telecommunication operators must encompass factors that create significant value to the organisations' internal operations, as well as their external stakeholders. Therefore, the propositions of the knowledge based view such as the specialization of knowledge requires that continuously, for such knowledge driven industry characterized by intense competition and dynamism, the organisations must strive to acquire and retain experts' knowledge in order to enhance competitive performance.

The importance of relating the organisation's knowledge capability with its external environment was further highlighted by Ogbo, Okechukwu and Ukpere (2012) as they emphasized that innovation, being a part of the organisation's knowledge activity, can be enhanced in telecommunication firms through a process that links employees of the organisation with external stakeholders. This assertion supports the proposition of the knowledge based view of the firm in that transferability of knowledge both from within and outside the organisation exposes them to opportunities such as acquiring competitors, customers, suppliers, government and IT based knowledge.

### 2.2.3 Theory of Collective Intelligence

Collective intelligence (CI) is the engagement of communal efforts (e.g. members of an organisation) as opposed to individual effort, to execute tasks or initiate solutions to problems, with the aim of achieving more effective and efficient outcomes (Leimeister, 2010). By implication, collective intelligence explains how people and technology can be connected to act systematically. It show cases a combination of human cognition and technological memory to enhance the performance of groups of organisational members towards achieving organisational objectives. Wooley, Chabris, Pentland, Hashmi and Malone (2010) observed that with the help of collective intelligence groups can use their combine cognition to solve single and a wide variety of tasks, which ordinarily individual knowledge might not be so competent at solving.

The need for timely and accurate response to and decision making about the fast-paced and hyper-competitive business environment makes it quite risky for firms to rely on

practices that encourage individual decision making (Bonabeau, 2009). Supposedly, this is why firms harness the advantages associated with team structures in designing, evaluating and implementing decisions.

CI theory of organisational knowledge propagates relational thinking, which means a way of human intellectual interactions within a social context, as an essential for enhancing organisational and workforce productivity, as well as goal achievement. It showcases organisational network system (or practices) in which people interact among themselves and sometimes with computers and other information technology facilities, to generate and share knowledge for the use of the organisation. Thus, it is multi-system in nature, creating a network form of knowledge that shifts focus principally from individuals to groups (Svobodová & Koudelková, 2011).

During the collective work process, it is vital that that job tasks are organized in a way that suggest proper structuring in which every individual is aware of the role they must perform to achieve the collective objective of the organisation. Consequently, Malone, Laubacher and Dellarocas (2009) opined that collective intelligence in organisations should involve defining two major factors, namely: (i) what and how job tasks must be executed; and (ii) who is performing the tasks and why. Identifying what job tasks is to be done and how involves the pattern with which groups would combine knowledge efforts together to generate novel ideas that advance the organisational competitiveness. In this same light, they must decide how the tasks would be organized to achieve the set objectives of the organisation. Deciding who should perform each task in the organisation would depend on taking a decision whether it would be a single individual or a crowd. Crowd in this context is defined as a collection or group of individuals collaborating based on expertise and knowledge sharing.

In organisational knowledge research, the theory of collective intelligence is significant in that it emphasizes group tacit and explicit knowledge as important organisational factors for achieving competitive performance (Leimeister, 2010). The theory suggest that the capacity of groups to reason through their tacit knowledge is one aspect of organisational collective thinking that can achieve organisational objectives. In the same way, it suggest that group knowledge encoded in explicit form by the organisation can also be a part of the organisational knowledge asset (Preece & Shneiderman 2009). Some of the modern

expressions of collective intelligence in organisations include: crowdsourcing, decision support, open innovation and social collaboration.

Crowdsourcing is the outsourcing of organisational activities to a crowd of independent operators (Howe, 2009). It is an essential means through which organisations get project executed, with the aim of leveraging of the efficiency and effectiveness capacity of experts. A group of communications experts building a new network communication system can enhance speed and quality in accomplishing the task. Open innovation is an organisational practice in which opinions and ideas from stakeholders of the organisation is incorporated into a new product or service building process. According to Chesbrough (2003), by incorporating the environment into its innovation process, organisations can enhance their innovation capabilities to achieve superior competitive performance. This is more likely to result from the fact that the collective knowledge gathered from customers and the organisation's customer relations unit, for example, would guide the organisation's new product design, promotion and pricing to satisfy customers' expectation. Organisations can also leverage on the use of social collaborations to generate collective intelligence. An example of one of the fastest growing social collaborations on the web is Wikipedia (Leimeister, 2010). Many other social collaborations have since emerged such as investopedia, business dictionary, slide share and so on.

## 2.3 Empirical Framework

### 2.3.1 Individual-tacit Knowledge and Customer Satisfaction

Individual-tacit knowledge is a viable organisational resource for achieving customer satisfaction (Lee, 2000). Polanyi (1967) introduced the concept and tacit knowledge has increasingly gained attention from both researchers and practitioners, especially with respect to fulfiling the customer satisfaction objective. Tacit knowledge is one which the possessor acuire overtime from his/her experience while on the job (Chilton & Bloodgood, 2007). Individual-tacit knowledge can be captured based on skill/expertise, experience and attitude (Fei *et al.*, 2009). The authenticity of measuring tacit knowledge spreads across many fields of specialization, such as: project execution/management (Anand, Ward & Tatikonda, 2010); informatics (Kurti, 2011); in knowledge intensive industries (Harlow, 2008), film making (Alony, Whymark & Jones, 2007) and so on.

According to Smith (2001) individual-tacit knowledge is siginificant to solving strategic organisational problems, such as, handling customer queries. In relating with customers, the role of individual's tacit knowledge cannot be over emphasized. This is because very often, especially within industries where customers' queries are attended to through telephone or internet calls, conversations between the organisation's employee and the customer is highly individualized (Woo, 2004). Despite that organisations have in-house computerized knowledge-bases that serve as guide to employees' response to customers' queries, the experience, knowledge, and skill of the employee is tested at such times. Especially when the customers' queries are not explicitly captured in the organisation's knowledge-base. Such situations leave the employee at the mercy of his or her experience, intuition and individual ability to generate solutions for the customer's queries.

Moreso, Jones and Leonard (2009) argued that organisational managers should also seize opportunity of the tacit knowledge of individuals to enhance and sustain organisational relevance, as perceived by the customers. Consequently, Ryan and O'Connor (2013) explained that tacit knowledge is essential for high-performing teams' effectiveness. Effectiveness here is determined by their ability to develop new products that satisfy customer requirements. Although previous research works, such as Gebert, Geib, Kolbe, and Brenner (2003) have examined the relationship between organisational knowledge and customer satisfaction this has been limited to the use of codified knowledge stored in the firm's online knowledge base. Therefore, there is a need for empirical research to show how individuals use their tacit knowledge to achieve customer satisfaction objective of the organisation.

Moreover, the relationship between individual-tacit knowledge and customer satisfaction can be viewed as a dyadic interaction. The interactions between individual tacit knowledge and customer satisfaction require that organisational members learn continuously so that they can enhance tacit knowledge acquisition. This is with the aim of achieving positive customer experience during service encounter (Chakravorti, 2011). Therefore, part of using individual-tacit knowledge to ensure positive customer experiences is by using their experiences and intuitions to resolve challenges that customers present (Ketchen, Hult & Slater, 2007). The mutual relationship developed when using individual-tacit to achieve customer satisfaction can be beneficial to both the organisation and customers alike. It can ensure expected future interaction and a history of shared interaction between the organisation and customers (Gutek, Groth & Cherry,

2002). Also, individual-tacit knowledge can achieve customer satisfaction because it is context specific to customers' requirements. In other words, customers can perceive value from the services they get from the organisation because employees employ their individual-tacit knowledge to address direct issues that customers present before them (Guchait, Namasivayam & Lei, 2010). Thus, individual-tacit knowledge and customer satisfaction, as a dyadic relationship is likely going to improve trust in the customer, it would build confidence in the customer regarding the organisation's products and services and ensure customers' continuous patronage of the organisation's services (Guchait, Namasivayam & Lei, 2010).

## 2.3.2    Individual-Explicit Knowledge and Operational Efficiency

Individual-explicit knowledge are conceptual skills and cognitive capabilities which organisational members use to drive operational efficiency for the organisation (Lam, 2000). Individual's formal education and trainings could therefore serve as indicators of their explicit knowledge (Fei *et al.,* 2009). Knowledge gained by individual employees of the organisation, such as knowledge gained from training programmes have been shown to improve efficiency in IT based organisations (Maran,  Arokiasamy & Maimunah, 2009). Saleem, Shahid, & Naseem, (2011) suggested that training enhances individuals' know-how skill and enhances their level of efficiency in pursuance of organisational objectives. Educational level of individual employees have also been argued to be an important part of their explicit knowledge that enhances operational efficiency of the organisation (Gibson Consulting Group, 2011). Ng and Feldman (2009) argued that individual-explicit knowledge gained from education provides individual employees with the requisite knowledge that makes them efficient with every job-task that they are given. This means, for example, individual employees can leverage on their specific areas of discipline and the knowledge gained from the same to achieve higher levels of efficiency for the organisation. This also implies that formal training provides individual organisational members with the conceptual and technical skill that helps the organisation prevent waste of costs, time and efforts in business, and overall organisational, processes (Kotur & Anbazhagan, 2014).

Moreover, Rossi (2014), reported a positive relationship between individual-tacit knowledge and operational efficiency based on the size of knowledge transfer operation that can occur between multiple learners during research and teaching intensity.  Whereas

operational efficiency can be looked at from a perspective of decision relating to firm operation, another way to investigate it is by determining those characteristics that significantly impact on operations (Sarkis, 2000). Thus, Verkasalo and Lappalainen (1998) investigated efficiency of knowledge utilization based on characteristics, such as, process delay, effort and width.

### 2.3.3    Group-tacit Knowledge and Organisational Effectiveness

Group-tacit knowledge involves the coming together of individual members of the organisation to act in a collective and coordinated manner and to solve complex tasks, as a way of achieving organisational effectiveness (Erden, von Krogh & Nonaka, 2008). Although knowledge is created in the minds of individuals, the development and progressive increase in individual knowledge occurs within a social context of group interactions (Nasimi, Nasimi, Kasmaei, Kasmaei, Basirian & Musapour, 2013; Nonaka, Toyama & Konno, 2000).  Owing to the highly personalized nature of tacit knowledge, Agbim, Owutuamor and Oriarewo (2013) opined that tacit knowledge among groups is gained as organisational members gain experience on their jobs, and being under the tutelage of experts. This implies that group-tacit knowledge reflects in the experiences shared on the job and the expertise that arises by reason of learning subtle skills and know-hows that are not common to most members of a profession and, indeed, the organisation.

According to Li, Chang, Chen and Jiang (2010) group-tacit knowledge has the advantage of enhancing the effectiveness of organisational members' ability to forecast events relating to their operations. This is because, leveraging on experience and leveraging on collective knowledge sharing they are able to predict future events and thus, ensure effective strategic planning. This view therefore, emphasizes the fact that organisational effectiveness basically resides in the ability of organisational members to think corporately for the benefit of the organisation. Part of the challenge for managers therefore is to manage the process that stimulates expert in the organisational members to share their knowledge for the purpose of achieving higher performance. According to Ardichvili (2008) individuals' willingness to share knowledge in organisations is influenced by factors imbedded in motivators, for example, personal benefits; barriers, such as, organisational culture; and knowledge enablers, namely: inter-personal trust and information technology. Zhang, He and Zhou (2013) showed that industries and projects

that operate in a dynamic environment, yet demanding effectiveness and efficiency in work processes can take advantage of integrated project development (IPD). The IDP concept enhances team, and by extension organisational, effectiveness through the collaborative expertise of teams, usually known as integrated project team (IPT).

In organisations, group tacit knowledge resides in the collective understanding which organisational members have about their work and organisational processes. It would reflect in their beliefs, values and cultural patterns of relationships, work flow systems and knowledge sharing. Fei, Chen and Chen (2009) suggest that group-tacit knowledge would reflect in the firm's culture and relationship with customers, suppliers and other external parties. It can also be linked to what Hinton (2003) called "communities of practice". According to Alwis and Hartmann (2008) group-tacit knowledge has the ability to propel creative patterns to achieving organisational effectiveness. Organisational effectiveness implies the capability of the firm to attain its broad goals, cutting across internal and external stakeholders' requirements (Zoogah, Peng, & Woldu, 2015). Pivar, Malbašić and Horvat (2012) also suggested that effective tacit knowledge sharing among organisational members will result in effective organisational systems and work processes.

### 2.3.4 Group-explicit Knowledge and Productivity

Group-explicit knowledge, as an organisational asset, has been shown to result in higher organisational productivity (Das, 2003). Organisational productivity measures the degree to which a firm, over time, can improve on the quantity of its output given a specific level of input resources, such as, explicit knowledge of organisational members (Phusavat, 2013). Das (2003) using a context of technical support work, tested productivity through call resolution time and extent of call escalation. Knowledge of technical support was measured through problem-solving tasks and moves dimensions. The results indicated that along different activity lines of technical work the relationship is significant. However, the present research seeks to examine productivity of telecommunication firms from a group knowledge perspective. This will add value in explaining the degree to which collective knowledge applications in the work place contribute to the firm's objectives.

One way of measuring productivity is by examining capital and employees' inputs, such as their explicit knowledge in relation to their gross output or value adding capability (Schreyer & Pilat, 2001). This approach measure productivity based on single-factors because it consider a very limited range of organisational knowledge-based resources to

examining the relationship beween productivity and organisational knowledge, especially, group-explicit knowledge. Moreover, this single-factor approach does not explain for the collective strength of input measures (Syverson, 2011). Therefore, most empirical literature take a multifactor analysis/approach to the measurement of productivity (for example, Del Gatto, Di Liberto, & Petraglia, 2011). This implies therefore that the measurement of productivity in empirical literature follows a more quantitative or objective approach to decision making. Only very few known studies, such as, Antonelli, Patrucco & Quatraro (2011) have been found to be based on such objective measures.

According to Handfield and Nichols (2002) organisational productivity can be realized from organisational knowledge, through the ability of employees to use their explicit knowledge to save time in the process of carrying out organisational activities, reduce redundancies in operational processes and attempt to eliminate waste of efforts. Therefore, the concentration of managers would not simply be about organising knowledge of organisational member in information technology (IT) based devices, but about ensuring that such IT systems can achieve the organisation's efficiency objective. For example, the organisation's IT system must be user friendly, such that organisational members can easily store, process and retrieve required knowledge that applies to different situations across the organisation's operational processes at the most minimal time, effort and cost.

Wu, Yeung, Mok and Han (2007) opined that the at the group level organisational knowledge can be influenced by factors such as capital intensity in the IT infrastructure of the organisation and research and development (R&D) expenditure. Mahadevan (2000) examined the relationship between capital intensity and production of the organisation and found a negative relationship. Much emphasis has also been place about the role of R&D on operational efficiency of organisations. Research and development has been reported to be a viable tool to enhancing productivity in organisational products and processes (Dilling-Hansen, Madsen & Smith, 2003). Basically, R&D is significant to organisations' productivity in terms of its ability to innovatively help them achieve cost control on input resources, maintain quality products and market share and ensure cost reduction on finished goods.

### 2.3.5 Moderating Effect of Organisational Orientation on the Relationship between Organisational Knowledge and Performance

In other to enhance the role of organisational knowledge in achieving higher performance, the organisation's orientation play a key role (Wiklund and Shepherd, 2003). This is because orientation is a pointer to the firm's strategic and competitive patterns that examine relationships between the firm and its environment. Kim, Im and Slater (2013) identified the possibilities of a relationship between organisational orientation and organisational knowledge. A firm's internal strategic knowledge capabilities and resources can successfully interact with its external environmental context given the intervention of the firm's strategic orientation (Zhou & Li, 2010). It is observed that the few available empirical works in this area have discussed this relationship by looking at individual strands of orientation. For example, Wiklund and Shepherd (2003) examined how entrepreneurial orientation enhances the relationship between knowledge-based resources and firm performance.

Entrepreneurial orientation represents that way firms organize their activities to demonstrate entrepreneurial traits in responding to their internal and external environmental demands (Wiklund & Shepherd, 2003). Overtime strategic management scholars have attempted to show the importance of entrepreneurial orientation to organisational performance (for example, Lumpkin & Dess, 2001; Wiklund & Shepherd, 2005). Moreso entrepreneurial orientation has been shown to reveal the capability of an organisation to explore and exploit market opportunities above its competitors (Zahra & Garvis, 2000).

Organisations that focus on entrepreneurial orientation can create an atmosphere that encourage employees to share knowledge based on the organisation's chosen dimensions of entrepreneurial orientations and thus develop capacity, generate products and services that reflect a unique competitive package that is targeted at enhancing organisational performance (Gold, Malhotra, & Segars, 2001). For example, the creation of new products and services in the present knowledge based economy require that organisational members think innovatively. Innovation is a knowledge-based activity that can be very tasking, either at an individual or at the group level (Li, Huang & Tsai, 2008). Therefore, firms can demonstrate higher innovativeness by mobilizing and utilizing the knowledge of individuals and groups to develop new and highly competitive products and services for

their markets. According to Carrillo, Robinson, Al-Ghassani and Anumba (2004) and Lee and Sukoco (2007) a combination of organisational knowledge and entrepreneurial orientation positions organisations in a vantage position of continuous exploration and exploitation of new market opportunities.

Organisational knowledge can also interact with learning orientation to enhance organisational performance. Organisational orientation reflects the dynamism of firms to create or acquire new knowledge from experience and sources that are either internal or external to the organisational operations (Argote & Miron-Spektor, 2011). Organisational knowledge utilization and learning occur in a social context of the organisation, thus Lam (2000) suggest that organisations should be organized in a way that ensures coordinated interactions between organisational members to ensure that knowledge is effectively transmitted to aid continuous learning. As the firm continues to learn, at different stages it stabilizes on the knowledge building cycle, which in turn creates the starting point for further learning.

Organisational learning has been identified to be a major advantage to the competitive performance of organisations because it enhances their ability to access new information, and by extension knowledge, which is concurrent with the organisation's objectives (Wang, 2008). However, Calantone, Cavusgil and Zhao (2002) observed that the benefit derivable from the combination of organisational knowledge and learning orientation would be realized only when organisational managers strategically design and implement their learning orientation to match organisational knowledge. Evidence abound from Liao and Wu (2010) in strategic management research about the importance of learning orientation in stimulating organisational knowledge to achieve higher innovativeness in organisations.

Organisations use entrepreneurial and learning orientations to enhance their capacity to respond to changing market demands, adapt to competitors' actions, enhance employees' values and build internally viable business processes. However, the customers being served also constitute an important aspect of the firms' service concern. Moreso, organisations must adapt to their customers' requirements and understand how competitors develop strategic means of competing for the same set of customers. Therefore, in addition to the two organisational orientations mentioned above, the role of market orientation in moderating the relationship between organisational knowledge and

performance is another aspect of organisations' operation that deserve research attention (Hult & Ketchen, 2001). According to Wang, Hult, Ketchen and Ahmed (2009) a study combining organisational knowledge and market orientation because it would present a balanced view of how organisations use internal capabilities, such as organisational knowledge, to enhance external organisational worth through understanding its customers and competitors (market orientation). Hu (2010) showed that organisations with knowledge that is geared towards market oriented pursuits enhances its growth and overall organisational performance.

This research argues that the individual configuration of organisational orientation as a moderator in the relationship between organisational knowledge and orientation as have been examined by the above cited existing studies is insufficient to address firms' goals to satisfy a large range of stakeholder expectation. Besides, in the fast changing business environment, managers need to make decisions that respond to the needs of a large spectrum of organisational stakeholders. This research, therefore, takes of examining three key orientations, which are entrepreneurial, learning and market orientations, which relate to the firm's knowledge.

## 2.4  Gaps in Literature

This study investigated the relationship between organisational knowledge, orientations and performance in the Nigerian telecommunications industry.

Previous research has been limited in empirically showing the relationship between individuals'-tacit knowledge and customer satisfaction based on knowledge captured in the firm's online knowledge base (Gebert, Geib, Kolbe & Brenner, 2003; Guchait, Namasivayam & Lei, 2010). The research gap identified with these previous studies (as mentioned above) is the limitation of measuring organisational knowledge to knowledge stored in the firm's information technology (IT) base. This implies that little research attention has been given to how individual-tacit knowledge can influence customer satisfaction.

Also, the few studies available on the relationship between organisational knowledge and operational efficiency in the telecommunication industry were carried out in developed economies (Hu & Chu, 2008; Huang & Zhu, 2009). However, it is not clearly established in literature particularly within the Nigerian context as regards the relationship between operational efficiency and organisational knowledge in the telecommunication industry.

In addition, existing literature, such as Gold, Malhotra and Segars (2001) and Zheng, Yang and McLean (2010) explained the relationship between organisational knowledge and effectiveness from a perspective of knowledge infrastructure, such as the effect that knowledge stored in the firm's IT-base can have on its performance. The limitation with this approach is that it will to a large extent focus on IT usage more than direct human involvement in the work process. Thus measurement of effectiveness cannot be based on actual usage of group/collective knowledge.

Furthermore, even though the role of organisational knowledge, specifically group-explicit dimension, on firm's productivity has been conceptually predicted, yet only very few scholars have produced empirical research along this line (Madsen & Mikkelsen, 2012). Within a high-tech industry, such as telecommunications, this research argues that there is a need to examine the impact of tacit knowledge on productivity.

In conclusion, it is observed that the few empirical works, such as Wiklund and Shepherd (2003) and Zhou and Li (2010), that have discussed the relationship between organisational knowledge, orientation and performance examined the relationships by looking at individual strands of orientation. The argument of this study is that such individual configuration of orientation will be insufficient to address firms' goal of satisfying a large range of stakeholder expectation. This research, therefore, examined three key orientations that relate to the firm's knowledge. They are market orientation, entrepreneurial orientation and learning orientation.

# CHAPTER THREE

# METHODOLOGY

**Preamble**

This chapter focused on the research design that was adopted, the study population, the sample size, sample frame, the sampling techniques that were used, as well as sources of data and statistical techniques that were utilized in the data analysis. This chapter also highlighted the research instruments, data gathering method and sources of data, and the inclusion of validity and reliability test.

## 3.1    Research Design

There are broadly three types of research design: qualitative, quantitative and mixed method research design. Whereas the qualitative research design is posed on exploring individuals' understanding about a given subject matter, the quantitative approach tests the relationship between variables and theories using numbers (Creswell, 2014). The mixed method incorporates both views as a means of arriving at a more comprehensive understanding of the subject matter.  This research study adopted the mixed method research design. The mixed method approach was adopted because it incorporates both the quantitative and qualitative research designs and it is advantageous in its ability to infuse, in a single research process, scientific experimentation of perceived truth/reality with human opinions drawn from practical experiences in the work place (Johnson & Onwuegbuzie, 2004). Previous related studies, such as, Molina-Azorin (2012) and Nemani (2009), have showcased the importance of using mixed method research design.

The research study is descriptive in nature. The use of descriptive research design is validated by the fact that populations for the study is already established, theories are not newly explored or determined and the research study simply attempts to describe the relationships among the variables included in the research (Jong & van der Voordt, 2002).

Four main types of research methods are commonly used in the field of management and social sciences, these are survey research, experimental/participatory, observation and ex-

post facto methods. Survey method was adopted for the study because it gave the researcher the opportunity for gathering large and small samples from a given population in order to examine the description, incidence and interaction of relevant variable pertaining to the research objectives. The choice of survey research method is also premised on its value and feasibility in addressing the research problem raised in the study. In addition, insights relating to the study can be easily gained from the subset of the population using the survey method (Taylor, Sinha & Ghoshal, 2014). In other words, given the population for this research study, the survey method enhanced accessibility to a subset of the population using a sample. More specifically, semi-structured interviews and structured questionnaires were used to collect data from the sampled respondents.

Ex-post facto method was also adopted because data envelopment analysis is a mathematical programming technique that requires evaluation of decision making units. Efficiency and productivity are inevitably retrospective and this is not a unique handicap because most performance monitoring relies on historical data (Hollingsworth & Street, 2006). Indeed, the ease with which data envelopment analysis can be applied implies that only the speed of information impedes the timeliness of analysis.

From the review of literature, most scholars influenced by the demand of their research focus utilized a mix of these research approaches (Uchendu, Osim & Akuegwu, 2012). Therefore, this study utilized the survey and ex-post facto methods because of the need to collect both data on causative factors that were likely to influence the efficiency and productivity of telecommunication firms in the study. In addition, the observation of previous works in telecommunication firms' efficiency and productivity indicates that it is the commonly adopted research method by most researchers studying similar problems (Akazili, Adjuik, Jehu-Appiah & Zere, 2008; Zere, Mbeeli, Shangula, Mandlhate, Mutirua, Tjivambi & Kapenambili, 2006; Mwase, 2006).

## 3.2    Population of the Study

Population according to Ifidon and Ifidon (2007) is defined as the aggregate of all elements that is of interest to a research concern. Managerial and technical and administrative employees of firms in the Nigeria telecommunications industry formed the population for this study. The telecommunications industry consists of nine active companies, namely: MTN, Etisalat, Airtel, Multilinks Telkom, 21st Century, Visafone,

Globacom, VGC/MTN and IPNX (Nigeria Communications Commission, 2015). Active companies are defined as firms that have gained license to operate in the Nigeria telecommunication industry and have commenced operation.

The GSM sub-sector is pivotal to the Telecommunication industry because it has the highest number of subscribers (98.07 per cent), thus serving as the major driver of growth in the industry. Only four of these organisations fall under the category of Mobile (GSM) operators. They are: MTN Nigeria Communication (57,042,721), Globacom Limited (34,608,793), Airtel Nigeria (33,866,789) and Etisalat (21,877,542). These four organisations were included in the research work.

Although the variables of interest to this research address issues of strategic concern to firms, it must however be noted that organisational knowledge as a practice cuts across individuals and groups in the firm. Therefore, the population of this study include managerial cadre employees and other technical and administrative employees of the four firms in the GSM market segment of the Nigerian telecommunication industry. These set of personnel are believed to have acquired years of experience and been exposed to strategic events both in the firm and within the telecommunications industry that inform their suitability to respond to the queries raised by the research instrument.

i.      Firm Employees Population: At the firm level, only MTN was included in the study. Studying MTN was advantageous to this study since it is the market leader in the GSM market of Nigeria's telecommunication industry. The firm accounts for the largest subscriber base of 57,042,721 (38.84%), while other firms in the industry have the following market share statistics: Globacom 34,608,793 (23.48%), Airtel 33,866,789 (22.98%) and Etisalat 21,877,542 (14.84%) (Nigerian Communication Commission, 2016). The firm has a population of One thousundred, four hundred and sixty-five (1,465) employees. As the market leader in a knowledge intensive industry, the managerial cader employees and other technical and administrative employees of MTN were considered to be suitable to respond to the questionnaires.

ii.      Customer Service Center Employee Population: The Customer Service Centers of each of the four firms were included in the survey. Deciding to use the Customer Service Center is justified by three main reasons: (i) the challenges associated with accessing the corporate offices of the telecommunications operators and their staff. (ii) Customer

Service Centers have a strong tendency of determining customer satisfaction through the quality of services received by customers when they walk in to make complaints. They are also strong determinant of the firm's ability to maintain and attract customers (Tsoukas & Vladimirou, 2001). (iii) Customer Service Centers are perceived to be an important part of the firms' cost and revenue outlets, therefore, determining the role of knowledge on their efficiency, productivity and effectiveness is vital to their overall performance.

In total, within Lagos state and FCT the four firms have One hundred and twenty-four (124) Customer Service Centers. The Table 3.1 (see page 97) shows the distribution of GSM market segment's CSCs by state.

**Table 3.1: State-based Distribution of Customer Service Centers of Mobile (GSM) Telecommunication Firms in Nigeria**

| STATE | TELECOMMUNICATION FIRMS | | | | AGGREGATE |
|---|---|---|---|---|---|
| | MTN | GLO | AIRTEL | ETISALAT | (%) |
| Abia | 4 | 2 | 1 | 1 | 8 (2.067) |
| Adamawa | 2 | 1 | - | 1 | 4 (1.034) |
| Akwa Ibom | 3 | 2 | 2 | 1 | 8 (2.067) |
| Anambra | 7 | 2 | 1 | 2 | 12 (3.101) |
| Bauchi | 1 | 1 | 1 | - | 3 (0.775) |
| Bayelsa | 1 | 1 | 1 | 1 | 4 (1.034) |
| Benue | 2 | 2 | 1 | - | 5 (1.292) |
| Borno | 1 | 1 | 1 | 1 | 4 (1.034) |
| Cross River | 1 | 2 | 1 | 1 | 5 (1.292) |
| Delta | 7 | 3 | 2 | 2 | 14 (3.618) |
| Ebonyi | 1 | 1 | - | 1 | 3 (0.775) |
| Edo | 3 | 2 | 1 | 1 | 7 (1.809) |
| Ekiti | 2 | - | 1 | 1 | 4 (1.034) |
| Enugu | 5 | 3 | 3 | 3 | 11 (2.842) |
| Federal Capital Territory | 14 | 2 | 5 | 6 | 27 (6.977) |
| Gombe | 2 | 1 | 1 | - | 4 (1.034) |
| Imo | 3 | 1 | 1 | 1 | 6 (1.550) |
| Jigawa | 1 | - | - | 1 | 2 (0.517) |
| Kaduna | 6 | 3 | 1 | 1 | 11 (2.842) |
| Kano | 5 | 1 | 1 | 2 | 9 (2.326) |
| Katsina | 3 | 2 | - | 2 | 7 (1.809) |
| Kebbi | 1 | 1 | - | 1 | 3 (0.775) |
| Kogi | 2 | 1 | - | - | 3 (0.775) |
| Kwara | 4 | 1 | 1 | 2 | 8 (2.067) |
| Lagos | 39 | 21 | 17 | 20 | 97 (25.066) |
| Nasarawa | 2 | 1 | - | - | 3 (0.775) |
| Niger | 3 | 2 | 1 | 1 | 7 (1.809) |
| Ogun | 4 | 4 | - | 3 | 11 (2.842) |
| Ondo | 2 | 2 | 1 | 1 | 6 (1.550) |
| Osun | 3 | 1 | 1 | 1 | 6 (1.550) |
| Oyo | 6 | 4 | 3 | 2 | 15 (3.876) |
| Plateau | 2 | 1 | 1 | 1 | 5 (1.292) |
| Rivers | 9 | 5 | 2 | 3 | 19 (4.91) |
| Sokoto | 2 | 1 | - | 1 | 4 (1.034) |
| Taraba | 2 | 1 | - | - | 3 (0.775) |
| Yobe | 1 | - | - | - | 1 (0.258) |
| Zamfara | 1 | 1 | - | - | 2 (0.517) |
| **TOTAL** | 157 | 80 | 52 | 65 | **351 (100%)** |

**Source: Retrieved on 21st March, 2016 from  http://www.mtnonline.com,**
**http://www.gloworld.com/ng,**
**http://africa.airtel.com/wps/wcm/connect/africarevamp/nigeria, and**
**http://www.etisalat.com.ng**

The number of employees working in the Customer Service Center (CSC) of the four

firms across Lagos State and FCT are two hundred and ninety-one (291) and one hundred

and three (103) employees respectively. In Lagos State and FCT, the four telecommunication firms in the GSM sub-market have a total of three hundred and ninety-four (394) employees who were included in the CSC population for this research study.

iii.     Customer Population: It was important to include customers in this study because the most appropriate means to measuring customer satisfaction is by interviewing customers themselves. In the telecommunication industry, customer base is determined by the number of subscribers in the network. According to Nigeria Communication Commission (2016) the population of subscribers to the four GSM firms' networks in Lagos state and the FCT is 18,933,519 and 6,030,689 respectively. Table 3.2 below provides a breakdown of the population used in this research work at the firm, Customer Service Centers and customer levels of the four GSM firms in Nigeria's telecommunication firms across Lagos State and FCT.

**Table 3.2: Breakdown of Population of the Study**

| S/N | Respondents' Category | Firms Category By State | | | | | | | |
|-----|-----------------------|-------|-------|---------|-------|---------|-------|----------|-------|
|     |                       | MTN   |       | Globacom |       | Airtel  |       | Etisalat |       |
| 1   | Headquarters          | 1500  |       | -       |       | -       |       | -        |       |
|     |                       |       |       |         |       |         |       |          |       |
| 2   | Customer Service Center | Lagos | FCT | Lagos | FCT | Lagos | FCT | Lagos | FCT |
|     | Supervisors           | 39    | 14    | 21      | 2     | 17      | 5     | 20       | 6     |
|     | Other technical and administrative Staff | 78 | 38 | 42 | 11 | 34 | 12 | 40 | 15 |
| 3   | Customers             | 5,736,067 | 1,949,187 | 3,588,424 | 1,765,833 | 5,421,268 | 1,037,564 | 4,187,760 | 1,278,105 |

**Source: Field Survey (2017)**

### 3.3     Sample Size Determination

Sample according to Moti (2005) refers to the fraction of total the population that is selected for study. It makes it possible for the researcher to make inference from sample to population (Loto, Ademola & Toluwase, 2008). Samples are vital because it may be practically impossible to study the entire population (especially where the population is very large), it prevents waste of time and offers benefits on cost. The sample size determination procedures were discussed under the following sub-headings

i.     **Firm Sample:** The sample size for the firm was determined using Bartlett, Kotrlik and Higgins (2001) formula. The margin of error, that is, 0.03 or 3 percent provided by them is very suitable for this study, hence making it a justifiable formula for determining

the sample size for the firm's employees. According to Bartlett, Kotrlik and Higgins (2001) the sample size for a study can be determined through the following presentation:

**Table 3.3: Determination of Sample Size at the Firm Level**

| Population Size | Sample Size | | | | | |
|---|---|---|---|---|---|---|
| | Continuous data (margin of error = .03) | | | Categorical data (margin of error = .05) | | |
| | alpha = .10 t = 1.65 | alpha = .05 t = 1.96 | alpha = .01 t = 2.58 | p = .50 t = 1.65 | p = .50 t = 1.96 | p = .50 t = 2.58 |
| 100 | 46 | 55 | 68 | 74 | 80 | 87 |
| 200 | 59 | 75 | 102 | 116 | 132 | 154 |
| 300 | 65 | 85 | 123 | 143 | 169 | 207 |
| 400 | 69 | 92 | 137 | 162 | 196 | 250 |
| 500 | 72 | 96 | 147 | 176 | 218 | 286 |
| 600 | 73 | 100 | 155 | 187 | 235 | 316 |
| 700 | 75 | 102 | 161 | 196 | 249 | 341 |
| 800 | 76 | 104 | 166 | 203 | 260 | 363 |
| 900 | 76 | 105 | 170 | 209 | 270 | 382 |
| 1,000 | 77 | 106 | 173 | 213 | 278 | 399 |
| 1,500 | 79 | 110 | 183 | 230 | 306 | 461 |
| 2,000 | 83 | 112 | 189 | 239 | 323 | 499 |
| 4,000 | 83 | 119 | 198 | 254 | 351 | 570 |
| 6,000 | 83 | 119 | 209 | 259 | 362 | 598 |
| 8,000 | 83 | 119 | 209 | 262 | 367 | 613 |
| 10,000 | 83 | 119 | 209 | 264 | 370 | 623 |

**Source: Bartlett, kotrlik and Higgins (2001)**

From their estimation, a population of 1500 at alpha value of 0.05 will yield a sample size of 110 respondents. Thus, a total sample size of 110 managerial and other technical and administrative employees was determined for this research work.

**ii.      Customer Service Center Sample:** Considering that the population of all four firms' CSCs and total number of employees of their CSCs within Lagos and FCT geographical locations are within accessible range, the census approach was adopted. Census approach implies that all elements of the population are included in the survey (Singh & Masuku, 2014). Therefore, the sample size for the Customer Service Centers include all the Three hundred and ninety-four (394) employees located in the CSCs.

**iii.      Customer Sample:** The total number of subscribers operating with the four GSM telecommunication firms is very large, running into millions. Hence, it is practically not visible in this single research to include all of them in the sample. According to Godden (2004) where population size is greater than 50,000, it is regarded as infinite and thus sampling should be narrowed based on equation 3.1

$$SS = \frac{Z^2 \times (P) \times (1\text{-}P)}{C^2} \quad \ldots\ldots\ldots\ldots.. \text{ Equation 3.1}$$

Where,

SS = Sample Size

Z = Z-value[A] (e.g., 1.96 for a 95 percent confidence level)

$Z^2 = 3.8416$

P = Percentage of population picking a choice, expressed as decimal[B]

C = Confidence interval, expressed as decimal (e.g., .04 = +/- 4 percentage points)

$$SS = \frac{1.96^2 \times (0.5) \times (0.5)}{0.0016}$$

$$SS = 600$$

Based on this estimation the sample size is given as 600. In other words, between customers of the for GSM firms in Lagos State and FCT geographical locations 600 respondents were included in the customer sample for this research study. Based on proportionate sampling, Lagos state having a higher number of subscribers had to be allotted with a higher sample size of 350 respondents while FCT was allotted with 250 respondents.

Table 3.4 below provides a simplified breakdown of the sample size included in this research work at the firm, customer service center and customer levels of the four GSM firms in Nigeria's telecommunication industry across Lagos state and the FCT.

**Table 3.4: Breakdown of Sample Size for the Study**

| S/No | Respondents' Category | Firms Category By State | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MTN | | Globacom | | Airtel | | Etisalat | | |
| 1 | Headquarters | 110 | | - | | - | | - | | **110** |
| | | | | | | | | | | |
| 2 | Customer Service Center | Lagos | FCT | Lagos | FCT | Lagos | FCT | Lagos | FCT | |
| | Supervisors | 39 | 14 | 21 | 2 | 17 | 5 | 20 | 6 | **124** |
| | Other technical and administrative employees | 78 | 38 | 42 | 11 | 34 | 12 | 40 | 15 | **270** |
| 3 | Customers | 600 respondents were determined across Lagos state and FCT. However, based on proportionate sampling, Lagos state was allotted a higher sample size of 350 respondents while FCT was allotted 250 respondents. | | | | | | | | |

**Source: Field Survey (2017)**

### 3.4    Sample Frame

A sampling frame is the list of sampling units from which the sample, or stage of the sample, is selected (Ojo, 2005). The sample frame of this research work is all employees in the managerial cadre and other technical and administrative employees at the MTN headquarters and Customer Service Centers of the four telecommunication firms included in this study. The total number of customers of MTN, Glo, Airtel and Etisalat, in Lagos State and FCT were also included in the sample frame of this research work.

### 3.5    Sampling Techniques

The sampling techniques used for data collection can be grouped into two broad categories. These include, probability sampling (including simple random technique, stratified technique, and cluster technique) and non-probability sampling techniques (including convenience technique, purposive technique, and judgmental sampling technique.

Within the Nigerian Telecommunication industry, firms that were sampled were selected through a purposive and stratified means. This is because Nigeria Communication Commission has grouped the firms operating in the industry into three major sub-markets/strata consisting: Mobile (GSM), Mobile (CDMA) and Fixed (wired and wireless). Of the three sub-markets in Nigeria's telecommunication industry, the Mobile (GSM) was revealed to have the highest market share (98.5%) and the most active industry sub-market (Nigeria Communication Commission, 2015). Hence, based on the assertion that the most active use of knowledge for driving industry competitiveness and contributing to national economy comes from this sub-market, it was purposefully selected for this study.

**i.    Firm Sampling:** Determination of sample in the firm was based on stratified and simple random sampling. The firm's employees were stratified based on (i) management cadre, (ii) other technical and administrative employees and (iii) artisans (including maintenance staff) of the firms. From these three strata only management and other technical and administrative employees of the firm were included in this research study.

Consequently, selecting one-hundred and ten respondents out of the total population was done using simple random sampling. This gave credence to the sampling process because

every member of the total population had an equal chance to be included in the sampling selection procedure. In distributing the questionnaire and carrying out the semi-structured interviews the stratified sampling techniques was adopted. Two strata were determined (i) management cadre (ii) other technical and administrative employees in the firm. Whereas, only the management cadre staff were included in the semi-structured interview, the distribution of the structured questionnaire was to other technical and administrative employees of the firm.

**ii.** **Customer Service Center Sampling:** The Customer Service Centers (CSCs), of the four operators: MTN, Etisalat, Airtel and Globacom, that were sampled was based on (i) the number of CSCs to be studied and (ii) the number of employees included in the sample. At both levels, this research study adopted the census approach. This implies that all the CSCs were sampled. Similarly, all the employees were also included in the sample size. Consequently, since the research adopted a census approach, the complete enumeration survey was used (Sigdel, 2015).

The complete enumeration survey collects data from each and every unit included in the population under study (Gupta, Sud & Rajender, 2015). Therefore, because number of both Customer service centers (CSC) and their staff in Lagos State and FCT can be covered, all the CSC and employees from each was included in the research study. For easy accessibility of the CSCs in Lagos State and FCT, each of the CSCs were grouped into clusters. The clustering was based on proximity.

The stratified sampling techniques was however adopted as a means of distributing the questionnaires and conducting the semi-structured interview. Thus, two strata were determined (i) supervisors of CSCs (ii) other technical and administrative employees. Whereas, only the supervisors were included in the semi-structured interview, the distribution of the structured questionnaire was to the technical and administrative employees in each customer service center.

**iii.** **Customer sampling:** Sampling at the customer level was carried out based on cluster and simple random sampling techniques. In Lagos State and FCT, geographical clustering was determined in each state. Customers were divided into four geographical location each in Lagos State and FCT. Each geographical location formed a cluster and this helped to ease accessibility for the research process. In order to select 350 customers

from Lagos State and 250 customers from FCT for the sample, simple random sampling technique was adopted. Customer in each of the eight clusters across the two geographical locations used had equal chance of being included in the study sample.

## 3.6    Methods and Sources of Data Collection

The data used for this study were obtained from both primary and secondary sources. The secondary source included: Library, Internet facilities, text books, journals and bulletin. On the other hand, primary source of data collection largely depended on inputs from the field survey where opinions as reflected in the questionnaire were used. The questions were focused on research variables. Two types of questionnaire were designed. The first was directed to managers and the technical and administrative employees of the four telecommunication firm in the GSM sub-market, while the second questionnaire was directed to the customers of the telecommunication firms.

In the firm, one-hundred and ten (110) copies of questionnaire were distributed to employees at both the managerial cadre and technical and administrative levels. At the Customer Service Centers, three hundred and ninety-four (394) copies of structured questionnaire were distributed to supervisors and the technical and administrative employees in all the four GSM firms' customer service centers across Lagos state and FCT.

Questionnaire for Customer were also distributed to six hundred (600) subscribers of the four GSM telecommunication networks in both Lagos State and FCT. All these gave insight to first-hand information that were necessary to identify respondents view about the role of organisational knowledge and orientation on performance of the telecommunications industry.

## 3.7    Design of Research Instruments

In this research work, two (2) types of questionnaire were designed and directed to the different respondents groups. This include (i) structured questionnaire and (ii) semi-structured interview. A set of structured questionnaire were used in gathering responses for this research study. It is divided into three sections. Section A contained the bio-data of the respondents, such as their age, marital status, and so on. Section B focused on questions that are firm specific, such as the characteristics and operations of the firm. It

basically intended to inquire into the date the company started operations and the number of employee presently serving in the organisation. Section C dealt with questions that relate to the thrust of the study. Section C reflected the constructs of the dependent, independent, mediating and moderating variables in the study. Section C was designed using the 5-point Likert scale ranging from "strongly agree" to "strongly disagree" (5 = Strongly agree, 4 = Agree, 3 = Undecided, 2 = Disagree and 1 = Strongly disagree). Patterning the research instrument using the likert scale guided respondents selection process as to the best option that satisfied them.

## 3.8 Measurement of the Research Variables

The questionnaire was structured based on existing literatures that are related to the present study. Questions about organisational knowledge of the firms were developed based on a typological scaling of knowledge: individual-tacit, group-tacit, individual-explicit, and group-explicit knowledge dimensions (Chilton & Bloodgood, 2007; Fei, Chen & Chen, 2009; Huang, 2014).

Items of organisational orientation of the firms included market orientation (Narver & Slater, 1990; Chao-Hung, 2015); entrepreneurial orientation (Lumpkin & Dess, 2001; Li, Huang & Tsai, 2008); and learning orientation (Sinkula, Baker & Noordewier, 1997; Calantone, Cavusgil & Zhao, 2002). Apparently, a multidimensional approach to organisational orientation was adopted in this research. This is arguably more appropriate for explaining the effect of organisational knowledge on firm performance than the one-dimensional measure which is prominent in existing literature (such as, Kim, Im & Slater, 2013). This research work argued that such multidimensional approach can help managers have a more robust view of interactions between variables and arrive at more qualitative judgments in guiding the firm's strategic engagements.

Wiklund and Shepherd (2005) suggest that performance is multidimensional in nature, and should be measured by incorporating both economic and organisational perspectives. Specifically, performance was measured based on the following: customer satisfaction, organisational effectiveness, operational efficiency and productivity. Combining these measures result in the adoption of both subjective and objective approaches to performance measurement. This approach was adopted by Sin, Tse, Yau, Lee and Chow (2004) as subjective concept of performance which investigates organisation or firm

specific attributes relative to that of competitors over a period of time. On the other hand, objective measures of performance was also adopted in identifying the organisations' efficiency and productivity. This was necessary because, the use of already existent secondary data was a more concrete evidence to determine real figures, as such bias that can arise by reason of human errors have been eliminated.

Items on organisational effectiveness as designed by Gold *et al.* (2001) were used. This perspective to measuring organisational effectiveness was considered approapriatefor this research because the authenticity of it has been proven and adopted by several other research works, such as Rehman, Asghar & Ahmad (2015) and Shiaw-Tong, May-Chiun, and Yin-Chai (2016). The instrument contains items that measure organisational effectiveness based on the attainment of organisations' objectives. Such objective has been identified to cut across stakeholders both within and outside the firm and to include processes and activities that revolve around firms' integral operations.

Measuring operational efficiency and productivity was based on input and output factors relating to the firms and their Customer Service Centers. These factors include: number of customer services centers for each firm, number of managers in each Customer Service Center, number of employees in each customer service center, total expenditure on employee training, total expenditure on technology, average number of customers attended to daily, average number of customers with resolved cases and number of innovations produced. Customers' satisfaction item was captured by identifying customers' perception of their network provider's service quality before going further to develop questions that measure their level of satisfaction. This was in line with the suggestions of Almossawi (2012) and Rahman (2014).

The semi-structured interview instrument consisted of simple and short questions presented in open-ended format for management cadre employees and supervisors of the GSM telecommunication firms in order to let them extensively share their personal opinion on the relationship between organisational knowledge, orientation and firm performance. A pilot study was conducted to establish the adequacy and reliability of the instrument. A survey is reliable if it can be given a number of times and produce the same results. This helps to carefully consider the wording of questions and pretesting the survey and this invariably help to increase the reliability. For the pre-testing, one Customer Service Center of each of the telecommunications operators in Lagos geographical

location was administered with the questionnaire. Lagos State was considered suitable for the pre-testing exercise because among the two geographical locations for this research study, Lagos State is more commercially inclined; besides all the four organisations have their CSCs located in Lagos State.

## 3.9    Validity of the Research Instruments

Validity is concerned with ascertaining whether an instrument captures the intended data (Viswanathan, 2005). The aim of validity test is to ensure that the data gathered conforms to the intended objective and purpose of the research (Miles & Huberman, 1994). There are three major types of validity, namely: Content validity, construct validity and criterion-related validity (Kimberlin & Winterstein, 2008).

Content and construct validity were used for this study. Content validity deals with the question of whether or not the instrument contains all the necessary details that enables the researcher measure correctly the attributes of interest. Content validity is relevant to this study because it showed that the items of the test are representative of a universe of items that is comprehensive enough to represent the presumed objective. The content validity was ensured because the items contained in the instrument were drawn from existing literature. Moreover, the instrument was further analyzed for currency by senior academics and experts both in the field of strategic management and operations management.

Construct validity, on the other hand has been used widely in literature as a means of ensuring that items in the research instrument are actually measuring the constructs they claim to be measuring (Brown, 2000). Whereas some literature identify construct validity by using factor analysis to observe clustering of items, another way of determining this validity is to explore the degree of correlation among items of a construct (Weiner, 2007). Pae (2012) examined the use of correlation based construct validity on the Pearson Test of English academics. Therefore, this research study determined construct validity of the research items using the extent of convergence and discriminant validity among the items in each construct of the research study.

The result of the construct validity of the research instruments is attached in Appendix 8. There is a strong level of correlation among the items that make up each construct of this research study. Such strong interrelationship among items attest to the fact that they are

adequately measuring the construct for which they were linked with, thus, validity test is assured.

## 3.10    Reliability of the Research Instruments

Reliability according to Veal (2006) is the degree to which a research instrument produces the same findings if it is repeated at a later time using a different set of sample.

Reliability tests consists of three types: Test re-test method, Equivalent or multiple-form method, and internal consistency method. The reliability test used for this research is the internal consistency method. The Coefficient Alpha (α) or Cronbach Alpha is the most popularly used to measure internal consisitency (Pallant, 2005). The values of α range from 0 – 1. The closer the value of α to 1, the more accepted the reliability of the data. The Cronbach Alpha internal consistency of the items of the questionnaire was analyzed using the reliability procedure in SPSS version 21 and is presented in table 3.5 below

**Table 3.5: Reliability of Constructs and Scale Items**

| S/No | Construct | No. of Items | Cronbach's Alpha |
|------|-----------|--------------|------------------|
| Organisational Knowledge | | | |
| 1 | Individual-tacit knowledge | 2 | 0.878 |
| 2 | Individual-explicit knowledge | 3 | 0.547 |
| 3 | Group-tacit knowledge | 5 | 0.738 |
| 4 | Group-explicit knowledge | 2 | 0.785 |
| Organisational orientation | | | |
| 5 | Learning orientation | 11 | 0.870 |
| 6 | Entrepreneurial orientation | 10 | 0.852 |
| 7 | Market orientation | 10 | 0.852 |
| Organisational Performance | | | |
| 8 | Customer satisfaction (Firm perspective) | 2 | 0.770 |
| 9 | Customer satisfaction (Customer perspective) | 11 | 0.889 |
| 10 | Organisational effectiveness | 4 | 0.873 |
| 11 | Perception of service quality | 9 | 0.857 |

**Source: Field Survey (2017)**

From the table above, Pallant's (2005) bench mark of 0.7 scale reliability is fulfilled by most of the constructs. Therefore, the scale items were found to be reliable for the constructs of this research study. The combine reliability of all items in the research instrument gave a reliability statistics of 0.945, which also surpasses the benchmark.

## 3.11    Methods of Data Analysis

The methods of data analysis for this research work was approached based on the quantitative and the semi-structured research instruments.

**i. Structured Questionnaire**

Data collected for this study were subjected to relevant statistical analysis including descriptive statistics using SPSS version 21. Descriptive analysis was used to describe the responses of respondents, while frequency distribution and percentage analysis was used in the study. Pearson's Correlation and simple linear regression analysis were used to identify the relationship and effects of the relationships that exist between variables, especially with respect to hypotheses one and three. Hypotheses two and four were operationally solved using the Data Envelopment Analysis (DEA). Hypothesis five was determined using multiple regression analysis.

*Analyzing Efficiency and Productivity Using Data Envelopment Analysis*

The DEA is a non-parametric mathematical tool that uses linear programming technique to measure efficiency based on differences between units of a firm. It compares efficiencies of selected decision making units (DMUs) based on specific input and output measures. According to the DEA model, the number of selected input and output factors need to be small compared to the total number of DMUs. Essentially, the total number of DMUs should be at least twice the number of input and output factors (Sathya, 2006). Thus, this study adopted three input and three output factors, against a total of One hundred and twenty-four DMUs to satisfy this condition. In order to satisfy the content of hypothesis two and four that matched group-explicit and individual-explicit knowledge dimensions to operational efficiency and productivity respectively, the input and output measures determined for this study were selected based on their ability to represent knowledge resources and knowledge outcomes.

A two-stage Data Envelopment Analysis model was used in the analysis. The first stage of the model is a set of input oriented Data Envelopment Analysis model: Constant Returns to Scale (CRS) and the Variable Returns to Scale models (VRS). The second stage is the output oriented DEA which also examined the CRS and VRS models. Thus, this study adopted three input and three output factors, against a total of One hundred and twenty-four DMUs to satisfy this condition. In order to satisfy the content of hypotheses ii and iv that matched group-explicit and individual-explicit knowledge dimensions to operational efficiency and productivity respectively, the input and output measures determined for this study were selected based on their ability to represent knowledge resources and knowledge outcomes. The following notations are defined to guide the analysis.

Inputs:

$x_{ij}$ =the number of CSC resources i<sup>th</sup> input used in CSC j.

Therefore in this wise:

$x_{1j}$ = represents the estimated number of employees (i.e, first input) available in CSC j.

$x_{2j}$ = represents the estimated expenditure on employee training (i.e, second input) in CSC j in a year

$x_{3j}$ = represents the estimated expenditure on new technology (i.e, third input) in CSC j in a year

Outputs:

$y_{rj}$ =the output measures in CSC j.

Therefore,

$y_{1j}$ = the average number of customers attended to daily (i.e. first output) in CS

$y_{2j}$ = the average number of customers with resolved cases (i.e second output) in CSC j

$y_{3j}$ = the number of innovations produced (i.e, third output) in CSC j in a year.

$j$ =number of customer service centers (CSCs) considered in the study.

$\lambda_j$ = weights attached to the inputs used and outputs of each CSC.

$S_i^-$= slack variables attached to the input constraints.

$S_i^+$ =slack variables attached to the output constraints.

To determine efficiency of the customer service centers, the input minimizing model proposed for the research study is:

Min $\theta$

Subject to:

$$\sum_{j=1}^{29} \lambda_j x_{1j} \le \theta x_{10}$$ - Employee Constraints

$$\sum_{j=1}^{29} \lambda_j x_{2j} \le \theta x_{20}$$ - Training Constraints

$$\sum_{j=1}^{29} \lambda_j x_{3j} \le \theta x_{30}$$ - New technology Constraints.

Output Constraints

$$\sum_{j=1}^{29} \lambda_j y_{1j} \ge y_{10}$$ - Customers constraints

$$\sum_{j=1}^{29} \lambda_j y_{2j} \ge y_{20}$$ - Resolved cases constraints

$$\sum_{j=1}^{29} \lambda_j x_{3j} \ge y_{30}$$ - Innovations constraints

$$\sum_{j=1}^{29} \lambda_j = 1 \qquad \text{- Scale Constraints (CRS and VRS)}$$

$$\lambda_j \ge 0 \; \forall_j, j = 1,2,...,29 \text{ - Non-negativity Constraints}$$

However, to achieve movement to the efficient frontier in a two-stage DEA, there is the need to optimize the slack variables. This requires running the model below under the same assumption as in the basic DEA model above.

Max $S_1^- + S_2^- + S_3^- + S_4^- + S_1^+ + S_2^+ + S_3^+ + S_4^+$

Subject to:

**Input constraints**:

$$\sum_{j=1}^{29} \lambda_j x_{1j} + S_1^- = \theta x_{10} \text{ - Employee Constraints}$$

$$\sum_{j=1}^{29} \lambda_j x_{2j} + S_2^- = \theta x_{20} \text{ - Training Constraints}$$

$$\sum_{j=1}^{29} \lambda_j x_{3j} + S_3^- = \theta x_{30} \text{ - New Technology Constraints}$$

**Output constraints**

$$\sum_{j=1}^{29} \lambda_j y_{1j} - S_1^+ = y_{10} \text{ - Customers}$$

$$\sum_{j=1}^{29} \lambda_j y_{2j} - S_2^+ = y_{20} \text{ - Resolved cases}$$

$$\sum_{j=1}^{29} \lambda_j y_{3j} - S_3^+ = y_{30} \text{ - Innovations}$$

$$\sum_{j=1}^{29} \lambda_j = 1$$

$$\lambda_j \geq 0 \,\forall_j, (j = 1,2...29)$$

**Scales** constraint (VRS) $\sum_{j=1}^{29} \lambda_j = 1$

A two-stage Data Envelopment Analysis model is proposed for use in our analysis. The first stage of the model is a set of input oriented Data Envelopment Analysis model: Constant Returns to Scale (CRS) and the Variable Returns to Scale models (VRS).

## ii. Semi-structured Interview

Data collected from the semi-structured interviews were analyzed using the thematic analysis approach. Thematic analysis was used because within organisational knowledge literature it reflect dominant themes that respondents perceive as important to the subject under study (Satyanarayan & Azumah, 2011).

## 3.12    Ethical Consideration

Administering the questionnaire to respondents was based on their willingness to respond to the research instrument. Where supervisors, especially at the Customer Service Centers required the researcher's patience to get permission from the head office, we complied. Also, confidentiality and anonymity for participants in the study was assured, such as not reflecting their names in the questionnaire.

# CHAPTER FOUR

# RESULTS

## Preamble

This chapter involves the data presentation, analysis and interpretation of results. The hypotheses formulated for this study guides the arrangement of the tables. Each hypothesis focused on the variables identified. An interpretation of the results of the analysis follows each of the hypotheses and in addition where necessary, selected results from the demographical data collected were used to support and contrast the results of the analyzed hypotheses.

## 4.1 Response Rate

The data obtained for this study were presented using tables specifying relevant information on the amount of questionnaires distributed and retrieved from respondents.

**Table 4.1: Response Rate of Copies of Questionniare Administered**

| Questionnaire | Number of Respondents | Response Rate (%) |
|---|---|---|
| Returned | 816 | 73.91 |
| Not Returned | 288 | 26.08 |
| Total | **1104** | **100** |

**Source: Field Survey (2017)**

Table 4.1 show the breakdown of copies of questionnaire distributed and retrieved from the respondents. A total of 1104 copies of questionnaire was distributed. 816 copies, representing 73.91 percent was returned, while 288 representing 26.08 percent was not returned. This statistics show an appreciable level of response from the respondents.

At the firm headquarters, one hundred and ten (110) copies of questionnaire was distributed to employees. Only forty-five (45) copies representing 41 percent was retrieved. Among the Customer Service Centers, supervisors in Lagos State and FCT

received ninety-seven (97) and twenty-seven (27) copies of questionnaire respectively. In Lagos state, fifty-two copies (53.6%) was retrieved while in FCT fourteen copies (51.9%) was retrieved.

Other technical and administrative employees in the Customer Service Centers in Lagos State and FCT were given one hundred and ninety-four (194) and seventy-six (76) copies of questionnaire respectively. Out of the two hundred and seventy distributed copies of questionnaire, from Lagos State one hundred and thirty (67%) was returned while fifty-five (72.4%) was retrieved from FCT. A total of sixty-four (33%) was not returned from respondents in Lagos State while in FCT twenty-one copies of questionnaire (43.4%) was not returned. Ten (10) copies of questionnaire were returned but were not usable in this research work because they had too many unfilled columns. Copies of questionnaire were also administered to customers in Lagos State and FCT. Three hundred and fifty (350) copies of questionnaires were administered to respondents in Lagos State, out of which two hundred and seventy-seven (79.1%) were retrieved and seventy-three (20.9%) were not returned by respondents; while in FCT two hundred and fifty (250) copies of questionnaire was distributed but two hundred and forty-three (96.8%) were returned and eight copies (3.2%) were not returned by respondents.

## 4.2    Demographic Characteristics of Respondents

Tables 4.2 to 4.13 show the demographic information of the sampled respondents for the quantitative questionnaire from the organisations' Headquarters, their Customer Service Centers and the Customers, both in Lagos State and FCT. Firm based data was collected from only MTN, which was the only firm whose employees agreed to participate in this research study. However, at the Customer Service Center level, all the four firms in the GSM sub-market of the telecommunication industry participated in the research study. Customers for the study was drawn from randomly but included participants from the four firms.

**Table 4.2: Gender and Marital Status of Respondents**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| **Gender** | | | | |
| Male | 14 | 31.1 | 96 | 51.6 |
| Female | 31 | 68.9 | 90 | 48.4 |
| Total | 45 | 100.0 | 186 | 100.0 |
| **Marital Status** | | | | |
| Single | 16 | 35.6 | 72 | 38.7 |
| Married | 27 | 60.0 | 90 | 48.4 |
| Others | - | - | 1 | 0.5 |
| Total | 43 | 95.6 | 163 | 87.6 |

**Source: Field Survey (2017)**

Table 4.2 shows the gender characteristics of respondents in the firm and in the Customer Service Centers. At the firm, 14 respondents (31.1 percent) are male, while 31 respondents (68.9 percent) are female. In the Customer Service Centers, 96 respondents (51.6 percent) are male, while 90 respondents (48.4 percent) are female. The table also showed that the marital status of respondents at the firm include 16 single respondents (35.6 percent), while 27 respondents (60 percent) are married. In the Customer Service Centers, 72 respondents (38.7 percent) are single, 90 respondents (48.4 percent) are married and 1 respondents (0.5 percent) is in the other categories, such as divorced or widowed.

**Table 4.3: Working Experience and Age of Respondents**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| **Working Experience** | | | | |
| Less than 5 years | 11 | 24.4 | 72 | 38.7 |
| 6-10 years | 33 | 73.3 | 94 | 50.0 |
| 11-15 years | 1 | 2.2 | 14 | 7.5 |
| 16 years and above | - | - | 2 | 1.1 |
| Total | 45 | 100.0 | 182 | 97.8 |
| **Age** | | | | |
| Under 25 years | 1 | 2.2 | 17 | 9.6 |
| 25 – 35 years | 27 | 60.0 | 137 | 73.7 |
| 36 – 45 years | 16 | 35.6 | 23 | 12.4 |
| Total | 44 | 97.8 | 177 | 95.2 |

**Source: Field Survey (2017)**

Table 4.3 shows the working experience and age of respondents in the firm and in the Customer Service Centers. At the firm, 11 respondents (24.4 percent) have worked less than 5 years; 33 respondents (73.3 percent) have worked between 6 and 10 years; while only 1 respondent (2.2 percent) have worked between 11 and 15 years. In the Customer

Service Centers, 72 respondents (38.7 percent) have worked less than 5 years; 94 respondents (50 percent) have worked between 6 and 10 years; 14 respondents (7.5 percent) have worked 11 to 15 years; while 2 respondents (1.1 percent). The table 4.3 also showed that the age of respondents at the firm include 1 respondent (2.2 percent) under 25 years; 27 respondents (60 percent) between the age of 25 and 35 years; 16 respondents (35.6 percent) between 36 and 45 years. In the Customer Service Centers, 17 respondents (9.6 percent) are under 25 years, 137 respondents (73.7 percent) fall between 25 and 35 years and 23 respondents (12.4 percent) are between 36 to 45 years.

**Table 4.4: Position in the Organisation and Highest Educational Qualification of Respondents**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| **Position in the Organisation** | | | | |
| Senior Manager | - | - | 2 | 1.1 |
| Supervisor/Team Leader | - | - | 37 | 19.9 |
| Other technical and administrative employees | 45 | 100.0 | 124 | 66.7 |
| Total | | | 163 | 87.6 |
| **Highest Educational Qualification** | | | | |
| OND/NCE | - | - | 12 | 6.5 |
| HND/BSc | 33 | 73.3 | 137 | 73.7 |
| MSc/MBA/M.Ed. | 12 | 26.7 | 34 | 18.3 |
| Others | - | - | 2 | 1.1 |
| Total | 45 | 100.0 | 185 | 99.5 |

**Source: Field Survey (2017)**

Table 4.4 above shows the position and highest educational qualification of respondents in the firm and in the Customer Service Centers. 45 respondents in the firm (100 percent) are employees within the technical and administrative cadre of the organisation. In the Customer Service Centers, 2 respondents (1.1 percent) are senior managers; 37 respondents (19.9 percent) are either supervisors or team leaders; 124 respondents (66.7 percent) are employees in the technical and administrative category of the organisation. The table also showed that 33 respondents, representing 73.3 percent have obtained either the HND or BSc degree. 12 respondents (26.7 percent) have obtained a Masters' degree. Meanwhile, at the Customer Service Centers 12 respondents (6.5 percent) have their OND/NCE degree, 137 respondent (73.7 percent) have obtained HND/BSc degree, 34 respondents (18.3 percent) are either MSc/MBA/M.Ed. degree holders; while only 2 respondents (1.1 percent) have obtained more advanced degree, such as doctorate certificates.

**Table 4.5: Additional Professional Qualification and Technical Skills of Respondents**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| **Additional Professional Qualification** | | | | |
| Yes | 21 | 46.7 | 42 | 22.6 |
| No | 24 | 53.3 | 122 | 65.6 |
| Total | 45 | 100.0 | 164 | 88.2 |
| **Technical skills** | | | | |
| Yes | 9 | 20.0 | 39 | 21.0 |
| No | 28 | 62.2 | 101 | 54.3 |
| Total | 37 | 82.2 | 140 | 75.3 |

**Source: Field Survey (2017)**

Table 4.5 above reveals the data on additional professional qualifications and technical skills that have been acquired by the respondents, both at the firm and Customer Service Centers. 21 respondents in the firm (46.7 percent) have additional professional qualifications, while 24 respondents (53.3 percent) do not have additional professional qualifications. In the Customer Service Centers, 42 respondents (22.6 percent) have obtained professional qualifications, while the remaining 122 respondents (65.6 percent) do not have additional professional qualification. Moreover, only 9 respondents (20 percent) have acquired technical skills, while 28 respondents (62.2 percent) have not obtained any technical skill. In the Customer Service Centers, 39 respondents (21 percent) have technical skills, while 101 respondent (54.3 percent) have technical skills.

**Table 4.6: Respondents' Personal Income Level and Nature of Employment with the Organisation**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| **Personal Income Level** | | | | |
| ₦100,000 and below | 18 | 40.0 | 87 | 46.8 |
| ₦101,000 – ₦200,000 | 22 | 48.9 | 67 | 36.0 |
| ₦201,000 – ₦300,000 | 1 | 2.2 | 10 | 5.4 |
| ₦301,000 and Above | 3 | 6.7 | 11 | 5.9 |
| Total | 44 | 97.8 | 175 | 94.1 |
| **Nature of Employment with the Organisation** | | | | |
| Full-time staff | - | - | 82 | 44.1 |
| Contract staff | - | - | 95 | 51.0 |
| Total | - | - | 177 | 95.1 |

**Source: Field Survey (2017)**

Table 4.6 shows the frequency distribution of respondents' personal income level and the nature of their employment with the organisation, both at the firm and Customer Service

Centers. In the firm, 18 respondents (40 percent) earn not more than ₦100,000. 22 respondents (48.9 percent) earn salary between ₦101,000 and ₦200,000. Only 1 respondent (2.2 percent) earns between ₦201,000 and ₦300,000, while 3 respondents (6.7 percent) earn salary of ₦301,000 and above. In the Customer Service Centers, 87 respondents (46.8 percent) have earn at most ₦100,000, while 67 respondents (36 percent) earn between ₦101,000 and ₦200,000. 10 respondents (5.4 percent) earn between ₦201,000 and ₦300,000, while 11 respondents (5.9 percent) earn at least ₦301,000. Meanwhile, 82 respondents (44.1 percent) are full-time employees with the organisation, while 95 respondents (51 percent) are contract employees with the organisations.

**Table 4.7: Firm Category and Firm Location of Respondents**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | **Frequency** | **%** | **Frequency** | **%** |
| **Firm Category** | | | | |
| MTN | 45 | 100.0 | 47 | 25.3 |
| Globacom | - | - | 50 | 26.9 |
| Airtel | - | - | 37 | 19.9 |
| Etisalat | - | - | 52 | 28.0 |
| Total | 45 | 100.0 | 186 | 100.0 |
| **Firm Location** | | | | |
| Lagos State | 45 | 100.0 | 130 | 69.9 |
| FCT | - | - | 56 | 30.1 |
| Total | 45 | 100.0 | 186 | 100.0 |

**Source: Field Survey (2017)**

Table 4.7 reveals information on the firm category and firm location of respondents, both at the firm and Customer Service Centers. In the firm, 45 respondents (100 percent) work with MTN. In the Customer Service Centers, 47 respondents (25.3 percent) are employees of MTN, while 50 respondents (26.9 percent) are employees with Globacom, while 37 respondents (19.9 percent) work with Etisalat. Meanwhile, 45 respondents (100 percent) of the firms' headquarters are located in Lagos State. 130 respondents, representing 69.9 percent, and 56 respondents, representing 30.1 percent are located in Lagos State and FCT Customer Service Centers respectively.

**Table 4.8: Number of Employees Working with the CSCs and Number of Functional Units/Departments in the CSCs**

| Demographic Characteristic | A: Firm | | B: CSCs | |
|---|---|---|---|---|
| | Frequency | % | Frequency | % |
| **Number of Employees working in the CSCs** | | | | |
| 1 – 3 | - | - | 12 | 6.5 |
| 4 - 7 | - | - | 42 | 22.6 |
| 8 - 11 | - | - | 30 | 16.1 |
| 12 and Above | - | - | 71 | 38.2 |
| Total | - | - | 155 | 83.3 |
| **Number of Functional Units/Departments in the CSCs** | | | | |
| 1 – 3 | - | - | 36 | 19.4 |
| 4 - 6 | - | - | 70 | 37.6 |
| 7 - 9 | - | - | 21 | 11.3 |
| 10 and Above | - | - | 9 | 4.8 |
| Total | - | - | 136 | 73.1 |

**Source: Field Survey (2017)**

Table 4.8 reveals the number of employees working with the CSCs and number of functional units/departments in the CSCs. 12 CSCs (6.5 percent) have between 1 to 3 employees, 42 CSCs (22.6 percent) have between 4 to 7 employees working with them, 30 CSCs have 8 to 11 employees working with them and 71 CSCs (38.2 percent) have at least 12 employees working with them. Meanwhile, 36 CSCs (19.4 percent) operate with 1 to 3 functional units/departments, 70 respondents, representing 37.6 percent, have 4 to 6 functional units/departments, 21 (11.3 percent) have 7 to 9 functional units/departments and only 9 CSCs, representing 4.8 percent operate with at least 10 functional units/departments.

**Table 4.9: Gender and Marital Status of Customers**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 262 | 50.4 |
| Female | 257 | 49.4 |
| Total | 519 | 99.8 |
| **Marital Status** | | |
| Single | 300 | 57.7 |
| Married | 191 | 36.8 |
| Others | 6 | 1.2 |
| Total | 497 | 95.6 |

**Source: Field Survey (2017)**

Table 4.9 reveals the frequency distribution of customers' gender and marital status. 262 customers (50.4 percent) are of the male gender, while 257 customers (49.4 percent) are

female. The marital status distribution shows that 300 customers (57.7 percent) are single, 191 customers (36.8 percent) are married, and 6 customers (1.2 percent) are either widows, widowers or divorced.

**Table 4.10: Age and Highest Educational Qualification of Customers**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| Under 25 years | 183 | 35.2 |
| 26 - 35 years | 175 | 33.7 |
| 36 - 45 years | 106 | 20.4 |
| 46 years and above | 53 | 10.2 |
| Total | 517 | 99.4 |
| **Highest Educational Qualification** | | |
| OND/NCE | 128 | 24.6 |
| HND/BSc | 208 | 40.0 |
| MSc/MBA/M.Ed | 69 | 13.3 |
| Others | 105 | 20.2 |
| Total | 510 | 98.1 |

**Source: Field Survey (2017)**

Table 4.10 reveals the age distribution and highest educational qualification of customers. 183 customers (35.2 percent) are under 25 years of age, 175 customers (33.7 percent) are between ages 26 to 35 years, and 106 customers (20.4 percent) are between the ages of 36 to 45 years old, while 53 customers (10.2 percent) are at least 46 years old. Meanwhile, 128 customers (24.6 percent) have obtained either the OND/NCE certificates, 208 customers, representing 40 percent, have HND/BSc certificates, 69 customers (13.3 percent) have either the MSc/MBA/M.Ed. certificates while a large number of 105 customers (20.2 percent) have obtained other levels of educational qualifications, such as Ph.D.

**Table 4.11: Working Experience and Monthly Personal Income of Customers**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Working Experience** | | |
| Less than 5 years | 246 | 47.3 |
| 6 - 10 years | 123 | 23.7 |
| 11 - 15 years | 62 | 11.9 |
| 16 years and above | 68 | 13.1 |
| Total | 499 | 96.0 |
| **Monthly Personal Income** | | |
| N100,000 and below | 366 | 70.4 |
| N101,000 - N200,000 | 64 | 12.3 |
| N201,000 - N300,000 | 39 | 7.5 |
| N301,000 and above | 34 | 6.5 |
| Total | 503 | 96.7 |

**Source: Field Survey (2017)**

Table 4.11 shows information about the working experience and monthly personal income of customers. 246 customers (47.3 percent) have less than 5 years of work experience, 123 customers (23.7 percent) have between 6 to 10 years of work experience, 62 customers (11.9 percent) have work experience of between 11 and 15 years, while 68 customers (13.1 percent) have at least 16 years of work experience. More so, the monthly personal income distribution reveal that 366 customers (70.4 percent) earn at most 100,000 naira, 64 customers earn between 101,000 naira and 200,000 naira, 39 customers (7.5 percent) earn 201,000 naira and 300,000 naira, and 34 customer, representing 6.5 percent earn at least 301,000 naira.

**Table 4.12: Most Frequently Used Networks by Customers for Voice Calls and Data**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Most Frequently Used Network (Voice Calls)** | | |
| MTN | 315 | 60.6 |
| Globacom | 52 | 10.0 |
| Airtel | 66 | 12.7 |
| Etisalat | 85 | 16.4 |
| Total | 518 | 99.6 |
| **Most Frequently Used Network (Data)** | | |
| MTN | 210 | 40.4 |
| Globacom | 96 | 18.5 |
| Airtel | 77 | 14.8 |
| Etisalat | 128 | 24.6 |
| Others | 2 | .4 |
| Total | 513 | 98.7 |

**Source: Field Survey (2017)**

Table 4.12 shows the frequency distribution of most frequently used network by customers for voice calls and data. MTN communication has the largest subscriber rate at both levels (315 customers, 60.6 percent for voice calls; and 210 customers, 40.4 percent for data). 52 customers (10 percent) subscribe to Globacom's voice call services while 96 customers (18.5 percent) subscribe to its data services. 66 customers (12.7 percent) subscribe to Airtel's voice call services and 77 customers (14.8 percent) subscribe to its data services. Etisalat's voice call services enjoy the attention of 85 customers (16.4 percent), while 128 customers (24.6) subscribe to its data services. On the data side, 2 respondents (0.4 percent) subscribe to other networks.

**Table 4.13: Location of Customers**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| Location of Respondent | | |
| Lagos | 277 | 53.3 |
| FCT | 243 | 46.7 |
| Total | 520 | 100.0 |

**Source: Field Survey (2017)**

Table 4.13 reveals the location of customers. 277 respondents, representing 53.3 percent are based in Lagos state, while 243 customers, representing 46.7 percent are located in FCT.

## 4.3 Descriptive Statistics of Responses on Organisational Knowledge

**Table 4.14: Descriptive Statistics of Individual-tacit Knowledge at the Firm (and CSCs)**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Stat | Std. Error |
| Explaining job steps | 43(181) | 1.00 | 5.00 | 1.7674(2.8066) | .75078(1.53882) | 1.125(.181) | .361(.181) |
| Writing down the procedures | 43(182) | 1.00 | 5.00 | 2.0930(2.7857) | 1.12998(1.39977) | 1.367(.254) | .361(.180) |
| How to go about my job | 43(182) | 1.00 | 5.00 | 3.9767(3.9670) | 1.01156(1.03476) | -1.110(-.871) | .361(.180) |
| Doing my job is a natural ability/skill to me | 44(179) | 1.00 | 5.00 | 4.0000(4.1173) | .94006(.79513) | -.880(-.824) | .357(.182) |
| Valid N (listwise) | 176 | | | | | | |

**Source: Field Survey (2017)**

Table 4.14 shows the descriptive statistics of individual-tacit knowledge at the firm and the Customer Service Centers. The statistics shows that respondents, both in the firm and the Customer Service Centers tend to disagree that it is difficult for them to explain the steps involved with their job (mean = 1.76, std. dev. = 0.75, in the firm) and (mean = 2.81,

std. dev. =1.53, in the customer service centers). Similar, the respondents affirmed that it is not very difficult for them to write down the procedures involved with their job tasks, both at the firm (mean = 2.09, std. dev. = 1.13) and at the customer service centers (mean = 2.78, std. dev. = 1.39). However, they suggested that they could easily go about their job tasks without thinking too long about how to execute it (mean = 3.97, std. dev. = 1.01; at the firm) and (mean = 3.96, std. dev. = 1.03, at the customer service centers). Similarly, their response suggest that executing their job is more of a natural skill and ability showed high means at the firm (mean = 4.0, std. dev. = 0.94) and at the customer service centers (mean = 4.11, std. dev. = 0.79). Considering the statistics gathered from the descriptive table above, there are indications that the configuration of work systems in the telecommunication organisations is more explicit than tacit.

**Table 4.15: Descriptive Statistics of Individual-explicit Knowledge at the Firm (and CSCs)**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistics | Statistic | Statistic | Std. Error |
| Personal trainings | 43(183) | 1.00 | 5.00 | 3.1860(4.0656) | 1.18031(.81609) | -.105(-1.041) | .361(.180) |
| Knowledge gained from journal and magazines | 44(183) | 2.00 | 5.00 | 3.8636(4.0874) | .76526(.79352) | -.739(-1.025) | .357(.180) |
| Educational background to success on job | 43(182) | 2.00 | 5.00 | 4.1163(4.1099) | .90526(.85334) | -1.046(-1.130) | .361(.180) |
| Valid N (listwise) | 42(182) | | | | | | |

**Source: Field study (2017)**

Table 4.15 above shows the descriptive statistics of individual-explicit knowledge at the firm and at the Customer Service Centers. Respondents in the firm and the customer service centers generally expressed high value for individual-explicit knowledge. At the firm (mean = 3.1, std. dev. = 1.18) and the customer service centers (mean = 4.06, std. dev. = 0.81) respondents replied favourably to the role of personal training towards improving their performance on the job. Moreso, they expressed that knowledge gained from printed materials, such as magazines and journals in their field, help them with achieving organisational objectives: firm (mean = 3.86, std. dev. = 0.76) and customer service centers (mean = 4.08, std. dev. = 0.79). The role of knowledge gained from their formal education on their success in the job was also affirmed. This was evident at the firm level (mean = 4.12, std. dev. = 0.91) and the customer service centers (mean = 4.11, std. dev. = 0.85).

**Table 4.16: Descriptive Statistics of Group-tacit Knowledge in the Firm (and CSCs)**

|  | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
|  | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| The firm's culture | 44(181) | 1.00 | 5.00 | 4.2727(4.4420) | .72701(.70175) | -1.996(-1.449) | .357(.181) |
| Staff share experiences | 43(181) | 1.00 | 5.00 | 4.0000(4.4033) | .84515(.62164) | -1.241(-.679) | .361(.181) |
| Shared experiences | 44(181) | 1.00 | 5.00 | 4.0455(4.0939) | .77623(.81446) | -1.330(-1.235) | .357(.181) |
| Staff share stories | 41(180) | 3.00 | 5.00 | 4.2195(4.1722) | .65239(.79686) | -.250(-.588) | .369(.181) |
| Explain difficult work processes | 42(181) | 1.00 | 5.00 | 4.1429(4.3315) | .92582(.65875) | -1.458(-1.538) | .365(.181) |
| Valid N (listwise) | 40(171) | | | | | | |

**Source: Field Survey (2017)**

The above result in table 4.16 shows the descriptive statistics of group-tacit knowledge in the firm and in the Customer Service Centers. Most respondents strongly agree that the way they go about their job is largely guided by the organisational culture set in place by the management of the organisation (mean =4.27, std. dev. = 0.73) at the firm, and (mean = 4.44, std. dev. = 0.70) at the customer service centers. It was also noticed that part of the firm's culture is to strongly encourage employees to share experiences that relate to their job and work duties among themselves such that other members of staff can learn (mean = 4.00, std. dev. = 0.85) at the firm, and (mean = 4.40, std. dev. = 0.62) at the customer service centers. Respondents attested to the fact that most successes recorded on their job resulted from story sharing among one another. This applied to both the firm (mean = 4.22, std. dev. = 0.78) and the Customer Service Centers (mean = 4.09, std. dev. = 0.81). Moreover, the practice of explaining difficult work processes among collegues, when required is also noticeable from the statistics (mean = 4.14, std. dev. = 0.93, at the firm) and (mean = 4.33, std. dev. = 0.66, at the Customer Service Center). Therefore, as generally observed, GSM organisations in the Nigerian telecommunication industry are largely predisposed to the use group-tacit knowledge in achieving the firm's objectives, and by extension organisational performance.

**Table 4.17: Descriptive Statistics of Group-explicit Knowledge at the Firm (and CSCs)**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Organisational manual | 42(178) | 1.00 | 5.00 | 4.1667(4.5056) | .90841(3.13941) | -1.575(12.235) | .365(.182) |
| Firm's knowledge base | 43(179) | 2.00 | 5.00 | 4.0000(4.2626) | .78680(.69775) | -.615(-.912) | .361(.182) |
| Document personal experiences | 43(177) | 1.00 | 5.00 | 3.3953(3.8531) | .97930(.97170) | -.251(-.753) | .361(.183) |
| Valid N (listwise) | 42(175) | | | | | | |

**Source: Field Survey (2017)**

Table 4.17 shows the descriptive statistics of group-explicit knowledge in the firm and the customer service centers. Respondents suggest that organisational manual is an important guide to performing job tasks at the firm (mean = 4.16, std. dev. = 0.91) and at the customer service centers (mean = 4.51). In the same way, there was favourable reply over the usefulness of the firms' existing knowledge base for resolving problems that relate to their work at the firm level (mean = 4.00, std. dev. = 0.78) and the customer service centers (mean = 4.26, std. dev. = 0.69). The table also indicate that respondents agreed that the firm encourages employees to document their personal experiences as a way of helping colleagues learn at any point of need. This was evident at the firm (mean = 3.39, std. dev. 0.97) and the customer service centers (mean = 3.85, std. dev. 0.97).

## 4.4    Descriptive Statistics of Responses on Learning Orientation

Learning orientation consist of four dimensions, namely commitment to learning, shared vision, open-mindedness and intra-organisational knowledge sharing. These four dimensions were responded to in this research work and their mean statistics are presented in the following tables.

**Table 4.18: Descriptive Statistics of Commitment to Learning at the Firm (and CSCs)**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Firm's ability to learn | 42(175) | 2.00 | 33.00 | 4.0476(4.6571) | .82499(3.11045) | -1.185(8.782) | .365(.184) |
| Value learning | 44(178) | 2.00 | 5.00 | 4.0000(4.3146) | .77759(.64826) | -.933(-.792) | .357(.182) |
| Learning is a key commodity | 44(178) | 2.00 | 5.00 | 3.9318(4.2753) | .97403(.69506) | -.808(-.839) | .357(.182) |
| Valid N (listwise) | 42(175) | | | | | | |

**Source: Field Survey (2017)**

The result in table 4.18 shows the descriptive statistics of commitment to learning in the firm and the customer service centers. Respondents agreed to the fact that the firm's ability to learn is a key driver of competitive advantage: firm (mean = 4.04, std. dev. 0.824) and customer service centers (mean = 4.66). Again, the table indicated that the firm has a culture that places value on continuous learning, both at the firm headquarters (mean = 4.00, std. dev. = 0.78) and the customer service centers (mean = 4.31, std. dev. = 0.65). Moreso, respondents replied favuorably to learning as a key commodity to the organisations (mean = 3.93, std. dev. = 0.97) and the customer service centers (mean = 4.28, std. dev. = 0.69).

**Table 4.19: Descriptive Statistics of Shared Vision in the Firm (and CSCs)**

|  | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
|  | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Employees are committed | 44(178) | 1.00 | 5.00 | 3.6591(4.2079) | 1.03302(.69424) | -.582(-.714) | .357(.182) |
| Employees are partners | 44(174) | 1.00 | 5.00 | 4.4091(4.0977) | 7.72889(.73453) | 6.421(-.686) | .357(.184) |
| There is total agreement | 43(176) | 1.00 | 5.00 | 3.4884(4.1818) | 1.24158(.69357) | -.324(-.675) | .361(.183) |
| Valid N (listwise) | 43(173) |  |  |  |  |  |  |

**Source: Field Survey (2017)**

Table 4.19 shows descriptive statistics of shared vision both in the firm headquarters and the customer service centers. All respondents agreed that they are committed to the goals of the organization, both at the firm (mean = 3.66) and the customer service centers (mean = 4.21, std. dev. = 0.69). Also, respondents view themselves as partners with management in charting the course for the actualization of organisational objectives; firm (mean = 4.41) and the customer service centers (mean = 4.09, std. dev. = 0.73). The respondents also agreed that all levels, functions and divisions of the organisation have total agreement on the organisational vision; firm (mean = 3.49) and customer service centers (mean = 4.18, std. dev. = 0.69).

**Table 4.20: Descriptive Statistics of Open-mindedness at the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Reflect critically on the shared assumptions | 42(172) | 2.00 | 5.00 | 3.5000(4.1279) | .83374(.78430) | -.133(-.745) | .365(.185) |
| Continually judge the quality of our decisions | 43(176) | 2.00 | 5.00 | 3.7442(4.4034) | .72680(3.15899) | -.732(12.248) | .361(.183) |
| Marketplace must be continually questioned | 44(174) | 1.00 | 5.00 | 3.5682(4.0172) | .97403(.74860) | -.754(-.446) | .357(.184) |
| Valid N (listwise) | 41(170) | | | | | | |

**Source: Field Survey (2017)**

Table 4.20 reveals the descriptive statistics of open-mindedness in the firm and in the Customer Service Centers. Respondents agreed that they reflect critically on the shared assumptions that the members of the organisation has about its customers: firm (mean = 3.50, std. dev. = 0.83) and customer service centers (mean = 4.13, std. dev. = 0.78). They also agreed that they continually judge and review the quality of decisions and activities taken from time to time: firm (mean = 3.74, std. dev. = 0.73) and the customer service centers (mean = 4.40). Employees also suggested that the way they perceive the market place must be continually questioned both at the firm level (mean = 3.57, std. dev. = 0.97) and the customer service center (mean = 4.02, std. dev. = 0.75).

**Table 4.21: Descriptive Statistics of Intra-organisational Knowledge Sharing at the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Communicate lessons learned widely | 43(177) | 1.00 | 5.00 | 3.4651(4.1073) | 1.00827(.7722) | -.485(-.637) | .361(.183) |
| Emphasizes the importance of knowledge sharing | 43(173) | 2.00 | 5.00 | 3.9767(4.1618) | .91257(.7830) | -.741(-1.028) | .361(.185) |
| Mechanisms for sharing lessons learned | 44(175) | 2.00 | 5.00 | 4.0455(4.0800) | .77623(.7538) | -1.018(-.622) | .357(.184) |
| Valid N (listwise) | 43(171) | | | | | | |

**Source: Field Survey (2017)**

Table 4.21 shows the descriptive statistics on intra-organisational knowledge sharing in the firm and customer service centers. Based on respondents' views, the organisations often analyze unsuccessful organisational endeavours and communicate the lessons learned across functional units and departments of the firm (mean = 3.47, std. dev. = 1.01) and the customer service centers (mean = 4.11, std. dev. = 0.77). The table also suggested that top management repeatedly emphasize the importance of knowledge sharing in the

organisation both at the firm headquarters (mean = 3.98, std. dev. = 0.91) and the customer service centers (mean = 4.16, std. dev. = 0.78). Moreso, the firm have set in place specific mechanisms for sharing lessons learned in organisational activities across departments: firm (mean = 4.05, std. dev. = 0.78) and customer service centers (mean = 4.08, std. dev. = 0.75).

## 4.5    Descriptive Statistics of Responses on Entrepreneurial Orientation

Entrepreneurial orientation has five dimensions, namely innovativeness, risk-taking, proactiveness, competitiveness and autonomy.

**Table 4.22: Descriptive Statistics of Innovation at the Firm and Customer Service Centers**

|  | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
|  | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| New lines of products/services marketed | 41(177) | 2.00 | 5.00 | 4.1220(4.3164) | .89986(.60435) | -1.115(.60435) | .369(.183) |
| Strong emphasis on R&D, technological leadership, and innovations | 41(162) | 1.00 | 5.00 | 3.6829(4.1975) | .96018(.73796) | -1.087(.73796) | .369(.191) |
| Valid N (listwise) | 38(158) | | | | | | |

**Source: Field Survey (2017)**

Table 4.22 shows descriptive statistics of innovativeness dimension at the firm and customer service centers. Respondents emphasized that their firms have many new lines of products/services commercialized (mean = 4.12, std. dev. = 0.89, form the firm) and (mean = 4.32, std. dev. = 0.60, from the customer service centers). Also, it was noted that top management of the firms favour a strong emphasis on research and development, technological leadership and innovations at the firm level (mean = 3.68, std. dev. = 0.96) and the customer service centers (mean = 4.19, std. dev. = 0.74).

**Table 4.23: Descriptive Statistics of Risk-taking at the Firm and CSCs**

|  | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
|  | Statistic | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Strong proclivity for high risk projects | 41(173) | 2.00 | 5.00 | 3.6098(4.0925) | .73750(.76447) | -.399(-.632) | .369(.185) |
| Bold, wide-ranging acts are necessary to achieve the firm's objectives | 41(175) | 1.00 | 5.00 | 3.7317(4.0971) | .97530(.72456) | -.781(-.516) | .369(.184) |
| Valid N (listwise) | 40(172) | | | | | | |

**Source: Field Survey (2017)**

Table 4.23 shows the descriptive statistics of risk-taking at the Firm and customer service centers. From the statistics, respondents reply favorably that the organisations have a strong inclination for undertaking high risk projects that have promising returns at both the firm headquarters (mean = 3.61, std. dev. = 0.73) and the customer service centers (mean = 4.09, std. dev. = 0.76). Also, in response to the competitive and dynamic nature of it business operating environment, the organization engages in bold, wide-ranging acts to achieve the organisational objectives: firm (mean = 3.73, std. dev. = 0.98) and customer service centers (mean = 4.09, std. dev. = 0.72).

**Table 4.24: Descriptive Statistics of Proactiveness at the Firm and the CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Initiates actions to which competitors then respond | 43(178) | 2.00 | 5.00 | 4.0000(4.1685) | .65465(.79881) | -.534(-1.390) | .361(.182) |
| First to introduce new products/services, administrative techniques, operating technologies, etc | 42(179) | 2.00 | 5.00 | 3.9048(4.1508) | .95788(.80353) | -.676(-.872) | .365(.182) |
| Valid N (listwise) | 42(178) | | | | | | |

**Source: Field Survey (2017)**

Table 4.24 reveals the descriptive statistics of responses about proactiveness in the firm and customer service centers. Based on a mean of 4.00 (std. dev. = 0.65) at the firm headquarters and a mean of 4.17 at the customer service centers (std. dev. = 0.79) respondents confirmed that the organisation initiates actions which competitors respond to. Also, the table indicated that the firm headquarters (mean = 3.90, std. dev. = 0.96) and the customer service centers (mean = 4.15, std. dev. = 0.80) the organisations strive to be the first to introduce new products/services, administrative techniques and operating technologies.

**Table 4.25: Descriptive Statistics of Competitiveness at the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Adopts a very competitive "undo-the-competitors" posture | 43(176) | 2.00 | 5.00 | 4.0465(4.1818) | .78539(.77157) | -.393(-.930) | .361(.183) |
| Aggressive and intensely competitive | 41(174) | 2.00 | 5.00 | 4.0732(4.1494) | .81824(.76828) | -.715(-.881) | .369(.184) |
| Valid N (listwise) | 41(171) | | | | | | |

**Source: Field Survey (2017)**

The Table 4.25 above reveals the descriptive statistics of competitiveness of the firm and the customer service centers. Respondents opined that the organisations adopts very competitive measures even if it requires that they have to root out the competitors. This position is supported at the firm (mean = 4.05, std. dev. = 0.79) and the customer service centers (mean = 4.18, std. dev. = 0.77). Furthermore, the respondents' reply suggested the organisations have an orientation of aggressive and intens competitions, both at the firm (mean = 4.07, std. dev. = 0.82) and customer service centers (mean = 4.15, std. dev. = 0.77).

**Table 4.26: Descriptive Statistics of Autonomy of the Firm and Customer Service Centers**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Self-directed in the pursuit of opportunities | 40(173) | 2.00 | 5.00 | 4.0750(4.2312) | .72986(.68519) | -.950(-.661) | .374(.185) |
| Independent action of an individual or a team in bringing forth an idea | 41(173) | 1.00 | 5.00 | 4.0000(4.2486) | .94868(.70013) | -.923(-.695) | .369(.185) |
| Valid N (listwise) | 40(168) | | | | | | |

**Source: Field Survey (2017)**

Table 4.26 revealed the descriptive statistics of autonomy in the firm and in the customer service centers. Based on a mean score of 4.08 (std. dev. = 0.73) the firm headquarters and the customer service centers (mean = 4.23, std. dev. 0.69) have the ability and will to be self-directed in the pursuit of opportunities. In the same way the firm (mean = 4.00, std. dev. = 0.95) and the customer service centers (mean = 4.25, std. dev. = 0.700) grant individuals and teams the independence of generating ideas or visions and carrying it through to completion. Generally, the respondents' view show that the firm headquarters and customer service centers demonstrate high level of autonomy.

## 4.6    Descriptive Statistics of Responses on Market Orientation

Market orientation is the degree to which a firm is able to demonstrate customer orientation, competitor orientation and inter-functional coordination.

**Table 4.27: Descriptive Statistics of Customer Orientation in the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Encourage us to be committed to customers | 42(177) | 1.00 | 5.00 | 4.1905(4.3333) | .86216(.69631) | -1.587(-.866) | .365(.183) |
| Passionate about understanding customers' needs | 41(178) | 1.00 | 5.00 | 4.2439(4.4438) | .85967(.65500) | -1.747(-1.498) | .369(.182) |
| Consistently measure the level of our customers' satisfaction | 42(178) | 2.00 | 5.00 | 4.1190(4.4213) | .94230(.68643) | -.982(-1.303) | .365(.182) |
| Passionate about creating customer value | 42(177) | 2.00 | 5.00 | 4.0952(4.4181) | .87818(.68698) | -.646(-1.402) | .365(.183) |
| Valid N (listwise) | 41(171) | | | | | | |

**Source: Field Survey (2017)**

Table 4.27 shows the descriptive statistics of responses about customer orientation in the firm headquarters and the customer service centers. The firm's (mean = 4.19, std. dev. = 0.86) and customer service centers' (mean = 4.33, std. dev. = 0.69) top management encourage employees to be committed to customers. To further strengthen their customer orientation, employees are passionate about understanding their customers' needs both at the firm (mean = 4.24, std. dev. = 0.86) and the customer service centers (mean = 4.44, std. dev. = 0.66). There were also strong statistical support that the firm consistently measure the level of their customers' satisfaction: firm (mean = 4.12, std. dev. = 0.94) and the customer service centers (mean = 4.42, std. dev. = 0.69). As such, the firm is passionate about creating customer value: firm (mean = 4.09, std. dev. = 0.88) and customer service centers (mean = 4.42, std. dev. = 0.69).

**Table 4.28: Descriptive Statistics of Competitor Orientation at the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Responds rapidly to competitors' actions | 40(176) | 2.00 | 5.00 | 4.1250(4.5966) | .75744(3.90191) | -.588(12.436) | .374(.183) |
| Mindful of competitors' strategies | 42(178) | 2.00 | 5.00 | 4.0476(4.3708) | .73093(.69513) | -.468(-.956) | .365(.182) |
| Always target opportunities | 42(178) | 1.00 | 5.00 | 4.1190(4.2865) | .88902(.68225) | -1.336(-.756) | .365(.182) |
| Valid N (listwise) | 40(172) | | | | | | |

**Source: Field Survey (2017)**

Table 4.28 shows the descriptive statistics of competitor orientation at the firm and customer service centers. Based on the table, the organisation responds rapidly to competitors' actions: firm (mean = 4.13, std. dev. = 0.76) and customer service centers (mean = 4.59). There were also indications that top managers of the telecommunication organisations are mindful of competitors' strategies: firm (mean = 4.05, std. dev. = 0.73) and the customer service centers (mean = 4.37, std. dev. = 0.69). However, in order to secure first mover competitive advantage, top management of the organisations always target opportunities for competitive advantage both at the firm (mean = 4.12, std. dev. = 0.89) and the customer service centers (mean = 4.29, std. dev. = 0.68).

**Table 4.29: Descriptive Statistics of Inter-functional Coordination at the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Encourage information sharing among departments and units | 42(177) | 2.00 | 5.00 | 4.0714(4.3051) | .74549(.68060) | -.488(-1.014) | .365(.183) |
| Functional units contribute to creating customers' value | 42(178) | 2.00 | 5.00 | 4.1429(4.4213) | .75131(.56946) | -.969(-.522) | .365(.182) |
| Departments/Units integrate in designing and implementing strategies | 42(178) | 2.00 | 5.00 | 3.9286(4.1685) | .74549(.73240) | -.624(-.972) | .365(.182) |
| Valid N (listwise) | 42(175) | | | | | | |

**Source: Field Survey (2017)**

Table 4.29 reveals the descriptive statistics on inter-functional coordination in the firm and the Customer Service Centers. Based on the table, one of the ways management ensure inter-functional coordination is to encourage information sharing among departments and units. This applies in both the firm (mean = 4.07, std. dev. = 0.75) and

the customer service centers (mean = 4.31, std. dev. = 0.68). Also, all functional units of the organisations contribute to creating customer values both at the firm headquarters (mean = 4.14, std. dev. = 0.75) and at the customer service centers (mean = 4.42, std. dev. = 0.57). Consequently, there is harmony of efforts from departments and units when designing and implementing strategies to help achieve organisational objectives: firm (mean = 3.93, std. dev. = 0.75) and the customer service centers (mean = 4.17, std. dev. = 0.73).

## 4.7 Descriptive Statistics of Responses on Organisational Performance

**Table 4.30: Descriptive Statistics of Customer Satisfaction at the Firm and CSCs**

|  | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
|  | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Desire for lower tariff | 44(180) | 4.00 | 5.00 | 4.5455(4.2722) | .50369(.73864) | -.189(-.903) | .357(.181) |
| Increased customer complaints | 43(181) | 2.00 | 44.00 | 5.0465(3.6464) | 6.14489(1.05770) | 6.345(-.420) | .361(.181) |
| Customers questions get responded to | 42(178) | 2.00 | 5.00 | 3.6905(4.3034) | .92362(.71156) | -.692(-.897) | .365(.182) |
| Valid N (listwise) | 42(175) |  |  |  |  |  |  |

**Source: Field Survey (2017)**

The Table 4.30 above shows the descriptive statistics of customer satisfaction as gathered from the firm and customer service centers. Both in the firm headquarters (mean = 4.55, std. dev. = 0.50) and the customer service centers (mean = 4.27, std. dev. = 0.74) respondents answered favourably to the desire of customers for lowered tariff on calls and other products/services of the telecommunication firms. In the same way, the respondents' reply pointed at increased customer complaints for the services they get: firm (mean = 5.05) and customer service centers (mean = 3.65). However, respondents claim that most complaints that customers have presented to them were resolved both at the firm (mean = 3.69, std. dev. = 0.92) and the customer service centers (mean = 4.30, std. dev. = 0.71). It could therefore mean that, with respect to cost, customers' expectation have not been met by the firms.

**Table 4.31: Descriptive Statistics of Organisational Effectiveness at the Firm and CSCs**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Quick to adapt to unanticipated changes | 39(176) | 1.00 | 5.00 | 3.2308(3.8807) | 1.06281(.82978) | -.628(-.684) | .378(.183) |
| Responsive to new market demands | 41(176) | 2.00 | 5.00 | 4.0000(4.2727) | .89443(.65426) | -.882(-.719) | .369(.183) |
| Units of this firm work in a coordinated pattern | 42(175) | 1.00 | 5.00 | 3.8095(4.2686) | .77264(.71268) | -1.317(-1.021) | .365(.184) |
| Quick to adapt the firm's goals/objectives to changes | 41(177) | 1.00 | 5.00 | 4.0000(4.2034) | .97468(.70178) | -1.192(-.804) | .369(.183) |
| Valid N (listwise) | 39(171) | | | | | | |

**Source: Field Survey (2017)**

Table 4.31 shows the descriptive statistics of organisational effectiveness at the firm headquarters and customer service centers. The organisations are quick to adapt to unanticipated changes: firm (mean = 3.23, std. dev. = 1.06) and the customer service centers (mean = 3.88, std. dev. = 3.88, std. dev. = 0.83). Also, respondents replied favourably to the fact that the organisations are quick to adapt the firm's goals/objectives to changes in their market/industry: firm (mean = 4.00, std. dev. = 0.97) and the customer service centers (mean = 4.20, std. dev. = 0.70). It was also revealed that the organisations are responsive to new market demands: firm (mean = 4.00, std. dev. = 0.89) and the customer service centers (mean = 4.27, std. dev. = 0.65). Moreso, all units of the organisationss work in a coordinated pattern to acheive the same goal both at the firm (mean = 3.81, std. dev. = 0.77) and the customer service centers (mean = 4.27, std. dev. = 0.71).

**Table 4.32: Descriptive Statistics of Customer Satisfaction (Customer Perspective)**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Stat | Stat | Stat | Statistic | Statistic | Statistic | Std. Error |
| Signal quality | 511 | 1.00 | 5.00 | 3.8943 | 1.04628 | -1.035 | .108 |
| Voice call quality | 512 | 1.00 | 5.00 | 3.9902 | .96205 | -.973 | .108 |
| Using advanced technology | 502 | 1.00 | 5.00 | 3.9323 | .99870 | -.793 | .109 |
| Quality of call center services | 504 | 1.00 | 5.00 | 3.7738 | 1.01501 | -.761 | .109 |
| Quality of services at retail shops | 508 | 1.00 | 5.00 | 3.7874 | 1.07421 | -.728 | .108 |
| Retail/service shops in many places | 506 | 1.00 | 5.00 | 3.8794 | 1.16691 | -.860 | .109 |
| Mobile provider being modern | 503 | 1.00 | 5.00 | 3.9980 | .96863 | -1.039 | .109 |
| Mobile provider being friendly | 510 | 1.00 | 5.00 | 3.9667 | .98159 | -1.047 | .108 |
| Mobile provider keeping in touch | 506 | 1.00 | 5.00 | 3.6621 | 1.16993 | -.681 | .109 |
| Having user-friendly website | 500 | 1.00 | 5.00 | 3.6740 | 1.17750 | -.640 | .109 |
| Network/signal coverage | 511 | 1.00 | 5.00 | 3.7710 | 1.17841 | -.818 | .108 |
| Valid N (listwise) | 454 | | | | | | |

**Source: Field Survey (2017)**

Table 4.32 shows the descriptive statistics of customer satisfaction as gathered from the customers. The mean score of all the eleven dimensions of customer satisfaction showed that customers responded favourably to their satisfaction with the organisations' products/services, technology and modernization of the firm and their equipment and customer relationship practices. However, most of the scores obtained from the standard deviation reflect that the views of respondents are largely dispersed from the mean scores. Therefore, it suggest that respondents are generally not harmonized in their views. This indicates that the telecommunication firms still have a large gap to fill in fulfilling customers' expectation across the above mentioned service areas under study.

**Table 4.33: Descriptive Statistics of Service Quality (Customer Perspective)**

| | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error |
| Promptness to respond to my complaints | 515 | 1.00 | 5.00 | 3.7359 | 1.20641 | -.790 | .108 |
| Accuracy of transaction | 512 | 1.00 | 5.00 | 3.8887 | 1.04746 | -.904 | .108 |
| Speed of processing transactions | 508 | 1.00 | 5.00 | 3.8976 | 1.06465 | -.848 | .108 |
| Staff attitude to customers | 507 | 1.00 | 5.00 | 3.9172 | 1.06926 | -.954 | .108 |
| Security in transactions | 510 | 1.00 | 5.00 | 3.9686 | 1.03902 | -.961 | .108 |
| Ease of communication | 506 | 1.00 | 5.00 | 3.8814 | 1.05200 | -.817 | .109 |
| Attention and patience of staff | 507 | 1.00 | 5.00 | 3.8935 | 1.08916 | -.856 | .108 |
| Range of products and services | 500 | 1.00 | 5.00 | 3.8380 | 1.17751 | -.799 | .109 |
| Staff communicating among themselves | 493 | 1.00 | 5.00 | 3.7505 | 1.19647 | -.753 | .110 |
| Valid N (listwise) | 442 | | | | | | |

**Source: Field Survey (2017)**

The above table 4.33 reveals the descriptive statistics of service quality of the GSM firms in the telecommunication industry. The mean scores of perceived service quality shows that customers responded favourably to all the dimensions of the organisations' service quality. However, the standard deviations reveal large dispersal from the means. It could, therefore, be concluded that customer perception of the telecommunication firms overall service quality is only on the average and not yet satisfying.

**Table 4.34: Input and Output Measures for Operational Efficiency and Productivity of Telecommunication Firms**

| Measures | Mean | Standard Dev. | Max | Min |
|---|---|---|---|---|
| **Inputs** | | | | |
| Number of employees | 20.72093023 | 24.01781424 | 120 | 5 |
| Estimated expenditure on employee training | 6,837,353 | 22285624.43 | 125,000,000 | 30,000 |
| Estimated expenditure on new technology | 9,150,138 | 32395067.28 | 175,000,000 | 1,000 |
| **Outputs** | | | | |
| Number of customers attended to daily | 269.5 | 766.9927 | 5,000 | 10 |
| Number of customers with resolved cases | 92.02381 | 87.96105 | 400 | 5 |
| Number of innovations produced | 9.705882 | 9.564864 | 50 | 1 |

**Source: Field Survey (2017)**

The above Table 4.34 shows the input and output measures for operational efficiency and productivity of telecommunication firms. A total of 42 customer service centers in Lagos

state and FCT were included in this study. Therefore, the study consist of forty-two decision making units (DMU) upon which the data envelopment analysis (DEA) was performed. The table shows that employees in the customer service centers, range from between five to a maximum of one-hundred and twenty. Whereas in some centers only ten customers are attended to daily, others have as large as fifty customers been attended to daily. Resolved cases of customer complaints range from five to four-hundred. Organisations in the telecommunication industry are also seen to be involved in huge expenditure in employee training and new technology having mean scores of ₦6,837,353 naira and ₦9,150,138 naira respectively.

## 4.8    Test of Hypotheses

The test of hypotheses for this research was carried out from the perspectives of the three categories of respondents that were surveyed during this research. At different points, the research statistically analyzed the respondents' views on the hypotheses based on their responses, while at other points, where necessary, comparisons were made to gain clearer understanding of the hypothesized issues.  The hypotheses were stated in the null form.

Hypothesis One: There is no significant effect of individual-tacit knowledge on customer satisfaction

Hypothesis One was statistically tested using correlation and regression analysis to (i) identify whether or not there is a relationship, and (ii) examine the extent of the relationship, between the independent (that is, individual-tacit knowledge) and dependent variables (customer satisfaction). Also, it was necessary to view customers' perspective about their satisfaction with the firm's knowledge-based services. The essence of examining customers' perception about their satisfaction with the firms' knowledge based services is important for intangible-resources based theories, such as the resource based view and knowledge based view literature.

The evidences drawn from here will immensely give direction to the organisational knowledge based research, and broadly strategic management literatures, about how individual employees of the firm can use their knowledge as an asset to achieve customers' psychological, physiological and relationship based expectations over the firms' products and services. This is especially important in the telecommunications

industry where most often, customers interact with individual employees of the firm in an attempt to resolve their queries.

**4.35: Correlation Coefficient of Individual-tacit Knowledge and Customer Satisfaction among Telecommunication Firms**

| Firm Category | Pearson Correlation (r) | Level of Significance | Remark |
|---|---|---|---|
| Firm 1: MTN | -.265* | $p < 0.05$ | Significant and weak negative relationship |
| Firm 2: Glo | -.352* | $p < 0.05$ | Significant and weak negative relationship |
| Firm 3: Airtel | .274 | $p > 0.1$ | Not significant |
| Firm 4: Etisalat | -.164 | $p > 0.1$ | Not significant |

*Correlation is significant at the 0.05 level (2-tailed)
**Source: Field Survey (2017)**

Table 4.35 shows the correlation between individual-tacit knowledge and customer satisfaction based on the perception of firms' operators. Among the four organisations, only two (that is, firm 1 and 2) showed a correlation between individual-tacit knowledge and customer satisfaction. This is evidenced by the significance in correlation analysis, $r = -0.27$ ($p \leq 0.05$) for firm 1 and $r = -0.35$ ($p \leq 0.05$) for firm 2. The last two organisations (that is, Firm 3 and 4) do not show any statistical significance of individual-tacit knowledge to customer satisfaction. This is as indicated by their correlation results, $r = 0.27$ ($p > 0.1$) for firm 3, and $r = -0.16$ ($p > 0.1$) for firm 4. More importantly, from the table it is also noticeable that in the two firms where a relationship between individual-tacit knowledge and customer satisfaction exist, such relationship is inverse in nature. The result suggest that the engagement of individual-tacit knowledge yield a downward effect on customer satisfaction. By implication, statistical results from the table indicates that generally the notion about using individual-tacit knowledge by the organisations' employees is not considered to be of much importance to organisations' customer satisfaction objective.

**Table 4.36: Effect of ITK on Customer Satisfaction**

| R | $R^2$ | F |
|---|---|---|
| .124 | .015 | $F(1,223) = 3.497$, $p < 0.1$ |

**Coefficients$^a$**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 4.405 | .088 | | 49.873 | .000 |
| | ITK | -.056 | .030 | -.124 | -1.870 | .063 |

a. Dependent Variable: CS

**Source: Field Survey (2017)**

Table 4.36 summarizes the result of regression analysis carried out to determine the impact of individual-tacit knowledge on customer satisfaction. Using linear regression, the table shows that individual-tacit knowledge has an influence on customer satisfaction ($r^2 = 0.015$, $p \leq 0.1$). This implies that the explanatory power of individual-tacit knowledge on the firm's customer satisfaction objective is only 1.5 percent. This low explanatory power has important implications for the firm because it validates the statistical results in Table 4.14. It reflects the fact that collectively, the four firms' attitude and responsiveness to the use of tacit knowledge of individual employees is not encouraged in the GSM sub-market of the telecommunication industry.

**Decision:**

Based on the result from Table 4.36, the null hypothesis which state that individual-tacit knowledge has no influence on customer satisfaction was rejected while the alternate hypothesis which states that there is a relationship between individual-tacit knowledge and customer satisfaction was accepted.

This implies that for the firm to achieve better customer satisfaction through individual-tacit knowledge, the specific type of complaint the customer comes with should be a critical factor to consider. Also, the customer care representatives in the organisation must ensure that where intuition or experience is to be used in solving critical problems, the employee must explain extensively to the customer about how to resolve the problem. Consequently, issues such as patience, polite response to customer queries, in-depth understanding of customer related challenges and operational procedures relating to the

firm and technological sophistications, are vital to using individual-tacit knowledge to achieve better customer satisfaction.

**Test of Difference among the Four Telecommunication Firms about Customer Satisfaction**

Having ascertained the relationships between individual-tacit knowledge and customer satisfaction from employees in the four firms, it was considered necessary not to assume that there are no differences in the perspectives of employees of the firms' concerning customer satisfaction. Therefore, in determining whether differences exist between groups (employees in the four firms) about customer satisfaction, ANOVA was used as a statistical tool. ANOVA was used because it tests differences in the opinion of three or more groups about a dependent variable.

**Table 4.37: One-way Between-group ANOVA with Post-hoc Tests Results of Telecommunication Firms on Customer Satisfaction**

|  | N | Mean | Std. Dev. |
|---|---|---|---|
| **MTN** | 88 | 4.2159 | .57132 |
| **Globacom** | 50 | 4.1700 | .66708 |
| **Airtel** | 36 | 4.3889 | .56203 |
| **Etisalat** | 50 | 4.3500 | .60819 |
| **Total** | 224 | 4.2634 | .60254 |
| **Levene Statistic** | .291 (p = 0.832, ≥ 0.05) | | |

**ANOVA**

CS

|  | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.577 | 3 | .526 | 1.456 | .227 |
| Within Groups | 79.383 | 220 | .361 |  |  |
| Total | 80.960 | 223 |  |  |  |

**Source: Field Study (2017)**

Table 4.37 above shows statistical results of the test of differences in the perception of employees of the four organisation about customer satisfaction. The mean values from the four firms indicate that they all tend towards a strong inclination to customer satisfaction. This is evidenced by the means of MTN (4.22), Globacom (4.17), Airtel (4.39), and Etisalat (4.35). The standard deviation values of less than 1 also suggest that respondents' view cluster around the fact that the firms' customer satisfaction objective is being

pursued and achieved. The test for homogeneity of variances shows that the homogeneity value is higher than 0.05 (sig. value = 0.832). This indicates that the variance score for all the four groups is the same, thus the assumption of homogeneity in variance was not violated. Moreover, the ANOVA results shows that there is no significant difference among the views of the employees in the four firms of customer satisfaction (sig. value = .227).

**Table 4.38: Analysis of Customers' Perception about Telecommunication Firms' Services**

| | N | Min | Max | Mean | Std. Deviation | Skewness | |
|---|---|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error |
| Signal quality | 511 | 1.00 | 5.00 | 3.8943 | 1.04628 | -1.035 | .108 |
| Voice call quality | 512 | 1.00 | 5.00 | 3.9902 | .96205 | -.973 | .108 |
| Using advanced technology | 502 | 1.00 | 5.00 | 3.9323 | .99870 | -.793 | .109 |
| Quality of call center services | 504 | 1.00 | 5.00 | 3.7738 | 1.01501 | -.761 | .109 |
| Quality of services at retail/service shops | 508 | 1.00 | 5.00 | 3.7874 | 1.07421 | -.728 | .108 |
| Having retail/service shops in many places | 506 | 1.00 | 5.00 | 3.8794 | 1.16691 | -.860 | .109 |
| Mobile provider being modern | 503 | 1.00 | 5.00 | 3.9980 | .96863 | -1.039 | .109 |
| Mobile provider being friendly | 510 | 1.00 | 5.00 | 3.9667 | .98159 | -1.047 | .108 |
| Mobile provider keeping in touch | 506 | 1.00 | 5.00 | 3.6621 | 1.16993 | -.681 | .109 |
| Having user-friendly website | 500 | 1.00 | 5.00 | 3.6740 | 1.17750 | -.640 | .109 |
| Network/signal coverage | 511 | 1.00 | 5.00 | 3.7710 | 1.17841 | -.818 | .108 |
| Valid N (listwise) | 454 | | | | | | |

**Source: Field Survey (2017)**

Table 4.38 shows the mean scores of customers' satisfaction with the products and services they purchase from the GSM telecommunication firms. The essence of having this data is to get first-hand information, from customers, about their level of approval of the firm's product, services and employee relations. The mean score of all eleven dimensions of customer satisfaction responded to show a little above average satisfaction of customers with the firms' products/services, technology and modernization of the firm and their equipment and customer relationship practices. However, most of the scores obtained from the standard deviation reflect that the views of respondents are largely dispersed from the mean scores. Therefore, it suggest that respondents are generally not harmonized in their views. This indicates that the telecommunication firms still have a

large gap to fill in fulfilling customers' expectation across the above mentioned service areas under study.

### *Test of Difference between Customers in Lagos and FCT on their Satisfaction with the Firms' Products and Services*

Although the means of customers' satisfaction have been derived in Table 4.38 above, it is still important to identify whether there is a difference between perceptions of customers in Lagos State from those in FCT about the products and services the firms offer. This is to show the extent to which customers in Lagos and FCT differ in their opinion as to the use of organisational knowledge by the four firms under study in achieving customer satisfaction objective.

In order to achieve this, T-test was adopted. T-test is used to show difference among two groups of respondents about a subject matter. However, T-test only provides indications about whether or not there is a difference in the means of groups, it does not show the extent to which the difference exist. Therefore, as a way of determining the weight of such difference, the eta squared was recommended by Pallant (2005), using the formula:

$$\text{Eta Squared} = \frac{t^2}{t^2 + (N_1 + N_2 - 2)} \quad \ldots\ldots\ldots\ldots \text{Equation 4.1}$$

Where,

$t^2$ = t-value

$N_1$ = Number of respondents for group 1

$N_2$ = Number of respondents for group 2

Therefore, this study followed this approach to determining whether or not there is a statistical difference between customers in Lagos and FCT on their satisfaction with the four firms' products and services.

**Table 4.39: Test of Difference in Perception of Customers in Lagos State and FCT about their satisfaction with the products and services offered by the Telecommunication Firms**

| Location of Respondents | N | Mean | Std. Deviation |
|---|---|---|---|
| **Lagos State** | 273 | 3.7345 | .70752 |
| **FCT** | 239 | 3.9660 | .74026 |
| **Leven's Test of Equal variances** | t(510) = -3.615, sig. (0.064, p > 0.05) | | |
| **Mean Difference** | -0.23149 (sig. = 0.000, p ≤ 0.05), 95% CI = -0.35732 to -0.10567 | | |

**Source: Field Survey (2017)**

Table 4.39 above shows the T-test difference in the perception of customers in Lagos State and FCT about their satisfaction with the products and services offered by the four firms included in this study. The overall means are a little above average for the two groups. Since the P-value for the levene's test of equality in variances is above the benchamark of 0.05, then it is appropriate to assume that the variances are equal. Thus, from the table above, assuming that variances are equal, the p-value (2-tailed) indicates that $p < .05$, hence signifying that there is a statistical difference in the perception of the two groups of customers about their satisfaction with the firms' products and services. However, as earlier stated the eta squared test (see equation 4.1) will show the weight of the difference.

$$\text{Eta Squared} = \frac{-3.615^2}{-3.615^2 + (273 + 239 - 2)}$$
$$= 0.025$$

According to Pallant (2005), the levels of difference between two groups can be either small (when eta square = .01), moderate (when eta square = 0.06), or large (when eta square = .14). Thus, the eta square calculated above as 0.025 is moderate. It therefore holds that statistically, the extent of difference in means in the perceived levels of satisfaction between telecommunications customers in Lagos and FCT is moderate in nature. By implication, telecommunication firms are expected to bridge the gaps that makes for differences in perception of customers' satisfaction.

**Hypothesis Two:** There is no significant relationship between individual-explicit knowledge and Operational efficiency of an organisation.

Consequent upon the cumbersome task involved with manually formulating and solving forty-two (42) DEA models representing each decision making unit included in this research study, a proven alternative was utilized for solving the model. Therefore, the software used for the programming and the running of the DEA models in the study is DEA Frontier, which is a DEA add-in for Microsoft Excel. This software permits modelling with different scale constraints, that is, variable returns to scale (VRS) and constant returns to scale (CRS) constraints.

For each DMU's VRS and CRS, the input efficiency scores were generated and explained. The implication of focusing on input efficiency is that the research presented situations of increasing, decreasing or constant returns to scale as applicable to each DMU in such a

way that allows for the identification of DMUs where additional input resources can enhance operational efficiency.

**(a) Results of Input-oriented CRS Model: Pure Technical Efficiency – CSCs in Lagos State and FCT**

Appendix three (3) show the result of input-oriented constant returns to scale (CRS) based on the pure technical efficiency of the four telecommunication firms' Customer Service Centers in Lagos State and FCT. The efficiency results in the table indicates that one of three types of scale efficiency (increasing, decreasing and constant) exist in each of the Customer Service Centers. From the table (see appendix 3), all Customer Service Centers of MTN in Lagos State have increasing returns to scale (IRS), while MTN's CSCs in FCT have constant returns to scale. Four CSCs belonging to Globacom have IRS, two have CRS and three have DRS. The statistics show that six CSCs belonginf to Airtel have IRS, three have CRS and two have DRS. Moreover, nine CSCs belonging to Etisalat have IRS, three have CRS and one has DRS.

For the CSCs that have IRS, this implies that the firms' customer service centers are actively utilizing most of the resources allocated to them to achieve operational functions of the organization. Moreso, they are still able to utilize additional resources that will be allocated to them. For example, up to 67.7 percent and only about 15 percent each of the input resources invested in Customer Service Centers 1, 3 and 6 respectively by MTN is utilized by the CSCs. Therefore, if the firm employs or redeploy more employees, spends more on employee training and new technology there are still chances that the firm's technical efficiency will improve beyond the present state. The implication of these figures therefore calls attention to the fact that annually, or monthly, situations of slack resources exist due to non-usage. DEA frontier, also presented the slack figures where they exist and the results are contained in appendix 8 of this research study. From the table presented in appendix 8, it is evident that although MTN customer service center 2 experiences increasing returns to scale, it has most of its slack from expenditure on employee training. This translates that the customer service center could still achieve more in operational efficiency if more expenditure is made on staff training programs.

Other firms' customer service centers have efficiency score of 1.000. By implication they have constant efficiency because according to the statistics they are presently using up 100 percent of all input resources at their disposal. The customer service centers in this

category include: MTFCSC 1 and 2, GLCSC 2, GFCSC 1, ALCSC 1 and 7, AFCSC 2, and ELCSC 6, 7 and 8. Further evidence that these customer service centers fully utilize their input resources is revealed in the slack table (see appendix 8), indicating the absence of slack scores. Thus, CSCs with constant returns to scale can serve as benchamark for their less efficient counterparts.

However, there were also cases of decreasing returns to scale (DRS). Normally efficiency is optimized at the point where overall efficiency score is 1.000 (that is, 100 percent). The implication of DRS in any customer service center is that such CSCs are not yielding outputs that are proportionate to the resources invested in them. Therefore, every additional input made into the CSCs continues to decrease overall efficiency. The slack table provides a guide that helps to trace input resources that are fully utilized and those which are under-utilized by customer service centers in this category. For example, whereas GLCSC 4 and 5 are experiencing decreasing returns to scale, the slack table in appendix 8 revealed that most input resources of GLCSC 4 are wasted on employee training, at the neglect of other areas of input investment. Similarly, most of GLCSC 5's resources are wasted on employee training and investment and new technology. This could also reflect a situation of misappropriation of resources among input resources.

In order to guide how resources should be utilized in the customer service centers, the DMU frontier model provides a benchmark which displays certain other DMU's which others can pattern their operations with, in other to enhance operational performance. Appendix 8(b) of this research work presents the benchmark tables for the input-oriented constant returns to scale (CRS) model.

**(b) Results of Input-oriented VRS Model: Pure Technical Efficiency – CSC in Lagos state and FCT**

Appendix four (4) shows the results of input-oriented variable returns to scale (VRS) of pure technical efficiency of the four telecommunication firms' customer service centers in Lagos State and FCT. The result of variable returns to scale assumes that firms' inputs does not always yield direct and proportionate output due to environmental factors that could make efficiency vary. Therefore, whereas the CRS assumes that resources invested into the production process will yield directly proportionate outputs, the VRS makes assumptions for possibility of variation. In reality, the assumption of the VRS hold

because all factors invested in the firm will not always produce directly proportionate outcomes.

The result of input-oriented VRS technical efficiency of customer service centers of the telecommunication firms is presented in appendix 4. A total of twenty (20) CSCs representing 48 percent of DMUs were found to be technically efficient. Six CSCs belonging to MTN were technically efficient, four CSCs owned by Globacom were technically efficient, Airtel has three technically efficient CSCs, and seven CSCs belonging to Etisalat were statistically reported to be technically efficient. This implies that they fully utilize all input resources invested into them by the firms' headquarters. Among the most technically inefficient DMU, according to the table, are GLCSC 4 (33 percent), GLCSC 6 (25 percent), GLCSC 7 (39 percent), ALCSC 6 (16 percent), ELCSC 1 (17 percent) and ELCSC 5 (25 percent). Interestingly, the DMUs with these lowest efficiency scores are located in Lagos state which is the commercial capital of Nigeria.

**Decision:**

Based on the DEA results, it was revealed that there is a significant relationship between individual-explicit knowledge and operational efficiency. Therefore, the alternate hypothesis which state that a significant relationship exist between individual-explicit knowledge and operational efficiency was accepted while the null hypothesis was rejected.

**Hypothesis Three:** Group-tacit Knowledge does not have a significant influence on organisational effectiveness

This hypothesis was subject to correlation and regression analysis in order to identify whether there is an influence of the independent variable on the dependent variable. Having ascertained that, the research study further determined the extent/power to which such influence.

**Table 4.40: Correlation Coefficient of GTK and Organisational Effectiveness among Telecommunication Firms**

| Firm Category | Pearson Correlation (r) | Level of Significance | Remark |
|---|---|---|---|
| Firm 1: MTN | .469** | p < 0.001 | Significant and moderate positive relationship |
| Firm 2: Glo | .522** | p < 0.001 | Significant and moderate positive relationship |
| Firm 3: Airtel | .583** | p < 0.001 | Significant and moderate positive relationship |
| Firm 4: Etisalat | .623** | p < 0.001 | Significant and strong positive relationship |

**Correlation is significant at the 0.01 level (2-tailed)

**Source: Field Survey (2017)**

Table 4.40 show the correlation of group-tacit knowledge and organisational effectiveness of the four firms. The statistical result indicate that a moderate positive relationship exist between group-tacit knowledge and organisational effectiveness for firm 1 (r = .47), firm 2 (r = .52), and firm 3 (r = .58). The result however showed a strong positive relationship between the two variables in Firm 4, such that r = .62. The implication of the statistics in the four firms is that group-tacit knowledge increases organisational effectiveness. Therefore, there are indications that the organisations lay emphasis on group tasks.

**Table 4.41: Effect of GTK on Organisational Effectiveness**

| R | $R^2$ | F |
|---|---|---|
| .530 | .280 | F(1,220) = 85.729, p < 0.001 |

**(b) Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 1.285 | .304 | | 4.227 | .000 |
| GTK | .657 | .071 | .530 | 9.259 | .000 |

a. Dependent Variable: OE

**Source: Field Survey (2017)**

The above Table 4.41 summarizes the result of regression analysis carried out to determine the impact of group-tacit knowledge on organisational effectiveness. The linear regression result indicate that group-tacit knowledge significantly influnces organisational effectiveness of the telecommunication firms ($r^2$ = 28 percent, p ≤ 0.001). Thus, the

explanatory power of group-tacit knowledge on organisational effectiveness objective of the firms is only 28 percent.

The implication of the result is that the firms have a strong emphasis on group-tacit knowledge as a major determinant of achieving organisational effectiveness. This may also suggest that the firm has a strong culture of using team structures and knowledge sharing among employees in the firm to enhance their competitive positions in the telecommunication industry. Moreover, the model demonstrates a significantly high F-value to validate its appropriateness in testing the predictive ability of the independent over the dependent variable, $F(1, 220) = 85.729$, $p < 0.001$.

**Determination of Inter-Item Correlations of Group-tacit Knowledge and Organisational Effectiveness**

**Table 4.42: Inter-Item Correlation of Group-tacit knowledge and Organisational Effectiveness**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| The way I carry out my job is largely guided by the organizational culture of my firm (1) | 1 | | | | | | | | |
| Staff in this firm are encouraged to share experiences among one another (2) | .516** | 1 | | | | | | | |
| Most of the success I enjoy on my job is a result of the shared experiences gained from my colleagues (3) | .307** | .443** | 1 | | | | | | |
| Staff of this firm often share stories about past successes and failures of their work (4) | .280** | .135* | .313** | 1 | | | | | |
| My colleagues are always willing to explain difficult work processes to me when I need them (5) | .305** | .386** | .288** | .442** | 1 | | | | |
| Top management of my firm is quick to adapt to unanticipated changes (6) | .271** | .312** | .302** | .340** | .372** | 1 | | | |
| My firm is very responsive to new market demands (7) | .345** | .369** | .193** | .221** | .300** | .427** | 1 | | |
| All units of this firm work in a coordinated pattern to achieve the same goal (8) | .315** | .391** | .259** | .235** | .358** | .484** | .554** | 1 | |
| Top Management are quick to adapt the firm's goals/objectives to changes in our market/industry (9) | .324** | .336** | .276** | .256** | .232** | .512** | .550** | .491** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Source: Field Survey (2017)**

Table 4.42 shows the inter-item correlation of group-tacit knowledge and organisational effectiveness. The first five (5) items measured group-tacit knowledge while items six (6) to nine (9) measured organizational effectiveness. The adaptability of the organization to unanticipated changes correlates with organizational culture serving as guide to the way employees carry out their job (r = 0.271, p ≤ 0.01); sharing of experiences among employees of the organisations (r = 0.312, p ≤ 0.01); successes on the job is often linked to shared experiences (r = 0.302, p ≤ 0.01); story telling is a about past successes and failures is viable to organizational members (r = 0.340, p ≤ 0.01) and the cooperation among employees towards robbing minds to solve difficult work processes (r = 0.372, p ≤ 0.01).

Similarly, the responsiveness of the organization to new market demands strongly correlates with organizational culture serving as guide to the way employees carry out their job (r = 0.345, p ≤ 0.01); sharing of experiences among employees of the organisations (r = 0.369, p ≤ 0.01); successes on the job is often linked to shared experiences (r = 0.193, p ≤ 0.01); story telling is about past successes and failures is viable to organizational members (r = 0.221, p ≤ 0.01) and the cooperation among employees towards robbing minds to solve difficult work processes (r = 0.300, p ≤ 0.01). The collective orientation that helps the organization achieve their goals through coordinated pattern relates effectively with organizational culture serving as guide to the way employees carry out their job (r = 0.315, p ≤ 0.01); sharing of experiences among employees of the organisations (r = 0.391, p ≤ 0.01); successes on the job is often linked to shared experiences (r = 0.259, p ≤ 0.01); story telling is a about past successes and failures is viable to organizational members (r = 0.235, p ≤ 0.01) and the cooperation among employees towards robbing minds to solve difficult work processes (r = 0.358, p ≤ 0.01). Lastly, top management's promptness to adapt the organisations' objectives to industry and market changes relates with organizational culture serving as guide to the way employees carry out their job (r = 0.324, p ≤ 0.01); sharing of experiences among employees of the organisations (r = 0.336, p ≤ 0.01); successes on the job is often linked to shared experiences (r = 0.276, p ≤ 0.01); story telling is a about past successes and failures is viable to organizational members (r = 0.256, p ≤ 0.01) and the cooperation among employees towards robbing minds to solve difficult work processes (r = 0.232, p ≤ 0.01). Although statistical results from the table shows very moderate levels of inter-item correlations among items of the two constructs involved, it is more interesting to identify

that there is a significant relationship between items of group-tacit knowledge and organizational effectiveness.

**Decision:**

Based on the correlation and regression tables above, the null hypothesis was rejected because group-tacit knowledge was found to have significant influence on organisational effectiveness at both the firm and the Customer Service Centers. Therefore, the alternate hypothesis which state that group-tacit knowledge has significant influence on organisational effectiveness was accepted.

**Test of Difference (Using ANOVA) among Groups about Organisational Effectiveness**

Haven ascertained the relationships between group-tacit knowledge and organisational effectiveness from the perspective that gathered opinion of the employees in the four firms, it was considered necessary not to assume that there are no differences between the firms' perspectives concerning organisational effectiveness. Therefore, in determining whether differences exist between groups about organisational effectiveness, ANOVA was used.

**Table 4.43: One-way Between-group ANOVA with Post-hoc Tests Results of Telecommunication Firms on Organisational Effectiveness**

|  | **N** | **Mean** | **Std. Dev.** |
|---|---|---|---|
| **MTN** | 85 | 4.0412 | .64647 |
| **Globacom** | 49 | 4.0510 | .71622 |
| **Airtel** | 35 | 4.1714 | .57128 |
| **Etisalat** | 51 | 4.1078 | .56182 |
| **Total** | 220 | 4.0795 | .63068 |
| **Levene Statistic** | .606 (p = 0.612, ≥ 0.05) | | |

**ANOVA**

|  | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | .501 | 3 | .167 | .417 | .741 |
| Within Groups | 86.607 | 216 | .401 | | |
| Total | 87.108 | 219 | | | |

**Source: Field Survey (2017)**

Table 4.43 above show statistical results of the test of differences in the perception of employees of the four firms included in this research study about organisational effectiveness. From Table 4.43 all the mean values from the four firms indicate that they all tend towards a strong inclination to organisational effectiveness. The standard deviation values of less than 1 also suggest that respondents' views cluster around the fact that the firms' organisational effectiveness objective is being pursued and achieved. These are indicated by the statistics; MTN (mean = 4.04, std. dev. = 0.65); Globacom (mean = 4.05, std. dev. = 0.72); Airtel (mean = 4.17, std. dev. = 0.57); and Etisalat (mean = 4.12, std. dev. = 0.56).

The test for homogeneity of variances shows that the homogeneity value is above 0.05 (sig. value = .612). This therefore implies that the variance is score for all the four groups is the same, thus the assumption of homogeneity in variance was not violated. The ANOVA results show that there is no significant difference among the views of the employees in the four firms about organisational effectiveness (sig. value = .741).

**Hypothesis Four:** Group-explicit knowledge does not have any significant influence on organisational productivity.

This was analyzed using data envelopment analysis (DEA). Firms' productivity objective is basically concerned with the level of output that can be produced given certain level of input. As such, productivity objective is in the long run out driven. Therefore, result from the output-orientation of the CRS and VRS models of data envelopment analysis is presented in the following tables.

**(a) Results of Output-oriented CRS Model: Pure Technical Efficiency – CSC in Lagos state and FCT**

Appendix five show the result of output-oriented constant returns to scale (CRS) of pure technical efficiency of the four telecommunication firms' customer service centers in Lagos State and FCT. Among the CSCs belogning to MTN, two of the CSCs have IRS, while five have CRS and two have DRS. In Globacom, three CSCs have CRS, and six have DRS. In Airtel, one CSC has IRS, three of the CSCs have CRS and seven CSCs have DRS. Among the CSCs owned by Etisalat, five have IRS, four have CRS and four have DRS. Thus, from the forty-two DMUs analyzed, 15 (36 percent) were found to be technically efficient. In other words, their productive capacity is fully optimized. These

customer service centers serve as models which other that are not technically efficient can follow. However, 27 other DMUs were presented to be inefficient. Inefficiency in the DEA occurs when the efficiency scores are either greater than or less than 1. From the appendix the twenty-seven DMUs representing 64 percent, will be required to keep inputs constant while they attempt to utilize their existing output level to achieve productivity.

Using the benchmark tables in appendix 4(b) of this research work can guide the firms as to what other customer service centers each inefficient CSC in the table can model after to enhance productivity level.

**(b) Results of Output-oriented VRS Model: Pure Technical Efficiency – CSC in Lagos state and FCT**

Appendix six (6) show the result of output-oriented variable returns to scale (VRS) of pure technical efficiency of the four telecommunication firms' customer service centers in Lagos State and FCT. As in efficiency measures, under firm productivity using DEA variable returns to scale assumes that firms' inputs might not always yield direct and proportionate output due to environmental factors that could make efficiency vary. Therefore, whereas the CRS assumes that resources invested into the production process will yield directly proportionate outputs, the VRS makes assumptions for possibility of variation. In reality, the assumption of the VRS hold because all factors invested in the firm will not always produce directly proportionate outcomes.

Given this assumption, twelve (12) CSCs representing 28.6 percent of DMUs were found to productively engage their present input resources on outputs that achieve optimal productivity for the firm. This implies that they fully utilize all input resources invested into them by the firms' headquarters. Every other DMU have figures that are above 1, therefore, they are inefficient in the use of the firm's resources to achieve its productivity objective. The ideal solution is for inefficient customer service centers to maintain their present input level and enhance utilization of outputs targets such as achieving more number of customers with resolved cases and producing more innovations that can help achieve the firms' productivity objective.

**Decision:**
The results from DEA carried out showed that group-explicit knowledge has a significant influence on organisational productivity. Therefore, the alternate hypothesis which state

that group-explicit knowledge has significant influence on organisational effectiveness was accepted while the null hypothesis was rejected.

**Hypothesis Five:** There is no moderating effect of organisational orientation on the relationship   between organisational knowledge and performance of the firms.

The analysis developed eight models to test different levels of relationships that relate to the hypothesis. Two specific performance variables were examined; they are: customer satisfaction and organizational effectiveness. The analysis consist of first and second order variables showing the results of interacting variables (organisational orientation) on the relationship between organisational knowledge and performance.

**Results of Hierarchical Multiple Regression Showing the Interaction of Second Order Organisational Knowledge with First and Second Order Organisational Orientation and their Linkages with Organisational Performance**

The first set of tables (Tables 4.44a,b,c) consist of eight models that include results of hierarchical multiple regression showing the interaction of second order organisational knowledge with first and second order organisational orientation and their linkages with organisational performance. Model 1, examined the relationship between employees' demographic factors and customer satisfaction. Models 2 – 4 examined the relationships between organizational demographic variables, organizational knowledge variables and the interacting variables on customer satisfaction. Model 5 examined the relationship between employees' demographic variables on organizational effectiveness. Models 6 – 8 examined the relationships between organizational demographic variables, organizational knowledge variables and the interacting variables on organizational effectiveness.

**Table 4.44(a): Result of Hierarchical Multiple Regression (Second Order Organisational Knowledge with First and Second Order Organisational Orientation)**

| | Customer Satisfaction | | | | Organisational Effectiveness | | | |
|---|---|---|---|---|---|---|---|---|
| | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 |
| **Employees' Demographic Variables** | | | | | | | | |
| Gender | .085 | .104 | .105 | .030 | .002 | .035 | .008 | -.266*** |
| Marital status | .096 | .143 | .170 | .093 | -.085 | -.035 | -.031 | -.310*** |
| Work experience | -.125 | -.103 | -.019 | -.120 | -.048 | -.029 | .105 | -.255*** |
| Age | .000 | -.006 | -.088 | -.081 | -.087 | -.032 | -.090 | -.075 |
| Position | .287** | .309*** | .238** | .273** | .141 | .170 | .129 | .326*** |
| Education | .114 | .112 | .006 | .097 | .054 | .050 | -.061 | .273*** |
| Personal Income | -.057 | -.007 | -.010 | -.104 | -.076 | .019 | -.013 | -.368*** |
| **Organisational Demographic Variables** | | | | | | | | |
| Nature of employment | | .092 | .012 | .053 | | .286*** | .071 | .243*** |
| Firm size | | -.131** | -.088 | -.170*** | | -.129** | -.034 | -.323*** |
| Functional units | | .082 | .042 | .047 | | -.012 | -.088 | -.126*** |
| **Individual-tacit Knowledge** | | | | | | | | |
| Explaining job steps | | | -.028 | -.278*** | | | -.109*** | -1.043*** |
| Writing down the procedures | | | -.062 | -.234*** | | | .045 | -.613*** |
| **Individual-explicit Knowledge** | | | | | | | | |
| Personal trainings | | | -.007 | -.007 | | | .096** | .116*** |
| Knowledge gained from journal and magazines | | | .156*** | -.052 | | | .058 | -.733*** |
| Educational background | | | .038 | -.112 | | | -.083* | -.643*** |

**Source: Field Survey (2017)**
**\*p ≤ 0.1, \*\*p ≤ 0.05, \*\*\*p ≤ 0.01**

**M1 = Model 1, M2 = Model 2, M3 = Model 3, M4 = Model 4, M5 = Model 5, M6 = Model 6, M7 = Model 7, M8 = Model 8**

Table 4.44(a) is the result of hierarchical multiple regression carried out to show the moderation effect of organisational orientation on the relationship between organisational knowledge and customer satisfaction based on data gathered from the firm. Model 1 examined the influence of individuals' demographic factors on customer satisfaction. Seven demographic factors were examined, namely: sex, marital status, work experience, age, position in the organisation, highest education obtained and personal income level. However, only position in the organisation was found to influence customer satisfaction ($\beta$ = 0.287; $p \leq 0.05$). This indicates that employees at all levels in the organisation consider their position to be a major determinant on their influence level over customers' satisfaction.

In model 2, organisational demographic variables were included into the block. Thus, employee and organisational demographic variables' influence were examined on customer satisfaction. At this level, position in the organisation was found to influence

customer satisfaction ($\beta$ = 0.309, p ≤ 0.01); firm size was also found to influence customer satisfaction ($\beta$ = -0.131, p ≤ 0.05). As depicted in the result of analysis, the relationship between firm size and customer satisfaction is negative in nature. This implies that customer satisfaction declines as the number of employees in the organisation increases.

In model 3, organizational knowledge was introduced into the block. The model examined the influence of individuals' and organisational demographic variables, and organisational knowledge dimensions on customer satisfaction. Organisational knowledge dimensions include: individual-tacit knowledge (ITK), individual-explicit knowledge (IEK), group-tacit knowledge (GTK) and group-explicit knowledge (GEK). Each dimension of organisational knowledge was measured based on the items in them. ITK was measured with two (2) items, IEK was measured with four (4) items. Five (5) items were used to measure GTK, while GEK was measured using two (2) items. At this level, position in the organisation was found to influence customer satisfaction ($\beta$ = 0.238, p ≤ 0.05). Also, individual-explicit knowledge was found to have significant influence on customer satisfaction. Statistically, the knowledge that employees gain from journals and magazines significantly impacts on their responsiveness towards customer satisfaction ($\beta$ = 0.156, p ≤ 0.01).

Model 4, shows the moderating effect of organisational orientation on organisational knowledge and customer satisfaction. Position in the organisation has a significant influence on customer satisfaction ($\beta$ = 0.273, p ≤ 0.05). Individual-tacit knowledge, specifically employees' ability to explain the steps involved with carrying out their work ($\beta$ = -0.278, p ≤ 0.1) and to write down procedures involved with their work, were found to significantly predict customer satisfaction ($\beta$ = -0.234, p ≤ 0.1). However, the negative influence implies that losing employees with this tacit knowledge could result in declined customer satisfaction. Moreover, the moderating role of organisational orientation on organisational knowledge and customer satisfaction was also found to be significant. Three dimensions of organisational orientation were measured in this regard. They are: learning orientation, entrepreneurial orientation and market orientation. These three organisational orientations moderated the relationship of organisational knowledge and customer satisfaction in the following ways: learning orientation ($\beta$ = 0.079, p ≤ 0.05), entrepreneurial orientation ($\beta$ = -0.633, p ≤ 0.1), and market orientation ($\beta$ = -1.191, p ≤ 0.01).

**Table 4.44(b): Result of Hierarchical Multiple Regression (Second Order Organisational Knowledge Interactions with First and Second Order Organisational Orientation)**

| | Customer Satisfaction | | | | Organisational Effectiveness | | | |
|---|---|---|---|---|---|---|---|---|
| | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 |
| **Group-tacit Knowledge** | | | | | | | | |
| Organizational culture | | | .091 | -.088 | | | .098 | -.554*** |
| Staff share experiences | | | .040 | -.246* | | | .111 | -.929*** |
| Shared experiences | | | .024 | .083 | | | -.006 | .216*** |
| Staff share stories of work | | | .055 | -.252* | | | .061 | -1.035*** |
| Explain difficult work processes | | | .006 | -.066 | | | .080 | .249*** |
| **Group-explicit Knowledge** | | | | | | | | |
| Firm's knowledge base | | | .104 | -.393* | | | .170** | -1.739*** |
| Document personal experiences | | | .015 | -.250** | | | .152*** | -.859*** |
| **Interacting Effects** | | | | | | | | |
| **OK×LO (Second Order)** | | | | **.079**** | | | | **.156**** |
| OK×Shared Vision | | | | .272*** | | | | 1.022*** |
| OK×Open mindedness | | | | -.516 | | | | -2.631*** |
| OK×CommitTo Learning | | | | --------- | | | | --------- |
| OK×InterOrgKnowledge | | | | --------- | | | | --------- |
| **OK×EO (Second Order)** | | | | **-.633*** | | | | **-.074** |
| OK×Proactive | | | | .100 | | | | 2.156*** |
| OK×Competitor Orient. | | | | -.125 | | | | -1.978*** |
| OK×Autonomy | | | | -1.288 | | | | -3.738*** |
| OK×Innovativeness | | | | --------- | | | | -------- |
| OK×Risk-taking | | | | --------- | | | | -------- |
| **OK×MO (Second Order)** | | | | **1.191**** | | | | **1.424**** |
| OK×Customer Orient. | | | | 2.877*** | | | | 10.001*** |
| OK×Compt. Orient. | | | | .575** | | | | 2.183*** |
| OK×Inter Dept. Orient. | | | | --------- | | | | --------- |

**Source: Field survey (2017)**
**\*p ≤ 0.1, \*\*p ≤ 0.05, \*\*\*p ≤ 0.01**
**M1 = Model 1, M2 = Model 2, M3 = Model 3, M4 = Model 4, M5 = Model 5, M6 = Model 6, M7 = Model 7, M8 = Model 8**

The Table 4.44(b) above show the result of hierarchical multiple regression carried out to show the moderation effect of organisational orientation on the relationship between

organisational knowledge and organisational effectiveness based on data gathered from the firm. Model 1 examined the influence of individuals' demographic factors on organizational effectiveness. Seven demographic factors were examined, namely: sex, marital status, work experience, age, position in the organisation, highest education obtained and personal income level. However, none of the individual demographic factors included in this study was found to have any statistical influence on organisational effectiveness.

In model 2, organisational demographic variables were included into the block. Thus, individual and organisational demographic variables' influence were examined on organisational effectiveness. At this level, two organisational demographic variables were found to have statistical influence on organisational effectiveness; nature of employees' employment with the organisation, such as whether they are full time or contract employees, was found to influence organisational effectiveness ($\beta = 0.286$, $p \leq 0.01$); firm size was also found to influence customer satisfaction ($\beta = -0.129$, $p \leq 0.05$). As depicted in the result of analysis, the relationship between firm size and organisational effectiveness is negative in nature. This implies that organisational effectiveness declines as the number of employees in the organisation increases.

In model 3, organizational knowledge was introduced into the block. The model examined the influence of individuals' and organisational demographic variables, and organisational knowledge dimensions on organisational effectiveness. At this level, direct effect was only found between dimensions of organisational knowledge and effectiveness. Individual-tacit knowledge, specifically the fact that employees with this tacit knowledge find it difficult to explain the steps involved with their work, has statistical influence on organisational effectiveness ($\beta = -0.109$, $p \leq 0.01$). Individual-explicit knowledge was found to have significant influence on organisational effectiveness. Statistically, the knowledge that employees gain from personal training ($\beta = 0.096$, $p \leq 0.05$) and their educational background ($\beta = 0.083$, $p \leq 0.1$) significantly impacts on their responsiveness to the extent of ensuring higher organisational effectiveness. Group-explicit knowledge, such as the organisation's knowledge base ($\beta = 0.170$, $p \leq 0.05$) and documentation of employees' personal experiences relating to their work ($\beta = 0.152$, $p \leq 0.01$), has statistical influence on organisational effectiveness.

Model 4, shows the moderating effect of organisational orientation on organisational knowledge and organisational effectiveness. Individual-tacit knowledge, specifically the fact that employees find it difficult to explain the steps involved with their work, was found to significantly predict organisational effectiveness ($\beta = 0.302$, $p \leq 0.01$). Individual-explicit knowledge such as the knowledge that employees gain from personal training ($\beta = 0.082$, $p \leq 0.1$) and their educational background ($\beta = 0.195$, $p \leq 0.01$) significantly impacts on their responsiveness to the extent of ensuring higher organisational effectiveness. Group-tacit knowledge, such as the fact that employees of the firm often share stories about their successes and failures of their work, has statistical influence on organisational effectiveness ($\beta = -0.180$, $p \leq 0.05$). Group-explicit knowledge, indicated by the organisation's knowledge base ($\beta = -0.170$, $p \leq 0.1$) also has statistical influence on organisational effectiveness. Moreover, the moderating role of organisational orientation on organisational knowledge and effectiveness was also found to be significant. Three dimensions of organisational orientation were measured in this regard. They are: learning orientation, entrepreneurial orientation and market orientation. However, only two organisational orientations moderated the relationship of organisational knowledge and organisational effectiveness in the following ways: learning orientation ($\beta = 0.156$, $p \leq 0.01$) and market orientation ($\beta = -1.424$, $p \leq 0.01$).

**Table 4.44(c): Result of Hierarchical Multiple Regression (Second Order Organisational Knowledge with First and Second Order Organisational Orientation)**

| | Customer Satisfaction | | | | Organisational Effectiveness | | | |
|---|---|---|---|---|---|---|---|---|
| | **M1** | **M2** | **M3** | **M4** | **M5** | **M6** | **M7** | **M8** |
| **R²** | .085 | .123 | .292 | **.326** (.344) | .058 | .160 | .488 | **.575** (.896) |
| **ΔR²** | | .038 | .169 | **.033** (.051) | | .102 | .328 | **.087** (.408) |
| **F** | 1.979* | 2.061** | 2.535*** | **2.548***** (2.311)*** | 1.316 | 2.804*** | 5.853*** | **7.154***** (38.161)*** |
| **Df** | 7,150 | 10,147 | 22,135 | **25** (29) | 7 | 10 | 22 | **25** (29) |

**Source: Field survey (2017)**
**\*p ≤ 0.1, \*\*p ≤ 0.05, \*\*\*p ≤ 0.01**
**M1 = Model 1, M2 = Model 2, M3 = Model 3, M4 = Model 4, M5 = Model 5, M6 = Model 6, M7 = Model 7, M8 = Model 8**

Table 4.44(c) show the regression results of the direct and interaction effects of organisational knowledge, orientation and performance. Individuals' demographic factors had up to eight (8) percent influence on customer satisfaction ($r^2 = 0.085$), $F(7, 150) = 1.979$, $p \leq 0.1$. In model 2, the influence of organisational demographic factors, on customer satisfaction was twelve (12) percent ($r^2 = 0.123$; $\Delta r^2 = 0.038$), $F(10, 147) = 2.061$, $p \leq 0.05$. With the introduction of organisational knowledge variables in model 3,

the effect of the predictor variables had an overall higher influence on customer satisfaction of over sixteen (16) percent ($r^2 = 0.292$; $\Delta r^2 = 0.169$), F (22, 135) = 2.535, p ≤ 0.01. In model 4, with the moderating role of organisational orientation the influence of organisational knowledge on customer satisfaction further strengthened by up to three (3) percent ($r^2 = 0.326$; $\Delta r^2 = 0.033$), F (25, 132) = 2.548, p ≤ 0.01 when viewed from the second-order perspective. However, the first order influence of organisational orientation on organisational knowledge and customer satisfaction reveal a higher value of up to five (5) percent influence ($r^2 = 0.344$; $\Delta r^2 = 0.051$), F (29, 128) = 2.311, p ≤ 0.01.

In model 5, individuals' demographic factors had five (5) percent influence on organisational effectiveness ($r^2 = 0.058$), F (7, 150) = 1.316. In model 6, the influence of organisational demographic factors on organisational effectiveness was sixteen (16) percent ($r^2 = 0.160$; $\Delta r^2 = 0.102$); F (10, 147) = 2.804, p ≤ 0.01. With the introduction of organisational knowledge variables in model 7, the effect of the predictor variables had an overall higher influence on customer satisfaction of over thirth-two (32) percent ($r^2 = 0.488$; $\Delta r^2 = 0.328$), F (22, 135) = 50853, p ≤ 0.01. In model 8, with the moderating role of organisational orientation the influence of organisational knowledge on customer satisfaction further strengthened by up to eight (8) percent ($r^2 = 0.575$; $\Delta r^2 = 0.087$), F (25, 132) = 7.154, p ≤ 0.01. However, the first order influence of organisational orientation on organisational knowledge and organisational effectiveness reveal a higher value of up to forty (40) percent influence ($r^2 = 0.896$; $\Delta r^2 = 0.408$), F (29, 128) = 38.161, p ≤ 0.01.

**Results of Hierarchical Multiple Regression Showing the Interaction of First Order Organisational Knowledge with First Order Organisational Orientation and Organisational Performance**

Tables 4.45a,b,c consist of eight models that include the results of hierarchical multiple regression showing the interactions of first order organisational knowledge with first order Organisational Orientation and their linkages with organisational performance. Model 1, examined the relationship between individuals' demographic factors and customer satisfaction. Models 2 – 4 examined the relationships between organizational demographic variables, the first order of organizational knowledge variables and the interacting variables on customer satisfaction. Model 5 examined the relationship between individual demographic variables on organizational effectiveness. Models 6 – 8 examined the

relationships between organizational demographic variables, the first order of organizational knowledge variables and the interacting variables on organizational effectiveness.

**Table 4.45a: Result of Hierarchical Multiple Regression (First Order Organisational Knowledge with First Order Organisational Orientation)**

| | Customer Satisfaction | | | | Organisational Effectiveness | | | |
|---|---|---|---|---|---|---|---|---|
| | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 |
| **Individuals' Demographic Variables** | | | | | | | | |
| Sex | .085 | .104 | .105 | .373*** | .002 | .035 | .008 | -.594*** |
| Marital status | .096 | .143 | .170 | -.019 | -.085 | -.035 | -.031 | .327*** |
| Work experience | -.125 | -.103 | -.019 | .250** | -.048 | -.029 | .105 | -.520*** |
| Age | .000 | -.006 | -.088 | -.210* | -.087 | -.032 | -.090 | .142** |
| Position | .287** | .309*** | .238** | .451*** | .141 | .170 | .129 | -.599*** |
| Education | .114 | .112 | .006 | -.086 | .054 | .050 | -.061 | .235*** |
| Personal Income | -.057 | -.007 | -.010 | -.005 | -.076 | .019 | -.013 | .024 |
| **Organisational Demographic Variables** | | | | | | | | |
| Nature of employment | | .092 | .012 | -.253** | | .286*** | .071 | .682*** |
| Firm size | | -.131** | -.088 | -.425*** | | -.129** | -.034 | .680*** |
| Functional units | | .082 | .042 | .143** | | -.012 | -.088 | -.215*** |
| **Individual-tacit Knowledge** | | | | | | | | |
| Explaining job steps | | | -.028 | -.034 | | | -.109*** | .503*** |
| Writing down the procedures | | | -.062 | -.270* | | | .045 | .915*** |
| **Individual-explicit Knowledge** | | | | | | | | |
| Personal trainings | | | -.007 | .578* | | | .096** | -1.467*** |
| Knowledge gained from journal and magazines | | | .156*** | .874*** | | | .058 | -1.811*** |
| Educational background | | | .038 | .662*** | | | -.083* | -1.572*** |

**Source: Field survey (2017)**
**\*p ≤ 0.1, \*\*p ≤ 0.05, \*\*\*p ≤ 0.01**
**M1 = Model 1, M2 = Model 2, M3 = Model 3, M4 = Model 4, M5 = Model 5, M6 = Model 6, M7 = Model 7, M8 = Model 8**

Table 4.45a above also shows the result of hierarchical multiple regression carried out to show the moderation effect of organisational orientation on the relationship between organisational knowledge and customer satisfaction based on data gathered from the firm. Model 1 examined the influence of individuals' demographic factors on customer satisfaction. Seven demographic factors were examined, namely: sex, marital status, work

experience, age, position in the organisation, highest education obtained and personal income level. However, only position in the organisation was found to influence customer satisfaction ($\beta = 0.287$; $p \leq 0.05$). This indicates that employees at all levels in the organisation consider their position to be a major determinant on their influence level over customers' satisfaction.

In model 2, organisational demographic variables were included into the block. Thus, individual and organisational demographic variables' influence were examined on customer satisfaction. At this levels, position in the organisation was found to influence customer satisfaction ($\beta = 0.309$, $p \leq 0.01$); firm size was also found to influence customer satisfaction ($\beta = -0.131$, $p \leq 0.05$). As depicted in the result of analysis, the relationship between firm size and customer satisfaction is negative in nature. This implies that customer satisfaction declines as the number of employees in the organisation increases.

In model 3, organizational knowledge was introduced into the block. The model examined the influence of individuals' and organisational demographic variables, and organisational knowledge dimensions on customer satisfaction. At this level, position in the organisation was found to influence customer satisfaction ($\beta = 0.238$, $p \leq 0.05$). Also, individual-explicit knowledge was found to have significant influence on customer satisfaction. Statistically, the knowledge that employees gain from journals and magazines significantly impacts on their responsiveness towards customer satisfaction ($\beta = 0.156$, $p \leq 0.01$).

Model 4, shows the moderating effect of organisational orientation on organisational knowledge and customer satisfaction. Four individuals' demographic variables are seen to have effect on customer satisfaction at this level. Sex ($\beta = 0.373$, $p \leq 0.01$), work experience ($\beta = 0.250$, $p \leq 0.05$), age ($\beta = -0.210$, $p \leq 0.1$) and position in the organisation ($\beta = 0.451$, $p \leq 0.01$) have a significant influence on customer satisfaction. The three organizational demographic variables included in this study also revealed significant levels of relationship with customer satisfaction. Nature of employment ($\beta = -0.253$, $p \leq 0.05$), firm size ($\beta = -0.425$, $p \leq 0.05$) and functional units ($\beta = 0.143$, $p \leq 0.05$) all had their varying influence on customer satisfaction. Individual-tacit knowledge, specifically employees' ability to write down procedures involved with their work, were found to significantly predict customer satisfaction ($\beta = -0.270$, $p \leq 0.1$). However, the negative influence implies that losing employees with this tacit knowledge could result in declined customer satisfaction. All three items of individual explicit knowledge also have

significant influence on customer satisfaction at this level. Employees' engagement in personal training ($\beta = 0.578$, $p \leq 0.1$), knowledge they gain from journals and magazines ($\beta = 0.874$, $p \leq 0.01$), and their educational background ($\beta = 0.662$, $p \leq 0.01$). These are indicators of the importance of employees' personal development for the organizational good.

Three specific items group tacit knowledge have significant relationship with customer satisfaction. Employees' shared experiences ($\beta = -0.529$, $p \leq 0.01$), Shared experiences result in most successes ($\beta = -0.714$, $p \leq 0.01$) and employees often share stories of their work ($\beta = -0.293$, $p \leq 0.01$). Likewise, group explicit knowledge statistically had significant relationship with customer satisfaction. Organizational knowledge base ($\beta = 0.635$, $p \leq 0.01$) and the organizational culture that mandates employees to document their personal experiences during work ($\beta = 0.538$, $p \leq 0.01$) were revealed to influence customer satisfaction. Still in model 4, the moderating role of first order organisational orientation variables on first order organisational knowledge variables and customer satisfaction was also found to be significant. The four dimensions of organizational knowledge were individually tested on individual constructs of the three dimensions of organisational orientation that were included in this research study. They are: learning orientation, entrepreneurial orientation and market orientation. The relationship between individual tacit knowledge and customer satisfaction was moderated by constructs of entrepreneurial orientation, such as autonomy ($\beta = 2.699$, $p \leq 0.01$) and interfunctional coordination ($\beta = -2.156$, $p \leq 0.01$).

Similarly, the relationship between individual explicit knowledge and customer satisfaction was moderated by learning orientation's: commitment to learning ($\beta = 0.363$, $p \leq 0.01$), open mindedness ($\beta = -10.984$, $p \leq 0.01$) and shared vision ($\beta = 0.395$, $p \leq 0.01$); entrepreneurial orientation's: innovativeness ($\beta = -0.869$, $p \leq 0.01$); and market orientation's: inter-functional coordination ($\beta = 6.939$, $p \leq 0.01$). The influence of group tacit knowledge and customer satisfaction was moderated by organizational orientation. Statistically, learning orientation's: open mindedness ($\beta = 11.004$, $p \leq 0.01$) and inter organizational knowledge sharing ($\beta = -0.510$, $p \leq 0.05$); entrepreneurial orientation's: competitive aggressiveness ($\beta = 0.989$, $p \leq 0.01$) and autonomy ($\beta = -2.892$, $p \leq 0.01$); market orientation's: inter-functional coordination ($\beta = -4.797$, $p \leq 0.01$). Lastly, statistical result showed that first order constructs of organizational orientation moderate the relationship between group explicit knowledge and customer satisfaction. These

moderating factors include, learning orientation's: shared vision (β = -0.451, p ≤ 0.01); and entrepreneurial orientation's innovativeness (β = 0.342, p ≤ 0.05) and market orientation's: competitor orientation (β = -0.184, p ≤ 0.05).

**Table 4.45(b):** **Result of Hierarchical Multiple Regression (First Order Organisational Knowledge with First Order Organisational Orientation)**

| | Customer Satisfaction | | | | Organisational Effectiveness | | | |
|---|---|---|---|---|---|---|---|---|
| | **M1** | **M2** | **M3** | **M4** | **M5** | **M6** | **M7** | **M8** |
| **Group-tacit Knowledge** | | | | | | | | |
| Organizational culture | | | .091 | -.029 | | | .098 | -.238*** |
| Staff share experiences | | | .040 | -.529*** | | | .111 | .462*** |
| Shared experiences | | | .024 | -.714*** | | | -.006 | .934*** |
| Staff share stories of work | | | .055 | -.293*** | | | .061 | .215*** |
| Explain difficult work processes | | | .006 | -.140 | | | .080 | -.063 |
| **Group-explicit Knowledge** | | | | | | | | |
| Firm's knowledge base | | | .104 | .635*** | | | .170** | -.973*** |
| Document personal experiences | | | .015 | .583*** | | | .152*** | -.917*** |
| **Interacting Effects** | | | | | | | | |
| ITKnRiskTaking | | | | -.295 | | | | .073 |
| ITKnAutonomy | | | | 2.699*** | | | | -6.667*** |
| ITKnInterFunctionCoord | | | | -2.156*** | | | | 4.181*** |
| IEKnCommitToLearning | | | | .363* | | | | -.100 |
| IEKnOpenMindedness | | | | -10.984*** | | | | 23.334*** |
| IEKnSharedVision | | | | .395*** | | | | -.515*** |
| IEKnInnovativeness | | | | -.869*** | | | | 2.307*** |
| IEKnCustomerOrient | | | | -.400 | | | | 2.024*** |
| IEKnInterFunctCoord | | | | 6.939*** | | | | -16.143*** |
| GTKnOpenMindedness | | | | 11.004*** | | | | -23.369*** |
| GTKnInterOrgKnowSharing | | | | -.510** | | | | 1.539*** |
| GTKnRiskTaking | | | | -.294 | | | | .801*** |
| GTKnProactiveness | | | | -.187 | | | | .290*** |
| GTKnCompetitiveness | | | | .989*** | | | | -1.015*** |
| GTKnAutonomy | | | | -2.892*** | | | | 7.009*** |
| GTKnInterFunctCoord | | | | -4.797*** | | | | 12.258*** |
| GEKnSharedVision | | | | -.451*** | | | | .770*** |
| GEKnInnovativeness | | | | .342** | | | | -1.137*** |
| GEKnComptOrient | | | | -.184** | | | | .531*** |

**Source: Field Survey (2017)**
**\*p ≤ 0.1, \*\*p ≤ 0.05, \*\*\*p ≤ 0.01**
**M1 = Model 1, M2 = Model 2, M3 = Model 3, M4 = Model 4, M5 = Model 5, M6 = Model 6, M7 = Model 7, M8 = Model 8**

The Tables above shows the result of hierarchical multiple regression carried out to show the moderation effect of organisational orientation on the relationship between organisational knowledge and organisational effectiveness based on data gathered from the firm. Model 5 examined the influence of individuals' demographic factors on organizational effectiveness. Seven demographic factors were examined, namely: sex, marital status, work experience, age, position in the organisation, highest education obtained and personal income level. However, none of the individual demographic factors included in this study was found to have any statistical influence on organisational effectiveness.

In model 6, organisational demographic variables were included into the block. Thus, individual and organisational demographic variables' influence were examined on organisational effectiveness. At this level, two organisational demographic variables were found to have statistical influence on organisational effectiveness; nature of employees' employment with the organisation, such as whether they are full time or contract employees, was found to influence organisational effectiveness ($\beta = 0.286$, $p \leq 0.01$); firm size was also found to influence customer satisfaction ($\beta = -0.129$, $p \leq 0.05$). As depicted in the result of analysis, the relationship between firm size and organisational effectiveness is negative in nature. This implies that organisational effectiveness declines as the number of employees in the organisation increases.

In model 7, organizational knowledge was introduced into the block. The model examined the influence of individuals' and organisational demographic variables, and organisational knowledge dimensions on organisational effectiveness. At this level, direct effect was only found between dimensions of organisational knowledge and effectiveness. Individual-tacit knowledge, specifically the fact that employees with this tacit knowledge find it difficult to explain the steps involved with their work, has statistical influence on organisational effectiveness ($\beta = -0.109$, $p \leq 0.01$). Individual-explicit knowledge was found to have significant influence on organisational effectiveness. Statistically, the knowledge that employees gain from personal training ($\beta = 0.096$, $p \leq 0.05$) and their educational background ($\beta = -0.083$, $p \leq 0.1$) significantly impacts on their responsiveness to the extent of ensuring higher organisational effectiveness. Group-explicit knowledge, such as the organisation's knowledge base ($\beta = 0.170$, $p \leq 0.05$) and documentation of employees' personal experiences relating to their work ($\beta = 0.152$, $p \leq 0.01$), has statistical influence on organisational effectiveness.

Model 8, shows the moderating effect of organisational orientation on organisational knowledge and organisational effectiveness. At this level, almost all individuals' demographic variables influence organizational effectiveness, except for personal income. Gender ($\beta$ = -0.594, $p \leq 0.01$), marital status ($\beta$ = 0.327, $p \leq 0.01$), work experience ($\beta$ = -0.520, $p \leq 0.01$), age ($\beta$ = 0.142, $p \leq 0.05$), position in the organization ($\beta$ = -0.599, $p \leq 0.01$) and education ($\beta$ = 0.235, $p \leq 0.01$) all have siginificant influence on organizational effectiveness. Similarly, all the three organizational demographic variables included in the analysis, such as: nature of employment with the organization ($\beta$ = 0.682, $p \leq 0.01$), firm size ($\beta$ = 0.680, $p \leq 0.01$), and functional units ($\beta$ = -0. 215, $p \leq 0.01$), had significant effect on organizational effectiveness. Individual-tacit knowledge, specifically the fact that employees find it difficult to explain the steps involved with their work ($\beta$ = 0.503, $p \leq 0.01$) and the difficulty with writing down the procedures for carrying out their work ($\beta$ = 0.915, $p \leq 0.01$) were found to significantly predict organisational effectiveness. Individual-explicit knowledge such as the knowledge that employees gain from personal training ($\beta$ = -1.467, $p \leq 0.01$), knowledge gained from journals and magasines ($\beta$ = -1.811, $p \leq 0.01$) and their educational background ($\beta$ = -1.572, $p \leq 0.01$) significantly impacts on their responsiveness to the extent of ensuring higher organisational effectiveness.

Group-tacit knowledge, such as organizational culture ($\beta$ = -0.238, $p \leq 0.01$), Employees' shared experiences ($\beta$ = 0.462, $p \leq 0.01$), Shared experiences result in most successes ($\beta$ = 0.934, $p \leq 0.01$) and employees often share stories of their work ($\beta$ = 0.215, $p \leq 0.01$) influence organizational effectiveness. Likewise, group explicit knowledge statistically had significant relationship with organizational effectiveness. Specifically, organisational knowledge base ($\beta$ = -0.973, $p \leq 0.01$) and the organisational practice that mandates employees to document their personal experiences during work ($\beta$ = -0.917, $p \leq 0.01$) were revealed to influence organizational effectiveness.

The moderating role of first order organisational orientation variables on first order organisational knowledge variables and organizational effectiveness was also found to be significant. The four dimensions of organizational knowledge were individually tested on individual constructs of the three dimensions of organisational orientation that were included in this research study. They are: learning orientation, entrepreneurial orientation and market orientation. The relationship between individual tacit knowledge and organizational effectiveness was moderated by constructs of entrepreneurial orientation,

such as autonomy (β = -6.667, p ≤ 0.01) and market orientation's interfunctional coordination (β = 4.181, p ≤ 0.01). Similarly, the relationship between individual explicit knowledge and organisational effectiveness was moderated by learning orientation's: open mindedness (β = 23.334, p ≤ 0.01) and shared vision (β = -0.515, p ≤ 0.01); entrepreneurial orientation's: innovativeness (β = 2.307, p ≤ 0.01); and market orientation's: customer orientation (β = 2.024, p ≤ 0.01) and inter-functional coordination (β = -16.143, p ≤ 0.01). The influence of group tacit knowledge and organizational effectiveness was also moderated by organisational orientation. Statistically, learning orientation's: open mindedness (β = -23.369, p ≤ 0.01) and inter organizational knowledge sharing (β = 1.59, p ≤ 0.05); entrepreneurial orientation's: risk-taking (β = 0.801, p ≤ 0.01), proactiveness (β = 0.290, p ≤ 0.01), competitive aggressiveness (β = -1.015, p ≤ 0.01) and autonomy (β = 7.009, p ≤ 0.01); and market orientation's: inter-functional coordination (β = 12.258, p ≤ 0.01). Lastly, statistical result showed that first order constructs of organizational orientation moderate the relationship between group explicit knowledge and organizational effectiveness. These moderating factors include, learning orientation's: shared vision (β = 0.770, p ≤ 0.01); and entrepreneurial orientation's: innovativeness (β = -1.137, p ≤ 0.05) and market orientation's: competitor orientation (β = 0.531, p ≤ 0.05).

**Table 4.45(c):** **Result of Hierarchical Multiple Regression (First Order Organisational Knowledge with First Order Organisational Orientation)**

|  | Customer Satisfaction | | | | Organisational Effectiveness | | | |
|---|---|---|---|---|---|---|---|---|
|  | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 |
| R² | .085 | .123 | .292 | .500 | .058 | .160 | .488 | .866 |
| ΔR² |  | .038 | .169 | .207 |  | .102 | .328 | .378 |
| F | 1.979* | 2.061** | 2.535*** | 2.824*** | 1.316 | 2.804*** | 5.853*** | 18.257*** |
| Df | 7 | 10 | 22 | 41 | 7 | 10 | 22 | 41 |

**Source: Field Survey (2017)**
**\*p ≤ 0.1, \*\*p ≤ 0.05, \*\*\*p ≤ 0.01**
**M1 = Model 1, M2 = Model 2, M3 = Model 3, M4 = Model 4, M5 = Model 5, M6 = Model 6, M7 = Model 7, M8 = Model 8**

Individuals' demographic factors had up to eight (8) percent influence on customer satisfaction ($r^2 = 0.433$), F (7, 150) = 1.979, p ≤ 0.1. In model 2, with the influence of organisational demographic factors, the combine effect on customer satisfaction shifted upward by over three (3) percent ($r^2 = 0.433$; $\Delta r^2 = 0.038$), F (10, 147) = 2.061, p ≤ 0.05. with the introduction of organisational knowledge variables in model 3, the effect of the predictor variables had an overall higher influence on customer satisfaction of over sixteen (16) percent ($r^2 = 0.292$; $\Delta r^2 = 0.169$), F (22, 135) = 2.535, p ≤ 0.01. In model 4, with the

moderating role of organisational orientation the influence of organisational knowledge on customer satisfaction further strengthened by up to twenty (20) percent ($r^2 = 0.500$; $\Delta r^2 = 0.207$), F (41, 116) = 2.824, p ≤ 0.01 when viewed from the first-order relationships.

In model 5, individuals' demographic factors had up to five (5) percent influence on organisational effectiveness ($r^2 = 0.058$), F (7, 150) = 1.316. In model 6, with the influence of organisational demographic factors, the combine effect on organisational effectiveness shifted upward by over ten (10) percent ($r^2 = 0.160$; $\Delta r^2 = 0.102$), F (10, 147) = 2.804, p ≤ 0.01. With the introduction of organisational knowledge variables in model 7, the effect of the predictor variables had an overall higher influence on organizational effectiveness of over thirth-two (32) percent ($r^2 = 0.488$; $\Delta r^2 = 0.328$), F (22, 135) = 50853, p ≤ 0.01. In model 8, with the moderating role of organisational orientation the influence of organisational knowledge on organisationl effectiveness further strengthened by up to thirty-seven (37) percent ($r^2 = 0.866$; $\Delta r^2 = 0.378$), F (41, 116) = 18.257, p ≤ 0.01.

## 4.9 Demographic Characteristics of Respondents from the Semi-structured Interview

The following Table show the demographic information of the sampled respondents for the semi-structured interview

**Table 4.46: Gender and Marital Status of Respondents**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 37 | 56.1 |
| Female | 29 | 43.9 |
| Total | 66 | 100 |
| **Marital Status** | | |
| Single | 35 | 53.0 |
| Married | 30 | 45.5 |
| Total | 65 | 98.5 |

**Source: Field Survey (2017)**

Table 4.46 show the gender and marital status of respondents. 37 respondents are male (56.1 percent), while the remaining 29 respondents are female (43.9 percent). Also, 35 respondents are singles (53 percent) while 30 married (45.5 percent) respondents participated in the survey.

**Table 4.47: Years of Working Experience and Age of Respondents**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Years of Working Experience** | | |
| Less than 5 years | 25 | 37.9 |
| 6-10 years | 28 | 42.4 |
| 11-15 years | 7 | 10.6 |
| 16 years and above | 4 | 6.1 |
| Total | 64 | 97.0 |
| **Age** | | |
| Under 25 years | 14 | 21.2 |
| 25 – 35 years | 36 | 54.5 |
| 36 – 45 years | 14 | 21.2 |
| Total | 64 | 97.0 |

**Source: Field Survey (2017)**

Table 4.47 reveals the respondents' years of working experience and their age distribution. 25 respondents (37.9 percent) have worked for less than 5 years. 28 respondents (42.4 percent) have working experiences of 6 to 10 years. 7 respondents (10.6 percent) have worked for at least 11 years but not more than 15 years. While only 4 respondents (6.1 percent) have worked for at least 16 years. Moreover, 14 respondents (21.2 percent) are less than 25 years of age. 36 respondents (54.5 percent) are of the age bracket of 25 to 35 years. 14 respondents (21.2 percent) are at least 36 years but not more than 45 years of age.

**Table 4.48: Position and Highest Educational Qualification of Respondents**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Position in the Organisation** | | |
| Senior Manager | 5 | 7.6 |
| Supervisor/Team Leader | 39 | 59.1 |
| Other Technical & Administrative Employees | 17 | 25.8 |
| Total | 61 | 92.4 |
| **Highest Educational Qualification** | | |
| OND/NCE | 14 | 21.2 |
| HND/B.Sc. | 33 | 50.0 |
| M.Sc./MBA/M.Ed. | 17 | 25.8 |
| Others | 2 | 3.0 |
| Total | 66 | 100.0 |

**Source: Field Survey (2017)**

Table 4.48 show respondents' position in the organisation and their highest educational qualification. 5 respondents (7.6 percent) are senior managers, 39 respondents (59.1 percent) are supervisors or team leaders, and 17 respondents (25.8 percent) are in the category of other technical and administrative employees. Also, 14 respondents (21.2 percent) have obtained OND/NCE certificates, 33 respondents (50 percent) have obtained

HND/B.Sc., 17 respondents (25,8 percent) are have obtained Masters' degrees, while 2 respondents (3 percent) have other degree, such as Ph.D.

**Table 4.49: Additional Professional Qualification and Technical Skills of Respondents**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Additional Professional Qualification** | | |
| Yes | 16 | 24.2 |
| No | 43 | 65.2 |
| Total | 59 | 89.4 |
| **Technical skills** | | |
| Yes | 15 | 22.7 |
| No | 40 | 60.6 |
| Total | 55 | 83.3 |

**Source: Field Survey (2017)**

Table 4.49 shows the demographic statistics of respondents' additional qualification and technical skills. 16 respondents (24.2 percent) have additional professional qualification, while 43 respondents (65.2 percent) do not have any professional qualification. Also, 15 respondents (22.7 percent) have technical skills, while 40 respondents (60.6 percent) do not have technical skills.

**Table 4.50: Respondents' Personal Income Level and Nature of Employment**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Personal Income Level** | | |
| N100,000 and below | 26 | 39.4 |
| N101,000 – N200,000 | 29 | 43.9 |
| N201,000 – N300,000 | 4 | 6.1 |
| N301,000 and Above | 3 | 4.5 |
| Total | 62 | 93.9 |
| **Nature of Employment with the Firm** | | |
| Full-time staff | 46 | 69.7 |
| Contract staff | 16 | 24.2 |
| Total | 62 | 93.9 |

**Source: Field Survey (2017)**

Table 4.50 show the respondents' personal income level and nature of employment. 26 respondents (39.4 percent) earn at most 100,000 naira. 29 respondents (43.9 percent) earn 101,000 naira to 200,000 naira. 4 respondents (6.1 percent) earn from 201,000 naira to 300,000 naira and three respondents (4.5 percent) earn at least 301,000 naira. Meanwhile, 46 respondents (69.7 percent) are full-time employees, and 16 respondents (24.2 percent) are contract employees.

**Table 4.51: Number of Staff Working in the CSCs and Number of Functional Units/departments in the CSCs**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Number of staff working in the CSC** | | |
| 1-3 | 1 | 1.5 |
| 4-6 | 8 | 12.1 |
| 7-9 | 15 | 22.7 |
| 10 and above | 35 | 53.0 |
| Total | 59 | 89.4 |
| **Number of Functional Units/departments in the CSC** | | |
| 1-3 | 12 | 18.2 |
| 4-6 | 27 | 40.9 |
| 7-9 | 2 | 3.0 |
| 10 and Above | 11 | 16.7 |
| Total | 52 | 78.8 |

**Source: Field Survey (2017)**

Table 4.51 reveal the number of staff working in the CSCs and number of functional units/departments in the CSCs. One of CSC (1.5 percent) has 1 to 3 employees working in it. 8 CSCs (12.1 percent) have at least 4 and at most 6 employees working in them. 15 CSCs (22.7 percent) have 7 to 9 employees working in them and 35 CSCs (53 percent) have at least ten employees working in them. Also, 12 CSCs (18.2 percent) have 1 to 3 units/departments, 27 CSCs (40.9 percent) have at least 4 and at most 6 units/departments, 2 CSCs (3 percent) have 7 to 9 units/departments, and 11 CSCs (16.7 percent) have at least 10 units/departments.

**Table 4.52: Respondents' Firm Category and Firm Location**

| Demographic Characteristic | Frequency | Percentage |
|---|---|---|
| **Firm Category** | | |
| MTN | 16 | 24.2 |
| Globacom | 13 | 19.7 |
| Airtel | 15 | 22.7 |
| Etisalat | 22 | 33.3 |
| Total | 66 | 100.0 |
| **Firm Location** | | |
| Lagos State | 52 | 78.8 |
| FCT | 14 | 21.2 |
| Total | 66 | 100.0 |

**Source: Field Survey (2017)**

Table 4.52 show the firm category and firm location of respondents. 16 respondents (24.2 percent) work with MTN, 13 respondents (19.7 percent) work with Globacom, 15 respondents (22.7 percent) work with Airtel, while 22 respondents (33.3 percent) work with Etisalat. More so, 52 respondents (78.8 percent) are based in Lagos State, while 14 respondents (21.2 percent) are based in FCT.

## 4.10 Analysis of Results from the Semi-structured Interview

The analysis of the semi-structured interview was carried out using the thematic analysis. The following are the themes raised during the course of the interview and the results that were gathered from respondents.

## Theme One: Using Individual-tacit knowledge in resolving customer complaints that are not captured by your firm's online knowledge base

### Firm 1: MTN

The largest group of respondents simply stated that they would by all means within their ability resolve the customers' query. Hence, indicating that employees demonstrate some form of tacit knowledge when the firm's online knowledge based does not contain answers to customers' complaints.

However, a few others out rightly stated that complaints that were beyond the scope of the online data base would be directed to their head office for attention. The following quotation depicts that state of mind of two respondents

*"Any complaints above our capacity is directed to our bulk office for solution" (Respondent 2).*

*"Issues directed to me will be solved by seeking information from the HQ as regards the customer complaints that are not captured by the online knowledge base" (Respondent 11).*

There are possibilities that customers who come to such customer service centers with complaints beyond those provided on the online data base might have to spend longer period of time before getting their queries resolved.

The answer provided by some respondents points to the fact that it is important that Supervisors' possess adequate knowledge of different codes that relate to problems that may arise on their network.  The respondents stated that:

*"I can help the customers solve his/her problem by either telling which code to use or message to send back" (Respondent 5).*

Based on data collected, respondents that had either additional professional qualifications, technical skills or both that related to information technology were better acquitted with

using intuition, which is individual-tacit knowledge, to resolve customer complaints that are not captured in the firm's online knowledge base.

**Firm 2: Globacom**

The responses gathered from the data revealed that the respondents would to a large extent attempt to resolve customer complaints based on their personal knowledge and experience. The manner of response to this theme reflected employees' commitment to customer satisfaction by all means possible.

*"I respond to customer complaints in such situations by using my initiative and general knowledge of customer issues and general knowledge of past situation which are similar" (Respondent 2).*

The views of one respondent show cased a strong connection from tacit knowledge to employees' attitude and emotional intelligence especially when attending to customers' complaints. The following statement *"always responding to customers' complaints with care and making sure that the answer to their complaints is satisfactory enough"* depicts a cautious listening attitude *(Respondent 7)*.

Some respondents also revealed that in the case where they are unable to resolve customer queries, they refer such issues to either the appropriate units or to the headquarters where colleagues who are better experienced in the concerned issues can attend to them.

*"Normally I fix appointments with the customers and we discuss on a personal level, when it is a major complaint. But in the case of minor complaints I normally refer them to the head office" (Respondent 3).*

*"If I can attend to the issue, I will do that. But if not, I will forward their complaint to the appropriate unit. And after the issue has been resolved, a message will be forwarded to them to notify them that their complaint has been addressed" (Respondent 7).*

**Firm 3: Airtel**

Generally, there was scarcely any respondents found that was able to share any significant views about their use of individual-tacit knowledge to resolve customer complaints that are not captured on the firm's online knowledge base.

However, the responses of few employees reflects their reliance on the experience of colleagues when required. Others also emphasized the role of individual-tacit knowledge such as past experience.

One respondents said *"after listening carefully to the complaints, I put the customer on hold while I search for solutions. If I cannot discover any possible solution, I confer with my colleagues"* (Respondent 10).

*"I basically use past experience or experience already encountered, but if it is an issue too large for me, I call on other colleagues to get help"* (Respondent 2).

Other respondents simply stated that such issues beyond the scope of the firm's online knowledge base will be *"forwarded to the relevant technical unit"* or *"referred to the manager"* (Respondent 6).

*"I at best do referrals for issues that I am unable to handle (Respondent 3)"*

**Firm 4: Etisalat**

Most respondents were unable to demonstrate any significant views about responding to customer complaints that are not captured by the firm's online knowledge base.

However, very few respondents emphasized that they will depend on their individual-tacit knowledge gained from personal study.

*"Basically, a lot of resources are drawn from personal study and research"* (Respondent 1).

Other respondents who gave any significant response claimed that they will forward such complains to the higher authority, present it before the board or consult with colleagues.

*"Any complaints above our capacity is directed to our bulk office at head office for solution"* (Respondent 7).

*"They are treated at the board meeting after been submitted to the manager in charge"* (Respondent 12).

*"I would source for the information from my colleagues, and if the information does not satisfy the customer, I will ask him/her to drop a contact so that I can send an appropriate response when I have it"* (Respondent 10).

Therefore, possibilities are that the firm largely promotes a culture of collectivism more than that of individualism. This is such that in using knowledge to resolve customer complaints, especially those which are beyond the coverage of its online knowledge base, employees would rather seek collective solutions than attempt to individually seek out a means.

**Theme Two: Using Individual-explicit and Individual-tacit knowledge, such as educational and experiential skills, in improving your daily work routines**

**Firm 1: MTN**

Some respondents admitted that their individual-explicit knowledge, for example knowledge gathered from formal education, has been helpful for expressing communication and relational skill as they pursue their daily job tasks. A few others added that apart from making them effective with their daily work, their education also keep them goals oriented towards organisational objectives. To them achieving organisational effectiveness is paramount.

*"My educational skills have been helpful in that it avails me the opportunity to interact with English language proficiently where necessary. As a B.Eng holder, there is a thin line between my course while in school and the nature of my job" (Respondent 7).*

*"As a lawyer, I have been able to incorporate my educational experience to ensure that all legal issues as regards my team and our work is properly addressed and cared for" (Respondent 1).*

Experience is an expression of individual-tacit knowledge which respondents agreed is vital to their daily task and overall organisational performance. Most respondent are of the opinion that their experience over time on their job has sharpened their conceptual skill and enhanced them in decision making that related to their daily task of *"attending to customer complaints and attempting to satisfy them and executing operational work"*.

One of the respondents who is above 16 years of experience on the job stated that *"because of experiential skill challenges faced are easily uncovered and resolved" (Respondent 10)*.

Respondents who have stayed from six years upward seemed to be more emphatic about the role of their experience and professionalism, than their education, on their daily task

and the overall organisational performance. Some commented that they have *"earned more sales growth for the firm and attained to their set goals as a result of their professional skill, that is, expertise" (Respondent 8)*.

Therefore, it is important to note that as employees' spend more time on their job, their overall contribution to the organisational performance would likely come from their individual-tacit knowledge. Individual-explicit knowledge might be highly significant while they are still in their early years but they soon realize that the business environment demands their ability to enhance learning new skills and ways of enhancing organisational worth.

**Firm 2: Globacom**

Most respondents agreed to the importance of the individual-explicit knowledge gained from formal education to their work. Education, for example, has helped them to build and sustain good interpersonal, communication and technical skill to make them effective on the job. One commented that:

*"Education has helped me to develop every aspect of my personality from human relation skills, self-confidence even to technical methods of operating, and diplomatic way of handling issues" (Respondent 3).*

In the same way their individual-tacit knowledge, such as experience, was also viewed as an important determinant of their performance. One opined that it is an essential skill when *"interacting with angry and aggressive customers" (Respondent 10)* and enhances employees' ability to *"listen attentively and actively to customers' complaints without interruption" (Respondent 11)*.

*"The role of my educational and experiential skill cannot be overemphasized, because these have helped me a great deal in handling difficult issues and complaints intelligently and accurately. It has also given me a deeper understanding of how to attend to various customer issues" (Respondent 2).*

**Firm 3: Airtel**

Most respondents opined that their individual-explicit knowledge gained from their education helps them communicate effectively with customers, especially with English language. Other also suggested that they have become technically efficient on the job.

*"I studied computer science and through literacy in digitalization, I am able to handle technical issues" (Respondent 13).*

*"Based on my training in infrastructure management, I am able to avoid potentially problematic situations with minimum efforts" (Respondent 7).*

*"I studied Mass Communication and it has influenced greatly the way I relate with customers" (Respondent 3).*

Similarly, their response to individual-tacit knowledge was also very relevant because they related how experience has enhanced their creativity and maturity in resolving customer complaints, carrying out operational tasks, and divert different skills in departments that are different from those relating to their educational background.

*"My experience on the job has been an advantage to my service delivery" (Respondent 5).*

*"Education and experience play vital roles everyday for me: maximizing time, managing people, developing goals, etc" (Respondent 8).*

**Firm 4: Etisalat**

Respondents were of the view that individual-explicit knowledge, such as that gotten from their education has enhanced their ability to take decisions that aid their work, organize resources to achieve daily tasks and give subordinates due direction about job tasks.

*"My educational skill helps my job in the area of financial accounting and inventory management" (Respondent 8).*

*"My educational skill helps me to correct my colleagues when any error is made in any document" (Respondent 14).*

The role of indivudal-tacit knowledge on their daily work routines was also emphasized by respondents, especially in with respect to generating ideas to solve problems they encounter, being organized with assignments, enhanced professionalism when carrying out assignments and gaining more skill in relating with customers when attending to their queries.

*"My experiential skill has helped me to understand customers' behavioural tendencies and their reactions when they are upset" (Respondent 13).*

*"Experience has helped me to be better organized and handle issues professionally"* *(Respondent 10).*

## Theme Three: Utilizing Group-tacit knowledge to achieve organisational objectives.

### Firm 1: MTN

Respondents discussed a number of interesting views that revealed that they are aware of the existence of group-explicit and group-tacit knowledge practices in the firm and that knowledge sharing is the firm's major strategy for replicating expert knowledge among employees of the firm.

According to their views, regular trainings such as seminars, workshops, classroom discussions and what they tagged *"online knowledge quest"* are important strategies to the firm, and used in forming teams for the purpose of sharing knowledge and experiences that are necessary to stimulate employees towards achieving organisational objectives. The firm uses teaming both as a means of constantly sensitizing employees of the organisation's goals while at the same time making them aware of the required knowledge that could help them perform their role effectively.

An employee who has spent only less than five years in the firm opined that

- *"Team work is an important culture for the firm" (Respondent 4)*

- *"The manager/supervisor who is the team leader assigns responsibilities and follow up with it to ensure that the work is done" (Respondent 7)*

- *"We report daily about the job to the manager/supervisor" (Respondent 6)*

Another more experienced respondents with about fifteen years of experience on the job commented that

*"Through our collective knowledge we are able to design/redesign marketing strategies and achieve productivity from our markets" (Respondent 10).*

The firm also has a culture that ensures teams are formed based on ability to reason alike on a project taking into consideration their major area of individual passion. Hence, their collective-tacit knowledge is channeled to enhance the organisation's performance.

*"Teams within this organisation are formed based on the abilities, resourcefulness of the team members" (Respondent 1).*

Essentially, this depicts that the firm's goals of utilizing knowledge to enhance performance does not only end at knowledge sharing but continues with effective monitoring and evaluation of actions emanating from using such knowledge in daily work.

**Firm 2: Globacom**

Respondents' views highlighted the importance of group-tacit and group-explicit dimensions of organisational knowledge to organisational performance.

One respondent's view about group-explicit knowledge practice in the organisation was that *"daily, weekly and monthly sales reports/customer walk-in reports are maintained by the customer service centers and properly documented in IT applications to foster seamless sales operations" (Respondent 2).*

On the other hand, group-tacit knowledge is shared through daily briefings about experiences and encounters during the day's work, regular seminars, training and workshops. The firm has a culture of team formation that enhances mentorship among employees. In addition, the comment made by one respondent highlights that the firm encourages employees to use their knowledge and experience to achieve workable solutions to organisational problems and enhance performance.

*"There is a board meeting held at regular intervals or on ad hoc basis in case of emergencies to discuss developments in various units, as well as welcoming practicable suggestions that will help to tackle prevailing issues" (Respondent 3).*

*"My firm adopts daily briefing in order for individuals to discuss about various issues experienced during the working period" (Respondent 5).*

**Firm 3: Airtel**

Report about daily work are maintained by the customer service centers and documented in IT applications as a means of organisational group-explicit knowledge.

On the other hand, trainings from workshops and seminars. Also, the firm encourages teamwork as a means of individuals combining their knowledge to better understand and achieve organisational objectives.

*"Good brains put together helps us in team work and organizing workshops and seminars in making co-workers understand the goal in pursuit"* (Respondent 9).

**Firm 4: Etisalat**

Responses gathered revealed that group-tacit knowledge is part of firm's resource to achieving its objectives. Most often seminars, conferences, trainings, workshops and board meetings are observed as means of sharing and combining knowledge among employees. During such trainings and meetings, employees discuss customer problems as well as other organisational objectives and brainstorm on possible solutions.

The firm also organizes employees into teams/groups with each team having unique projects that are geared towards the organisation's objectives. Then the firm maintains a knowledge base that stores experiences of employees.

*"Employees are encouraged to share their ideas about how to achieve the organisation's goals each year"* (Respondent 17).

*"Ideas are gathered through conferences and responsibilities are assigned to departmental heads to carry-out"* (Respondent 11).

*"We create a knowledge base where experiences on the job is stored by members of staff"* (Respondent 1).

**Theme Four: Using Group-explicit knowledge gained from corporate symbols, policies and procedures to enhance productivity of employees.**

**Firm 1: MTN**

Ability of respondents to supply their views on this theme shows that they are aware of the firm's policy. One respondent emphasized that *"the organisation's policy guide our knowledge input and actions strategically towards the attainment of organisational objectives"* (Respondent 6).

Most of the respondents commented that the firm's policy statement contains issues such as pay, use of modern technology and organizing seminars and workshops for employees which all serve as motivators that commit them to the firm's objectives.

Another respondent mentioned that the organisation's ability to create *"information awareness to the employees"* serve as a motivator to them *(Respondent 2)*. Others also

commented to the part of the policy that encourage employees *"contribution to decision making" (Respondent 9)*.

These practices enhance group-explicit knowledge that gives employees sense of ownership and commitment to the organisation's productivity and its overall objectives.

**Firm 2: Globacom**

Most of the respondents aligned with the view that the organisation's group-explicit knowledge such as corporate symbols, policies and procedures govern and direct employees towards achieving organisational objectives. They claimed that group-explicit knowledge helps them understand or at least catch a view of the market competitiveness and set directions towards providing competitive services that attempt to offer distinct positions in the telecommunication market.

*"The corporate symbols, policies and procedures give us the understanding of competition in the market and it enhances our productions and services to meet up with customer needs" (Respondent 7).*

It is also pertinent to state that the firm's policies include aspects that lay emphasis on staff orientation (especially with regards to welfare and different aspects of training that help them know more) and effective communication, as such serving a strong motivators to employees and the overall organisational performance.

*"The staff orientation is high and as such are committed to the growth of the firm. Different training, workshops and seminars have boosted our technical input" (Respondent 3).*

**Firm 3: Airtel**

About all respondents claimed that group-explicit knowledge gained from corporate symbols, policies and procedures have created unified awareness among the organisation's employees thus giving them a common sense of pursuits towards set objectives. Consequently, this has resulted in increased number of subscribers, lessened complaints from customers and yielded higher employee commitment.

*"There has been an increase in the number of subscribers, we receive less complaints and the employees are more efficient and diligent in their duties" (Respondent 10).*

*"Our firm's policies provide a knowledge base that gear employees towards service excellence. The outcome of which drive productivity" (Respondent 1).*

**Firm 4: Etisalat**

Part of the firm's group-explicit knowledge is transmitted through policies and symbols that ensure all employees have a vision of the corporate objectives for each year and pursue it with a team spirit.

*"We are encouraged to be in total agreement on our organisational goals and vision across all functions and levels, thereby helping us achieve set goals" (Respondent 7).*

Also, part of the firm's policy on knowledge increment is to observe annual skill acquisition workshops, send employees with outstanding performance on international trainings that enhance their knowledge and skill, required to boost organisational performance

*"As a result of skill acquisition workshops held by the firm annually, the majority of staff now have better skills, hence their performance have improved leading to increased annual output of the firm" (Respondent 12).*

*"One of the policy is sending five outstanding staff for training abroad every year and the result has been improved performance born out of motivation" (Respondent 10).*

*"Staff of the firm are sent out of the country for seminars and training and on returning they implement what they have learnt in different aspects of the firm's operations" (Respondent 1).*

In addition to these, the firm also uses its policies as a knowledge means of enhancing employees' responsiveness to change.

*"Our firm's policy gives us high level responsiveness to change, both internal and external" (Respondent 3).*

# CHAPTER FIVE

# DISCUSSION

**Preamble**

This chapter discusses the result from the research analysis based on the objectives outlined in this research study and relates it with existing studies.

## 5.1    Discussion of Results

### 5.1.1   Discussion of Results from Descriptive Analysis

This research work is focused on examining the relationship between organisational knowledge, orientation and performance in Nigeria's Telecommunication industry. Organisational knowledge variables such as individual-tacit, individual-explicit, group-tacit and group-explicit knowledge were measured against organisational performance variables, such as customer satisfaction, operational efficiency, organisational effectiveness and organisational productivity. The moderation of organisational orientation was measured through three variables, such as, entrepreneurial, learning and market orientations.

Based on descriptive statistics carried out to examine employees' perception towards organisational knowledge utilization (see Tables 4.14 to 4.17), employees' responsiveness towards the use of individual-tacit knowledge was statistically revealed to be low, while the use of individual-explicit knowledge was high. This was evidenced by the low mean statistics and high standard deviations that characterise individual-tacit knowledge items and high mean statistics that characterised indivudal-explicit knowledge. This might imply that in the organisations under study, they place less emphasis on the utilization of individual tacit knowledge, but rather emphasise individual-explicit knowledge use over issues that relate to their work and the objectives of the organization. More interestingly, and as expected is the fact that employees' strong inclinations, evidenced by high mean scores, towards group-tacit and group-explicit knowledge respectively, which emphasised

the organisations' strong culture of team work. It is therefore likely that top management of the organisation emphasised team knowledge sharing and utilisation above individual dimensions of organisational knowledge so that through a collective culture, members of the organization can be built up together into a unified force that understand the organisation's strategic directions, execute such strategies and share knowledge based on the strategic drives of the organization. This finding is similar to existing studies such as Zhao and Anand's (2012), suggestion that a collective knowledge sharing culture is suitable to guide organisational members towards achieving a common set of objectives.

The responses gathered about items on organisational orientations: learning, entrepreneurial and market, indicate that organisations in Nigeria's telecommunication industry strongly practice strategic orientations as a means of achieving their organisational objectives and strengthening their strategic positions in the industry. The statistical results showed that the managers in the organisations are aware of strategic practices and ensure that members of the organisation are infused into its strategic practices. This is in consonance with the arguments of Liao and Wu (2010) who asserted that organisational orientation are strategic behaviours pursued by members of the organization towards the attainment of strategic objectives.

## 5.1.2  Discussion of Results from Objective One

Objective one was to examine the effect of individual-tacit knowledge on customer satisfaction. From the statistical results, it was revealed that individual-tacit knowledge has a significant effect on customer satisfaction. The present study fills a research gap in literature where there have been difficulty in explaining how knowledge embedded in individual employees can create or achieve customer satisfaction and hence create possibilities for customer loyalty. This argument is based on the proposition that most of the complaints made by customers are attended to by the individual employees in the organization, otherwise referred to as customer care representatives.

The analysis of this hypothesis was carried out by, firstly, testing relationships between individual-tacit knowledge and customer satisfaction based on responses gathered from employees of telecommunication firms. Secondly, ANOVA analysis was used to identify any possible differences among perception of employees of the four firms about the hypothesized relationship. Thirdly, it was considered necessary to identify customers'

perception about their satisfaction with the products and services they are offered by the organisations. Finally, the t-test analysis was carried out to identify whether there were any differences in perceived levels of satisfaction between customers in Lagos State and those in FCT.

The result from correlation and regression tables (Tables 4.35 and 4.36) indicated that employees of the four firms agree that individual-tacit knowledge has significant influence on customer satisfaction. However, their response showed a weak perception of the influence of individual-tacit knowledge usage as a means to achieving the organisations' customer satisfaction objective. The results revealed, may be derived from the weak mean scores showed on individual-tacit knowledge use as reflected in Table 4.15. Whereas two organisations included in the study showed a weak and negative correlation relationship between organisational knowledge and customer satisfaction, the other two did not reflect any relationship between the two variables at the five percent level of significant. However, the negative correlation coefficient indicated in statistical results translates to mean that individual-tacit knowledge might not necessary lead to increased customer satisfaction, and vice versa. This outcome, can be explained based on the fact that personalized knowledge of employees is not an automatic guarantee for resolving customer complaints and queries.

Organisational knowledge that yield customer satisfaction, for example through prompt and appropriate response to the queries, and eventually result in customer loyalty must be customer centered. Although it can be argued that individual-tacit knowledge is a very useful aid for enhancing customer satisfaction and stimulating customers' continuous interest to stay with and patronise the organization, telecommunication organisations must also ensure that the right caliber of employees are positioned at the customer care centers (Tsoukas & Vladimirou, 2001). This will entail, hiring or training employees with or to have adequate knowledge of customers' needs and about their personal interests. Individual-tacit knowledge of employees can be useful in subsiding increasing customer complaints, such as their perception about high tariff rates (Gebert, Geib, Kolbe & Brenner, 2003). They can also boost the firm's image as they use their tacit knowledge to respond accurately and within shorter time frame to customer complaints.

There are possibilities that when customers encounter problems, employees who have develop personality-based relationship with them are most likely going to provide

customer satisfaction (Bhargava & Anbazhagan, 2014). Moreover, the results from semi-structured interviews revealed that respondents that had either additional professional qualifications, technical skills or both, that relate to information technology were better acquitted with using intuition, that is, individual-tacit knowledge, to resolve customer complaints that are not captured in the firm's online knowledge base. Moreover, examining the results in table 4.37 points to the fact that employees in the four organisations hold a common view of the effect of individual-tacit knowledge on customer satisfaction. This result reflect a state of commonality in knowledge based practices among organisations in the telecommunication industry.

More interesting is the fact that the qualitative results strongly validate this claim. Employees from the four organisations agree that very often their first point of contact when attempting to resolve customer complaints is the on-line knowledge base of the organization. However, when their customers' queries are not provided for the organisation's online knowledge base, they rely on their individual-tacit knowledge to resolve the queries and complaints. Therefore, calling attention to the fact that individual-tacit knowledge is strategic to organisations towards attaining higher levels of customer satisfaction (Milana & Maldaon, 2015).

Nonetheless, the employees' weak disposition towards individual-tacit knowledge usage is evidenced by the fact that, except for very few employees, there is a general perception that any complaint or query from customers that they cannot proffer solutions to will be referred to higher officers in the organization. This, for example, can explain why customers often are dissatisfied with responses that they get from telecommunication operators. This also gives insight as to reasons why customers' queries, sometimes, take longer hours or days before they get resolved.

Furthermore, the data gathered from customers to investigate their level of satisfaction with the products and services that they purchase from the telecommunication organisations was statistically analysed. The statistical results revealed only a moderate level of satisfaction. Although the mean scores of all indicators of customer satisfaction that were included in the research item showed a moderately strong level of satisfaction, the high standard deviation scores also calls attention of decision makers and telecommunication operators to caution. The implication of the high mean and equally high standard deviation scores indicate that, though most customers tend to be satisfied

with their experiences when using the organisations' products and services. They also might be satisfied with services encounter with the organisations' employees, but their views are not in absolute agreement, when considered individually. In other words, on the aggregate, customers tend to be satisfied, but individually, their views are largely distinct. Thus, agreement about customer satisfaction, taken from the customers' perspective might not be conclusive (Alabar *et al.,* 2014). More critical is that respondents in both locations of Lagos State and FCT have very closely related perceptions of these views about their satisfaction with the telecommunication organisations. Therefore, organisational managers must note that there is still a lot of improvement work to be done in the area of the overall service quality and customer services rendered to telecommunication subscribers.

### 5.1.3 Discussion of results from Objective Two

Objective two was tailored to examine the extent of the relationship between individual-explicit knowledge and operational efficiency. The knowledge-based measures used in this research include: input resources such as, number of managers and other cadre of employees in each customer service center, total expenditure on employee training, total expenditure on technology; and output such as average number of customers attended to daily, average number of customers with resolved cases and number of innovations produced. This research work contributes to knowledge-based organisational research by developing a knowledge-based approach of operational efficiency of organisations. This initiative examined input and output measures based on the typological scaling of organisational knowledge, specifically individual-explicit dimension, to examine the operational efficiency of organisations in the telecommunication industry.

Using data envelopment analysis on knowledge-based input and output factors, results gathered from the input-oriented constant returns to scale (CRS) and variable returns to scale (VRS) revealed that 10 (23.8 percent; based on CRS) and 20 (48 percent; based on VRS) customer service centers were technically efficient. These efficient decision making units (DMUs) are statistically identified to be more efficient with using the number of employees, experiences from training activites, and expenditure on new technology to generate higher levels of customers attended to daily and those with resolved queries, and profitable innovations. The results also indicated that customer service centers which were technically inefficient could further enhance their efficiency, taking into account specific knowledge-based input and output measures that could be reworked.

Giving more accurate direction to investments of the customer service centers, the benchmark tables provided in the appendix can facilitate strategic investment efforts of the firm headquarters towards individual-explicit knowledge based investments. According to the DEA model, scale inefficient customer service centers, also referred to as decision making units, can benchmark their operations based on that of more operationally efficient firms using the benchmark tables in the appendix.

To maintain operational efficiency through individual-explicit knowledge managers would be expected to continue maintaining the resource input, such as, the ratio of supervisor-subordinates employees in the customer service centers and number of employees sent on training. Consistent training received by employees is a vital measure of knowledge-based input and could enhance their absorptive capacity, and by extension improve operational efficiency of the organisation (Igbaekemen, 2014). The importance of this to the firm's efficiency is that it results in better output at the customer service centers. Such output will be measured in terms of quality attention given to employees who visit the Customer Service Centers with their complaints. Quality attention in this sense can be measured by employees' ability to patiently listen to customer complaints and offer solutions that meet their queries (van der Heiden, Pohl, Manser & van Genderen, 2015). This way the employee would have demonstrated knowledge-based solutions. It is also important to note that customer service centers that had the lowest efficiencies were concentrated in Lagos State. This may mean that the firms' concentration on Customer Service Centers in Lagos State and their expectations from them is over estimated, probably because the Lagos State is Nigeria's commercial capital and is densely populated. It is also interesting to identify that the statistical results from this study was not peculiar to a particular firm but cut across Globacom, Airtel and Etisalat, leaving out the market leader, that is, MTN. This may also mean that MTN takes issues of operational efficiency very seriously and deals with it as a strategic issue above other players in the industry.

### 5.1.4  Discussion of Results from Objective Three

Objective three was to explore the extent to which group-tacit knowledge positively influence organisational effectiveness. Based on the statistical analysis carried out, correlation and regression results showed that group-tacit knowledge strongly and significantly influences organisational effectiveness. Departing from existing literature's measurement of organisational effectiveness from an IT-based knowledge perspective,

this research work is novel in its adoption of organisational knowledge resident in humans, especially tacit knowledge at the group level of organisations, to determine organisational effectiveness. The analysis of this hypothesis was carried out by, firstly, testing the relationships between group-tacit knowledge and organisational effectiveness based on responses gathered from employees of the telecommunication organisations. Secondly, an inter-item correlation test was carried out to determine specific areas of relationship between group-tacit knowledge and organisational effectiveness items. Thridly, ANOVA analysis was used to identify any possible differences among perception of employees of the four organisations about the hypothesized relationship.

The first stage of the analysis used correlation and regression statistics to examine the relationship between group-tacit knowledge and organisational effectiveness in the four telecommunication organisations. The result from correlation and regression tables (Tables 4.40 and 4.41) indicate that employees of the four firms generally have a strong perception of group-tacit knowledge use to achieve the organisational effectiveness. The results discovered here is in alignment with the strong mean scores and the evidence of clustering around the mean as indicated by standard deviations (see Tables 4.16 and 4.31) attached to group-tacit knowledge and organisational effectiveness.

The results from correlation statistics, at the second stage of analysis, showed that all items of group-tacit knowledge has significant levels of relationship with the items of organizational effectiveness used in this study. The use of organisational culture bound knowledge of the organisation, relates with the adaptability of the organization to unanticipate changes, its responsiveness to newer market demands, coordinated and collective patterns among units in the organizations to achieve corporate goals and top management's ability to adapt the firm's goals and objectives to industry changes. Essentially, this means that the firm has a strong and competitive culture which its industry competitors cannot easily detect and copy. This culture resides in the bahaviour and responsiveness of its employees such that they are able, to some extent, to define the pace of competitive complexity that exist in the industry (Agbim *et al.,* 2013). Dynamism in competition might also not be a major challenge to the firm's management because they could have rich knowledge about the industry to the extent that they can forecast and predict trends (Li *et al.,* 2010). In all of these, there is a show of expertise and years of experience at the top management level where strategies are made to design/redesign

goals that respond to demands and changes in the competitive industry and thus achieve organisational effectiveness.

This could imply that at smaller units of a large firm, the ability of group and team members to share knowledge and experiences towards achieving group goals and objectives accounts for most of the overall organisational effectiveness (Awodoyin, Osisanwo, Adetoro & Adeyemo, 2016). Employees of the organisations, most likely, have a sense of identity with the firm and therefore get bound by the organisation's corporate culture. A sense of purpose and recognition might be instilled into them. It is also important that team/group leaders encourage story-telling and mentorship among group members. This can be an essential way of getting difficult job tasks resolved within shorter time and with less efforts (Swap, Leonard, Shields & Abrams, 2001). Having smaller units of the large firm can be an essential means of stimulating knowledge sharing practices among group members. This can be made possible, when these smaller units are guided by leaders or supervisors who have experience about the job tasks given to the group, if they are willing to share their experience for the benefit of members of the group, and are willing to instil a sense of diplomacy and diplomatic leadership in the group.

Generally, the positive interrelationship among all items of group-tacit knowledge and organisational effectiveness indicate that organizational managers can influence positive organizational success in all areas of organizational objectives. This can be achieved by ensuring that group-tacit knowledge sharing becomes a part of the organizational culture that guide the way job is done, storytelling about past successes and failures in the organization is encourages among employees as a part of their learning activity, and group brainstorming is increasingly permitted in the organization (Nonaka *et al.,* 2000). They can also enhance organizational effectiveness through sharing of experiences and mentoring as a strategic path to ensuring tacit knowledge transfer among organizational members.

### 5.1.5 Discussions of Results from Objective Four

Objective four was focused on determining the influence of group-explicit knowledge on productivity of the organisation. The output oriented constant returns to scale and variable returns to scale obtained from using data envelopment analysis justified the acceptance of the alternate hypothesis. Viewed from the constant returns to scale model, fifteen

customer service centers cutting across the four GSM telecommunication firms were found to be productive. This implies that they were yielding outputs that corresponded with the resources invested into them. However, the result of variable returns to scale showed some slight downward slope, as the only twelve of the forty-two customer service centers were reported to be productive. The assumption of constant returns to scale is that decision making units, in this case customer service centers, would produce outputs that are directly proportional to the resources invested in them. While on the other hand, variable returns to scale assumes that given the effect of environmental factors' influence on the production/transformation process, resources invested might not always yield proportionate outputs. The implication is that outputs will vary depending on the extent to which the transformation process is impeded (Emerald Group Publishing, 2010). Hence, in reality an indeed most often the assumption of variability holds.

Productivity is a measure of firms' input to output. The results obtained imply that the firms' management, especially for customer service centers that are productivity deficient, should hold resource investment in the customer service centers constant while the supervisors and other employees at those centers are charged to upgrade their levels of output (Phusavat, 2013). In this sense, they might need to pay more attention to attending to all customer that have complaints about the firms' products and services. They might also need to ensure that a larger number of customers' complaints are resolved.

## 5.1.6 Discussion of Results from Objective Five

Objective five was to examine the moderating effects of organisational orientation on the relationship between organisational knowledge and performance of the firm. The hierarchical multiple regression was used to show this moderating effect of three dimensions of organisational orientation at two levels of analysis: the first level showed interaction effect based on the second order organizational knowledge with first and second order organizational orientation and their linkages with organisational performance. The second level showed interaction effect based on first order organisational knowledge with first order organizational orientation and their linkages with organisational performance. This relationship fills a research gap by demonstrating the moderating effect of multiple organisational orientations on the relationship between organisational knowledge and organisational performance. The first order analysis determined relationships based on a holistic view of the respective constructs, while the

second order analysis examined relationships based on the items that made up the variables.

At the first level of analysis, eight models were developed to examine the relationships between individuals' demographic factors, organizational demographic factors, organizational knowledge variables and interacting relationships of moderating variables on customer satisfaction and organizational effectiveness. Among all the individuals' demographic variables, position in the organization showed significant direct relationship with customer satisfaction in the first four models. Thus depicting that the ability of employees to respond satisfactorily to customers' queries and complaints will depend largely on their position in the organisation. Ordinarily, one way to have thought about this would be that the influence of employees' position to influence customer satisfaction could be subject to their years of work experience. However, and very surprisingly, work experience did not show any direct relationship with customer satisfaction. Therefore, employees' position in the organisation and its influence on customer satisfaction will result from the direct relationships that customer care representative of the telecommunication organisations have with their customers (Tsoukas & Vladimirou, 2001). The direct effect of firm size on customer satisfaction and organizational effecticveness was also statistically significant. Firm size was measured by the number of employees working in the organisation. Thus implying that the employee size of the organization, especially those assigned with the responsibility of attending to customers is sizeable enough to ensure that all queries and complaints are attended to and resolved. It also goes on to show that the actualisation of the organisations' objectives and its competitive responsiveness is being effectively executed by their employees.

More so, individual-tacit knowledge has a direct relationship with organisational effectiveness. Although the relationship is not positive, this might be that social interactions that enhance the sharing of tacit knowledge among individual employees in the organisation is not very effective, to the extent of creating unique competitive advantage for each organisation. Individual-explicit knowledge gained from journals and magazines has a direct relationship with customer satisfaction, while individual-explicit knowledge gained from personal training contributes directly to organisational effectiveness. Model seven showed the direct relationship which group-explicit knowledge has on organisational effectiveness. The practice of making sure that employees rely largely on the organisation's knowledge based and documenting their

personal experiences on the job is effective to achieving organisational objectives. It strengthens the culture of knowledge sharing and serves as a viable organisational repository for consultations in times of future need (Wooley, Chabris, Pentland, Hashmi & Malone, 2010).

The moderating effect of organisational orientation on the relationship between organisational knowledge and orientation was also evident on the second order analysis. The three organisational orientations included in the study moderated the organisational knowledge and customer satisfaction relationship. This research supports the existing endeavor of Wiklund and Shepherd (2003) who found that entrepreneurial orientation is significant to the utilization of knowledge based resources in enhancing organisational performance. According to the results of this research, strong emphasis and attention should be placed on an organisation-wide culture of learning orientation, such as shared vision and open mindedness; entrepreneurial orientation, such as proactiveness, competitive aggressiveness and autonomy as influencers of organizational effectiveness; and market orientation, such as customer and competitors' orientation. The influence of these orientations on organizational knowledge and performance demands that managers instil behavior in organisational members towards reflecting these orientations in their dealing with customers and across organisational functions.

At the second stage of analysis, where the moderating effect of organizational orientation on organisational knowledge and performance based on first order variables were examined, greater volumes of relationships were gathered. This research gives direction to the knowledge strategy literature (Zack, 2007) by highlighting important areas of organisational knowledge that influence strategic behaviours and achieve higher levels of organisational competitiveness. The construction of a knowledge strategy theme based, from the perspective of orientations that stimulate performance in the knowledge economy can be clearly understood. Based on statistical results, risk-taking attitude and autonomy (that is, entrepreneurial orientation), and inter-functional coordination (that is market orientation) moderated individual-tacit knowledge and both customer satisfaction and organisational effectiveness. Thus impying that employees with tacit knowledge in the organisation should be encouraged to come up with innovations that create radical industry changes, such that their strategic implementation can make the organisational a leader in that regard. However, these individuals should be made to think in autonomy. The reason is explained by the fact that rather than having a strong bureaucratic culture,

organisations that are dynamic and innovative have a more flexible culture that emphasise employee participation and idea sharing (Ferreira & Pilatti, 2011). Also noticeable is that individuals with tacit knowledge should work together, especially across departments and units of the organisation. This is essential for monitoring purposes, especially since it is expected that all efforts in the organisation, whether by individuals or as a group must be towards the actualisation of the common objectives of the organisation.

Also, individual-explicit knowledge and organisational performance was moderated by commitment to learning, open mindedness and shared vision (that is learning orientation); innovativeness (that is, entrepreneurial orientation) and customer orientation and inter-functional coordination (that is, market orientation). Again the evidences reveal that individual explicit knowledge must be synchronized into a collective form that achieve organisational objectives. The attention of managers should be called to awareness that despite the gains achievable from group or collective endeavours in the organisation, acting individual, employees still have many positive ideas and impact that they could make on the organisation. Therefore, there should also be systematically designed tasks that keep employees individually engaged but at the same time, their knowledge and experiences should be gathered, documented and stored as references to guide future similar endeavours. Both indivudals and organizational managers should follow the pattern of continuous learning. As indicated in the absorptive learning literature (Kotabe, Jiang and Murray, 2011), organizational members should continue to create new knowledge from existing ones. Thus, internal and external knowledge gathering should be emphasized (Denicolai, Zucchella & Strange, 2014). As they continue with this attitude individual should be willing to subject organizational processes to change, where there is a need and a collective effort on knowledge sharing should be an important theme among organizational members.

As expected, the emphasis on group knowledge was more pronounced. However, result showed that moderation effect on group-tacit knowledge was more pronounced than on group-explicit knowledge. Group-tacit knowledge and organisational performance was moderated by opening mindedness and inter-organisational knowledge sharing (that is learning orientation); risk-taking, proactiveness and competitive aggressiveness (that is, entrepreneurial orientation); and autonomy and inter-functional coordination (that is, market orientation). Similarly, the three organisational orientations, though with slightly different and fewer number of items, influence the group-explicit and organisational

performance relationship. The attention of managers is therefore called to specific areas of designing strategies for the organisations' market competitiveness, designing human resource strategies and setting operational strategies that guide organisational activities.

# CHAPTER SIX

# CONCLUSION AND RECOMMENDATIONS

**Preamble**

This chapter revealed the theoretical and empirical findings of this study. The hypotheses stated for the study guided the arrangement of the discussions. This is followed by the conclusions that were drawn from the findings. Recommendations and suggestions for further study were included in this chapter. Contributions to knowledge were also highlighted.

## 6.1    Summary of the Research Work

Chapter one showed background of the research work. The objectives of the study were to examine the impact of individual-tacit knowledge on customer satisfaction, to identify the strength of relationship of individual-explicit knowledge on operational efficiency, to explore the influence of group-tacit knowledge on organisational effectiveness, to determine the impact of group-explicit knowledge on productivity and to examine the extent to which organisational orientation moderates the relationship between organisational knowledge and performance. Along with the objectives of the study, chapter one contains the statement of research problem, research questions, significance of the study, hypotheses, scope and limitation of the study.

In chapter two, substantial literature relating to Nigeria's telecommunication industry, organisational knowledge dimensions, organisational orientation dimensions and performance dimensions were reviewed. Relevant theories to the research study, such as resource based view, knowledge based view and theory of collective intelligence were reviewed. The empirical analysis and gaps in literature were discussed.

In chapter three, in order to achieve the stated objectives of this study, the researcher adopted the survey method and a descriptive research design.  The research instruments included the use of structures questionnaire and semi-structured interviews.  Copies of the

questionnaire was administered to respondents including the technical and administrative employees in the headquarters of the leading firm in the GSM submarket of the Nigerian telecommunication industry, supervisors and other technical and administrative employees at the customer service centers of the four firms in the GSM submarket of the telecommunication industry and customers who are currently connected to either of the four network providers.

In chapter four, tables were used to present the data collected for this study, descriptive statistics was also used in analyzing the data while correlations, simple linear regression, hierarchical multiple regression and data envelopment analysis were used in testing the formulated hypotheses.

Chapter five presented the discussion of findings, based on the hypotheses, while chapter six contains summary of the study, conclusions, recommendations, limitation of the research work, suggestions for further studies and the contribution to knowledge.

## 6.2    Summary of the Research Findings

The research findings of this study were divided into two: summary of theoretical findings and summary of empirical findings. The theoretical findings were drawn from the literature reviewed, while the empirical findings were generated from the field survey.

## 6.2.1   Theoretical Findings

Firstly, the approach to organisational knowledge in literature has been patterned from different perspectives. In some instances, it was viewed as organized form of knowledge which organisations use to create value for stakeholders while achieving the firm's objectives (Tsoukas & Vladimirou, 2001). Another perspective opined that it is the process by which individuals create new knowledge which the organisation, in turn, adopts and embeds in the firm's knowledge management system (Nonaka, 1994). From another point of view, organisational knowledge can be well understood by identifying, within a formal organisational structure, where it comes from, how it resides in the firm and in what forms in exists and is utilized to achieve organisational objectives.

Secondly, based on this, authors such as Spender (1994), Cook and Brown (1999), and Fei, Chen and Chen (2009) have contended about viewing organisational knowledge from a typological scaling of how individuals and groups engage their tacit and explicit

knowledge to achieve organisational objectives. Job tasks and role demands in organisations are often structured in ways that, at some point leave individuals to use their expertise, experience and educational background to achieve organisational targets. At other times, certain duties exist that are beyond the capacity of a single individual but rather demands the intervention of a group of experts interacting within the organisation's social environment to create formidable outcomes. Sometimes, these group of experts could have related knowledge and experiences and at other times they might not. Within these scenarios, existing literature identifies the existence, interplay and importance of individuals and groups using their tacit and explicit knowledge to create organisational outcomes (Bhatt, 2002).

Thirdly, Smith (2001) while stressing on the role of individual-tacit knowledge observed that most innovative behaviours exist in the domain of human tacit knowledge because documented knowledge in organisational repositories and other knowledge management infrastructure consists of only about twenty percent of available knowledge.

Fourthly, the establishment and practices of collective use of knowledge in the organisation may take on either a structured or an unstructured form. This implies that the firm's management could either create groups to work on a project or the demands of certain organisational projects can bring individuals together. As argued by Córcoles (2014) collaborative knowledge sharing among groups will prevail in organisations where cooperative cultures exist. Within these settings employees who have greater job autonomy are more willing to share their knowledge and experiences with sub-ordinates. The knowledge based theory insisted on the role of knowledge aggregation as a necessary attribute of knowledge towards the creation of economic rent for the firm. In consonance with this view, Robillard and Cherry (2014) remarked that economic rents derivable from group tacit and explicit knowledge can only be achieved within a cooperative and collaborative system. In their view, collaborative knowledge sharing creates or build the competitive products and services while collaborative knowledge sharing enhances the teams' ability to understand and implement functional aspects to product/service building.

## 6.2.2 Empirical Findings

Based on the objectives and hypotheses set for this research study, the following empirical findings are hereby discussed:

**Hypothesis One:**

Hypothesis one which stated that "there is no significant impact between individual-tacit knowledge and customers' satisfaction" was rejected. From the statistical results, it was revealed that individual-tacit knowledge impacts significantly on customer satisfaction.

**Hypothesis Two:**

The second hypothesis which assumed that no significant relationship exist between individual-explicit knowledge and Operational efficiency was rejected. Using data envelopment analysis on knowledge-based input and output factors, results gathered from the input-oriented constant returns to scale (CRS) and variable returns to scale (VRS) revealed that 10 (23.8 percent; based on CRS) and 20 (48 percent; based on VRS) customer service centers were operationally efficient.

**Hypothesis Three:**

Hypothesis three which states that group-tacit knowledge does not have a significant influence on organisational effectiveness was also rejected. This is because correlation and regression results of analysis carried out showed that group-tacit knowledge strongly and significantly influences organisational effectiveness.

**Hypothesis Four:**

The argument in hypothesis four that group-explicit knowledge does not have any significant influence on productivity was rejected, while the alternate hypothesis was accepted based on statistical evidence. The out-put oriented constant returns to scale and variable returns to scale obtained from using data envelopment analysis justified the acceptance of the alternate hypothesis.

**Hypothesis Five:**

The fifth hypothesis state that there is no moderating effect of Organisational orientation on the relationship between organisational knowledge and performance was rejected. The hierarchical multiple regression was used to show this moderating effect of three dimensions of organisational orientation at two levels of analysis: the first level was at the firm, while the second level was at the customer service centers. At both levels, the measures of performance, which are customer satisfaction and organisational effectiveness

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revealed that learning and entrepreneurial orientations moderated the relationship between organisational knowledge and performance.

## 6.3     Conclusions

This study investigated the implications of organisational knowledge and orientation on the performance of telecommunication firms in Nigeria. The GSM sub-market of the telecommunication industry was used for this study because of its pivotal role and overall dominance in the industry, accounting for over ninety-eight percent of the industry's market share. Three groups of respondents were sampled in the research work: the firm, their customer service centers and the customers. Data was gathered from the headquarters of MTN, all the Customer Service Centers and customers of the telecommunication firms in the GSM sub-market and this gave very insightful details to the research work.

Five hypotheses were set to examine the impact of organisational knowledge on performance and to test the moderating effect of organisational orientation on the relationship between organisational knowledge and performance. The research was principally quantitative in nature, but semi-structured interviews were also used to augment results gathered from the structured questionnaires. The conclusion from the research findings is that organisational knowledge; such as individual-tacit, group-tacit, individual-explicit, and group-explicit knowledge dimensions had different levels of relationship and impacted on organisational performance constructs. The semi-structured interview, while supporting this finding, however, revealed insightful details about more practical ways employees apply the different dimensions of organisational knowledge to enhance performance. The use of semi-structured interviews also gave some level of insight to factors that might be responsible for the operational inefficiencies and low productivity encountered by some customer service centers. For example, that employees are probably over staffed while some other are understaffed. Also, that some employees interviewed would rather be interested in subjecting customer queries that are beyond the firm's electronic knowledge base to headquarters. This could cause delays in responding to customer queries. By implication, scantiness of a large number employees with many years of experience was among the reasons for poor engagement of individual-tacit knowledge in the firms.

Despite that the semi-structured interview revealed the importance of individual- and group-tacit knowledge on operational efficiency and productivity respectively, there was

still a large number of customer service centers that were operationally inefficiency and underproductive. Therefore it is important that managers give attention to holding input-constant and strategically redirecting the efforts of employees in such customer service centers to achieve better efficiency and output. Alternatively, the number of employees, especially those with fewer years of experience, in such customer service centers can be reduced and redeployed to more efficient customer service centers that have more experienced and knowledgeable employees.

Generally, the conclusion about the result of the research is that the telecommunication industry still lags behind in exploring the role of organisational knowledge as a strategic resource for enhancing performance. Although, group-tacit and explicit knowledge were found to be moderately explored, the individual-tacit and –explicit knowledge dimensions can still be explored towards in more strategic ways to achieve higher levels of organisational performance.

## 6.4    Implications of the Findings

### 6.4.1   Management of Telecommunication Firms

Organisational knowledge plays an important role in designing and implementation of firms' strategy. Within the firm exists, tacit and explicit knowledge which are daily utilized by individuals and groups of the firm. As employees attempt to achieve the firm's strategy through their daily work engagements, it is important that management realizes the roles and forms that their knowledge play and take in those daily tasks. Organisational strategy can be impeded or facilitated depending on how employees engage their knowledge either as individuals or during group assignments. In a bid to concretize and measure the utilization of knowledge resources in the firm, some organisations now have knowledge management officers. Organisational knowledge is a strategic resource of every firm and it must be managed and engaged to suit the firm's strategic direction. In using the knowledge of individuals, the firm must recognize that their tacit and explicit knowledge must suit the present strategies the firm attempts to achieve. Managers must learn the art of keeping and motivating experts in their firm. The role of experts in knowledge sharing and mentoring is an important strategy towards accomplishing organisational objectives. Experts for example are very likely to use their intuition and experience to both relate with customers and get their queries resolved. The only way firms can replicate this knowledge is by encouraging mentorship. Thus, it is important that

firms adjust their policy to suit expert retention, as a way of increasing the ratio of expert to trainee employees in the firm. It is equally vital to identify the role of individual-explicit knowledge, such as education and training, in enhancing organisational performance. This is important because employees who had knowledge and had undergone training that are relevant to the job tasks they are presently doing were more responsive to providing answers to how their education and training enhance their job performance and their contribution to the organisation's performance. Managers must ensure that group formation must also be in alignment with how members are willing to share knowledge and have passion about the task at hand. This is especially important because groups who share like passion are better able to relate their knowledge with the job tasks assigned to them. Their interaction on the job helps them resolve seemingly difficult challenges in lesser time and efforts.

### 6.4.2 Government and Policy Makers

The Nigeria Communications Commission (NCC) is the governmental organ saddled with the responsibility of regulating and directing the affairs of the nation's telecommunication industry. It is their responsibility to design laws that govern the smooth running and operations of firms in the industry. The NCC should prioritize the role of knowledge-based resources in the telecommunication industry. In enhancing the competitiveness of the industry, measures should be put in place that promotes knowledge-based customer satisfaction. Part of the findings in this study, for example, is that customer' perception about service quality and customer satisfaction are just around average. The dimensions that provided those results in this study were selected based on how their ability to reflect telecommunication firm's knowledge resources. As such, to build a sustainable telecommunication firm that is globally competitive, attention needs to be given to issues such as the use of advanced technology that ensures voice call quality and quick response of telecommunication providers to customer queries without having to come in contact with them. Hence, the telecommunication industry's operations can still be more automated, reflecting the use of group-explicit knowledge dimension. Policies that govern the ration of expert-employees in the industry might also be very significant to the industry. This way, knowledge, especially the tacit kind which individuals possess can be replicated among groups and consequently enhance the overall industry performance.

### 6.4.3 Service Industry Players

The service industry is recognized to be a major contribution to the GDP of most developed and knowledge based economies. This study, therefore, reflects the need for service industries of developing economies, like Nigeria, to invest and engage more in knowledge based resources and a means to enhancing the competitiveness of the industry. Part of the focus of firms in the service industry will be to encourage the effectiveness of individual-tacit knowledge use when attending to customers. This is vital because it largely influences the extent to which customers are either satisfied or dissatisfied during customers' service encounter with individual employees of the organisation. It is equally important for sustaining customer loyalty, since services basically are intangible but the experiences of customers during the service process are sustaining.

### 6.4.4 Customers

Customers now understand reasons for unsatisfied responses to queries, especially when they encounter individual employees of the telecommunication firms. They can better understand what makes one telecommunication firm, probably more effective that the other. As telecommunication firms gradually tend towards designing products and services that are knowledge based, customers can now better understand the essence for the telecommunication firms doing this. For example, they can better understand that online platforms for resolving customer queries are an attempt of the telecommunication firms to ensure easy and speedy access to answers that relate to their queries.

### 6.4.5 Researchers and Academics

This research serves as an eye opener to researchers and academics because this research serves as the first attempt to investigate the role of human cognition in individuals and groups and its role on performance of telecommunication firms in Nigeria. Besides, it is the first to explain the combine role of organisational knowledge and orientation on performance of telecommunication firms. The findings and conceptualization of a typological scaling of organisational knowledge creates a platform for researchers and academics to further investigate the role of knowledge across other manufacturing and service firms in Nigeria and across nations.

## 6.5    Recommendations

Based on the findings of this study, the following recommendations were made:

(i)     Employees of telecommunication firms should be encouraged to use their individual-tacit knowledge, such as intuition and experience, where possible to resolve customer complaints. This could save time, costs and efforts involved with long hours of solving customer queries. Employees should be encouraged at regular intervals to document their experiences about their most prominent challenges encountered on the job and how they were able to resolve it. The firm should also have a knowledge base mechanism that stores such information and can be retrieved when necessary.

(ii)    The role of expertise in the telecommunication industry cannot be overemphasized. Therefore, in order to achieve enhance performance and achieve their strategic objectives, management of the firms should prioritize experts retention and motivation, especially in the customer service centers. Mentorship is a strategic path to knowledge sharing and transfer. Within the firm and their customer service centers, managers should encourage group based job tasks as a way of duplicating the tacit knowledge of experts/professional staff.

(iii)   Firms' management, especially for customer service centers that are productivity deficient, should hold resource investment in the customer service centers constant while the supervisors and other employees at those centers are charged to upgrade their levels of output.

(iv)    Telecommunication firms should adjust their policy to suit staff retention, especially where they have talent that match up with the organisation's strategic drive. This could help result in improving operational efficiency in customer service centers that tend to be technically inefficient.

(v)     The firms' management should direct organisational knowledge towards entrepreneurial, market and learning orientations. Thus, Knowledge utilization should be treated as a strategic resource that guides the firm's strategic design and implementation.

## 6.6 Suggestions for Further Studies

The following suggestions might be useful to guide future research

(i)     More qualitative approach, such as focused group discussion involving experts may be a useful research method for drilling further into organisational knowledge-based inquiry.

(ii)    Future research should investigate the use of knowledge by organisations from more than one geographical location. A cross-country or cross-cultural investigation might provide deeper and more interesting insight about organisational knowledge.

(iii)   Subsequent research works should study other variables of performance, such as financial performance, as this research work did not exhaust all performance variables. More so, the use of secondary data for the measurement of financial performance may be a worthy initiative.

(iv)    Investigating factors that impede on or facilitate the use of knowledge in organisations might be another worthwhile direction for future organisational knowledge-based research.

(v)     Extending investigations of organisational knowledge across industries can provoke new thoughts and novel ideas from the efforts of future research works.

(vi)    Further research should consider examining the role of organisational culture and orientation on knowledge use in organisations, as this will give more insight to organisational knowledge literature.

## 6.7 Contributions to Knowledge

The following are the unique contributions of this research work:

(i)     This study contributed to research in organisational knowledge literature by examining the effects of tacit knowledge of individuals on customer satisfaction

(ii)    This study provided empirical evidence to show the relationship between explicit knowledge of individuals and operational efficiency of the organization using data envelopment analysis

(iii)    The study extended organisational knowledge research by exploring the extent to which tacit knowledge of group members in the organization affects organisational effectiveness.

(iv)    This study extended the application of the theory of competitive intelligence by examining the role of group-explicit knowledge on productivity of the organization.

(v)    This study broadened the understanding on the relationships found in organisational knowledge and orientation literature by adopting three multi-dimensional variables to examine the moderating effect of organisational orientation on the relationship between organisational knowledge and performance.

(vi)    The typological scaling of organisational knowledge that was used in this study gave clarity to researchers on the nature and importance of knowledge as an organisational asset.

(vii)    The model adopted in this research gave direction to further research endeavours for the exploration of knowledge based themes as a means of achieving organisational competitiveness and enhanced performance.

(viii)    The effect of orientations on the relationship between organisational knowledge and firm performance that was examined in this study can guide decision makers on specific competitive priorities that optimize organisational performance.

(ix)    The model below depicts a knowledge-orientation-performance (KOP) model that can be very useful to managers in their drive to implement a strategic focus in utilizing the organisation's knowledge based resources to achieve high performing organisations.
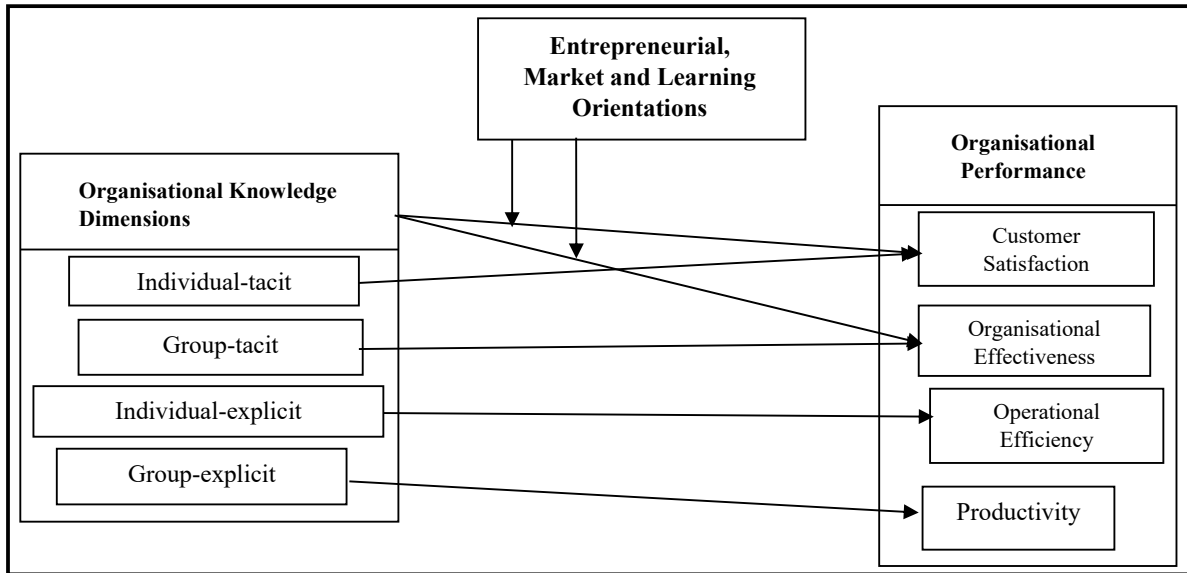
**Fig. 6.1: Knowledge-Orientation-Performance (KOP) Model**
**Source: Author (2017)**

Figure 6.1 depicts the knowledge-orientation-performance (KOP) model. It shows the relationship between organisational knowledge, orientation and performance based on the variables used in this research work. Organisational knowledge variables, such as individual tacit knowledge, group tacit knowledge, individual explicit knowledge and group explicit knowledge are shown to have linear relationships with organisational performance variables. Moreso, the moderating effect of organisational orientation, especially, entrepreneurial, market and learning orientation on organisational knowledge and performance was established.

(x)  Empirical investigations of efficiency and productivity performance, from a knowledge based perspective, of telecommunication firms in Nigeria using Data Envelopment Analysis (DEA), has not been done extensively. This study therefore provides an impetus for further discussion on the telecommunication industry and DEA application.

(xi)  The study has demonstrated that utilizing Data Envelopment Analysis (DEA) in organisational knowledge based research is a useful tool for identifying the most and least efficient and productive customer service centers and strategies for saving resources inputs and/or increasing outputs. Managerial response to the result of data envelopment analysis can produce a good guide for resource allocation. Data envelopment approach in this study yields a more realistic picture

about efficiency and productivity performance of the telecommunication industry to policy makers.

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**Appendix 1: Structured Questionnaire**

**QUESTIONNAIRE.**

**COVENANT UNIVERSITY OTA, OGUN STATE, DEPARTMENT OF BUSINESS MANAGEMENT.**

**Dear respondent,**

**I kindly solicit your assistance in filling this questionnaire on the "ORGANISATIONAL KNOWLEDGE AND ORIENTATION: IMPLICATIONS FOR THE PERFORMANCE OF SELECTED NIGERIAN TELECOMMUNICATION FIRMS". The information supplied is to form the basis of the study, therefore, your identity is protected and information supplied is purely for academic research. The questionnaire has been structured in a very simple and convenient pattern. Thank you.**

**Yours faithfully,**
**IBIDUNNI, A. STEPHEN.**
**(Researcher)**
**SECTION A:  DEMOGRAPHIC DATA (Please tick ✓ whichever is applicable)**

1.  Sex:          Male  ☐                    Female  ☐
2.  Marital status:          Single  ☐          Married  ☐          Others  ☐
3.  Working Experience so far
    a.  Less than 5 years  ☐          b.  6 – 10 years  ☐
    c.  11 – 15 years  ☐          d.  16 years and above  ☐
4.  Age:
    a.  Under 25 years  ☐          b.  26 – 35 years  ☐
    c.  36 – 45 years  ☐          d.  46 years and above  ☐
5.  Position in the organisation
    a.  Director  ☐          b.  Senior Manager  ☐
    c.  Supervisor  ☐          d.  Others,      please      specify
        …………………
6.  Educational qualification
    a.  OND/NCE  ☐          b.  HND/BSc.  ☐
    c.  MSc/MBA/M.Ed.  ☐          d.  Others  ☐
7.  Additional Professional Qualifications: Yes  ☐          No  ☐

    If Yes, Please specify …………………………………………….

8.  Technical skills that may have helped you professionally: Yes  ☐          No  ☐

    If Yes, Please specify …………………………………………….

9.  Income Level:
    a.  ₦100,000 and Below  ☐          b.  ₦101,000 – ₦200,000  ☐
    c.  ₦201,000 – ₦300,000  ☐          d.  ₦301,000 and above  ☐

**SECTION B:  ORGANISATION SPECIFIC DATA**

10. Number of Staff working in the company:
    a.  Below 100  ☐          b.  100 – 199  ☐
    b.  200 – 299  ☐          c.  300 and above  ☐
11. Number of functional units/departments operating in this Customer Service Center
    Please specify ……………………

**SECTION C**

| SA | A | U | D | SD |
|---|---|---|---|---|
| Strongly Agree | Agree | Undecided | Disagree | Strongly Disagree |

### Individual-tacit knowledge and customer satisfaction

| S/No | Item | SA | A | U | D | SD |
|---|---|---|---|---|---|---|
| 1 | It is often difficult for me to explain the steps involved with doing my job | | | | | |
| 2 | Writing down the procedures involved with my job tasks is difficult | | | | | |
| 3 | Most times, I don't have to think too long about how to go about my job | | | | | |
| 4 | Doing my job is more of a natural ability/skill to me | | | | | |
| 5 | Our customers often express their desire for lower tariff on calls and other products/services of this company | | | | | |
| 6 | Our customer service center has recorded increased customer complaints | | | | | |
| 7 | I can boldly say most questions customers ask are responded to | | | | | |

### Individual-explicit knowledge and operational efficiency

| S/No | Item | SA | A | U | D | SD |
|---|---|---|---|---|---|---|
| 1 | In order to improve my performance I often undergo personally sponsored trainings | | | | | |
| 2 | Knowledge gained from journal and magazines have been helpful in making me effective at work | | | | | |
| 3 | My educational background has largely contributed to my success on my job | | | | | |
| 4 | Input Factors:<br>i.  Estimated number of employees in the Managerial Cadre …………………………….<br>ii.  Number of employees in each Customer service center ……………………………….<br>iii.  Estimated expenditure in employee training in the last 1year …………………………<br>iv.  Number of employees sent on training in the last 1year ………………………………..<br>v.  Estimated expenditure in research & development in the last 1year ………………….<br>vi.  Estimated expenditure on new technology in the last 1 year …………………………. | | | | | |
| 5 | Output Factors:<br>i.  Average number of customers attended to daily ………………………………….<br>ii.  Average number of customers with resolved cases ………………………………<br>iii.  Number of innovations produced in the last 1year ……………………………….<br>iv.  Number of patents in the last 1 year …………………………………………………... | | | | | |

### Group-tacit Knowledge and organisational effectiveness

| S/No | Item | SA | A | U | D | SD |
|---|---|---|---|---|---|---|
| 1 | The way I carry out my job is largely guided by the organisational culture of my firm | | | | | |
| 2 | Staff in this firm are encouraged to share experiences among one another | | | | | |
| 3 | Most of the success I enjoy on my job is a result of the shared experiences gained from my colleagues | | | | | |
| 4 | Staff of this firm often tell share stories about past successes and failures of their work | | | | | |
| 5 | My colleagues are always willing to explain difficult work processes to me when I need them | | | | | |

| 6 | Top management of my firm is quick to adapt to unanticipated changes | | | | | |
|---|---|---|---|---|---|---|
| 7 | My firm is very responsive to new market demands | | | | | |
| 8 | All units of this firm work in a coordinated pattern to achieve the same goal | | | | | |
| 9 | Top Management are quick to adapt the firm's goals/objectives to changes in our market/industry | | | | | |

**Group-explicit knowledge on productivity**

| S/No | Item | SA | A | U | D | SD |
|---|---|---|---|---|---|---|
| 1 | This organisation has a manual that guides how we perform our job | | | | | |
| 2 | The firm's knowledge base is a very useful means for resolving most problems relating to my work | | | | | |
| 3 | The firm encourages members to document their personal experiences as a way of helping colleagues | | | | | |

**Organisational knowledge, Organisational orientation and Performance.**

| S/No | Item | SA | A | U | D | SD |
|---|---|---|---|---|---|---|
| 5 | Managers basically agree that our organisation's ability to learn is the key to our competitive advantage | | | | | |
| 6 | The basic values of this organisation include learning as key to improvement | | | | | |
| 7 | Learning in my organisation is seen as a key commodity necessary to guarantee organisational survival | | | | | |
| 8 | All employees are committed to the goals of this organization | | | | | |
| 9 | Employees view themselves as partners in charting the direction of the organisation | | | | | |
| 10 | There is total agreement on our organisational vision across all levels, functions, and divisions | | | | | |
| 11 | We are not afraid to reflect critically on the shared assumptions we have made about our customers | | | | | |
| 12 | We continually judge the quality of our decisions and activities taken over time | | | | | |
| 13 | Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned | | | | | |
| 14 | We always analyze unsuccessful organisational endeavors and communicate the lessons learned widely | | | | | |
| 15 | Top management repeatedly emphasizes the importance of knowledge sharing in our company | | | | | |
| 16 | We have specific mechanisms for sharing lessons learned in organisational activities from department to department | | | | | |
| 17 | My firm has very many new lines of products/services marketed in the past 5 years | | | | | |
| 18 | The top managers favor a strong emphasis on R&D, technological leadership, and innovations | | | | | |
| 19 | My firm usually has a strong proclivity for high risk projects (with chances of very high returns) | | | | | |

| 20 | Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives | | | | | |
|----|---|---|---|---|---|---|
| 21 | In dealing with competitors, my firm usually initiates actions which competitors then respond to | | | | | |
| 22 | In dealing with competitors, my firm is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc | | | | | |
| 23 | My firm usually adopts a very competitive "undo-the-competitors" posture | | | | | |
| 24 | My firm is very aggressive and intensely competitive | | | | | |
| 25 | My firm has the ability and will to be self-directed in the pursuit of opportunities | | | | | |
| 26 | My firm has the independent action of an individual or a team in bringing forth an idea or a vision and carrying it through to completion | | | | | |
| 27 | Top management of my firm encourage us to be committed to customers | | | | | |
| 28 | We are passionate about understanding our customers' needs | | | | | |
| 29 | Our firm consistently measure the level of our customers' satisfaction | | | | | |
| 30 | As a firm we are passionate about creating customer value | | | | | |
| 31 | Our firm responds rapidly to competitors' actions | | | | | |
| 32 | Top managers of this firm are mindful of competitors' strategies | | | | | |
| 33 | Top management of this firm always target opportunities for competitive advantage | | | | | |
| 34 | The management of this firm encourage information sharing among departments and units | | | | | |
| 35 | All functional units of this firm contribute to creating customers' value | | | | | |
| 36 | Departments/Units integrate in designing and implementing strategies to help the firm | | | | | |

**Thank you.**

**Appendix 2: Semi-structured Interview**

## QUESTIONNAIRE.

## COVENANT UNIVERSITY OTA, OGUN STATE, DEPARTMENT OF BUSINESS MANAGEMENT.

**Dear respondent,**

**I kindly solicit your assistance in filling this questionnaire on the "ORGANISATIONAL KNOWLEDGE AND ORIENTATION: IMPLICATIONS FOR THE PERFORMANCE OF SELECTED NIGERIAN TELECOMMUNICATION FIRMS". The information supplied is to form the basis of the study, therefore, your identity is protected and information supplied is purely for academic research. The questionnaire has been structured in a very simple and convenient pattern. Thank you.**

**Yours faithfully,**
**IBIDUNNI, A. STEPHEN.**
**(Researcher)**
**SECTION A:   DEMOGRAPHIC DATA (Please tick ✓ whichever is applicable)**

12. Sex:          Male ☐                    Female ☐
13. Marital status:          Single ☐          Married ☐          Others ☐
14. Working Experience so far
     b.  Less than 5 years ☐          b.     6 – 10 years ☐
     d.  11 – 15 years ☐          d.     16 years and above ☐
15. Age:
     b.  Under 25 years ☐          b.     26 – 35 years ☐
     c.  36 – 45 years ☐          d.     46 years and above ☐
16. Position in the organisation
     b.  Director ☐          b.     Senior Manager ☐
     c.  Supervisor ☐          d.     Others, please specify
          …………………….
17. Educational qualification
     b.  OND/NCE ☐          b.     HND/BSc. ☐
     c.  MSc/MBA/M.Ed. ☐          d.     Others ☐
18. Additional Professional Qualifications: Yes ☐          No ☐

     If Yes, Please specify …………………………………………………….

19. Technical skills that may have helped you professionally: Yes ☐          No ☐

     If Yes, Please specify …………………………………………………….

20. Income Level:

     b.  ₦100,000 and Below ☐          b.     ₦101,000 – ₦200,000 ☐

     c.  ₦201,000 – ₦300,000 ☐          d.     ₦301,000 and above ☐

## SECTION B:   ORGANISATION SPECIFIC DATA

21. Number of Staff working in the company:
     c.  Below 100 ☐          b.     100 – 199 ☐
     d.  200 – 299 ☐          c.     300 and above ☐
22. Number of functional units/departments operating in this Customer Service Center
     Please specify ……………………….

1. Briefly describe how you respond to customer complaints that are not captured by your online knowledge base

   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………

2. Briefly describe how you mobilize your educational and experiential skills to improve on your daily routine

   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………

3. Briefly describe how your firm utilize the knowledge of groups/teams to achieve organisational objectives

   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………

4. Briefly describe how your firm uses organisational knowledge gained from corporate symbols, policies and procedures to enhance productivity of employees

   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………

5. Can you say that your firm has been more productive this year than last year?, If yes, briefly describe in what ways

   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………………
   …………………………………………………………………………………………

   Thank you.

**Appendix 3: Customer Questionnaire**

**QUESTIONNAIRE.**

**COVENANT UNIVERSITY OTA, OGUN STATE, DEPARTMENT OF BUSINESS MANAGEMENT.**

**Dear respondent,**

**I kindly solicit your assistance in filling this questionnaire on "ORGANISATIONAL KNOWLEDGE AND ORIENTATION: IMPLICATIONS FOR THE PERFORMANCE OF SELECTED NIGERIAN TELECOMMUNICATION FIRMS". The information supplied is to form the basis of the study, therefore, your identity is protected and information supplied is purely for academic research. The questionnaire has been structured in a very simple and convenient pattern. Thank you.**

**Yours faithfully,**
**IBIDUNNI, A. STEPHEN.**
**(Researcher)**
**SECTION A:   DEMOGRAPHIC DATA (Please tick ✓ whichever is applicable)**

23. Sex:          Male ☐                      Female ☐

24. Marital status:          Single ☐          Married ☐          Others ☐

25. Working Experience so far
    c.   Less than 5 years ☐          b.   6 – 10 years ☐
    e.   11 – 15 years ☐              d.   16 years and above ☐

26. Age:
    c.   Under 25 years ☐          b.   26 – 35 years ☐
    c.   36 – 45 years ☐           d.   46 years and above ☐

27. Educational qualification
    c.   OND/NCE ☐               b.   HND/BSc. ☐
    c.   MSc/MBA/M.Ed. ☐        d.   Others ☐

28. Monthly Personal income Level:

    c.   ₦100,000 and Below ☐          b.   ₦101,000 – ₦200,000 ☐

    c.   ₦201,000 – ₦300,000 ☐         d.   ₦301,000 and above ☐

7. Please indicate all the networks that you are currently using

    a.   MTN ☐                          b.   Globacom ☐

    c.   Airtel ☐      d.   Etisalat ☐          e.   Others,   pls   specify
    …………

8. Which of these networks do you use most frequently for voice calls

    b.   MTN ☐                          b.   Globacom ☐

    c.   Airtel ☐      d.   Etisalat ☐          e.   Others,   pls   specify
    ………………..

9. Which of these networks do you use most frequently for data services

    a.   MTN ☐                          b.   Globacom ☐

    c.   Airtel ☐      d.   Etisalat ☐          e.   Others,   pls   specify
    ………………..

10. In what ways do you use your phone?

a. Personal use ☐   b. Business use ☐   c. Personal and Business use ☐

11. Estimated monthly expenditure on voice calls

    a.  Below ₦5,000 ☐          b.    ₦5,000 – ₦9,999 ☐

    c.  ₦10,000 – ₦20,000 ☐     d.    ₦20,000 and above ☐

12. Estimated monthly expenditure on data services

    a.  Below ₦10,000 ☐      b.    ₦10,000 – ₦19,999 ☐

    c.  ₦20,000 – ₦29,999 ☐    d.    ₦30,000 and above ☐

13. Frequency of airtime purchase for voice calls

    a.  Daily ☐          b.    Weekly ☐

    c.  Monthly ☐     d.  Bi-annually ☐    e. Yearly ☐

14. Frequency of airtime purchase for data services

    a.  Daily ☐          b.    Weekly ☐

    c.  Monthly ☐     d.    Bi-annually ☐    e. Yearly ☐

**SECTION B**

Kindly rate your mobile phone provider's services based on the following criteria:

5 = Very Good -------------- 1 = Not Good

| S/No | Item | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| 1 | Promptness of Staff to respond to my complaints | | | | | |
| 2 | Accuracy of transactions | | | | | |
| 3 | Speed of processing transactions | | | | | |
| 4 | Staff attitude to customers | | | | | |
| 5 | Security in transactions | | | | | |
| 6 | Ease of communication | | | | | |
| 7 | Attention and patience of staff | | | | | |
| 8 | Range of products and services they offer | | | | | |
| 9 | Ability of staff communicating among themselves to resolve my complaints | | | | | |

Kindly rate your level of satisfaction with mobile phone provider's services based on the following:

5 = High Satisfaction ------------- 1 = Low Satisfaction

| S/No | Item | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| 1 | Signal quality | | | | | |
| 2 | Voice call quality | | | | | |
| 3 | Using advanced technology | | | | | |
| 4 | Quality of call center services | | | | | |
| 5 | Quality of service at retail/service shops | | | | | |
| 6 | Having retail/service shops in many places | | | | | |
| 7 | Mobile provider being modern | | | | | |
| 8 | Mobile provider being friendly | | | | | |
| 9 | Mobile provider keeping in touch | | | | | |
| 10 | Having user-friendly website | | | | | |
| 11 | Network/Signal coverage | | | | | |

**Thank you.**

**Appendix 4: Results of Input-oriented CRS Model: Pure Technical Efficiency – CSC in Lagos state and FCT**

| S/No | Name of DMU | Efficiency score | Type of Scale |
|------|-------------|------------------|---------------|
| 1 | MTLCSC 1 | 0.677 | Increasing |
| 2 | MTLLCSC 2 | 0.565 | Increasing |
| 3 | MTLCSC 3 | 0.149 | Increasing |
| 4 | MTLCSC 4 | 0.475 | Increasing |
| 5 | MTLCSC 5 | 0.970 | Increasing |
| 6 | MTLCSC 6 | 0.151 | Increasing |
| 7 | MTLCSC 7 | 0.525 | Increasing |
| 8 | MTFCSC 1 | 1.000 | Constant |
| 9 | MTFCSC 2 | 1.000 | Constant |
| 10 | GLCSC 1 | 0.415 | Increasing |
| 11 | GLCSC 2 | 1.000 | Constant |
| 12 | GLCSC 3 | 0.200 | Increasing |
| 13 | GLCSC 4 | 1.097 | Decreasing |
| 14 | GLCSC 5 | 1.500 | Decreasing |
| 15 | GLCSC 6 | 0.326 | Increasing |
| 16 | GLCSC 7 | 0.950 | Increasing |
| 17 | GFCSC 1 | 1.000 | Constant |
| 18 | GFCSC 2 | 2.587 | Decreasing |
| 19 | ALCSC 1 | 1.000 | Constant |
| 20 | ALCSC 1 | 0.318 | Increasing |
| 21 | ALCSC 3 | 1.443 | Decreasing |
| 22 | ALCSC 4 | 0.886 | Increasing |
| 23 | ALCSC 5 | 0.635 | Increasing |
| 24 | ALCSC 6 | 1.103 | Decreasing |
| 25 | ALCSC 7 | 1.000 | Constant |
| 26 | ALCSC 8 | 0.601 | Increasing |
| 27 | ALCSC 9 | 0.450 | Increasing |
| 28 | AFCSC 1 | 0.683 | Increasing |
| 29 | AFCSC 2 | 1.000 | Constant |
| 30 | ELCSC 1 | 0.366 | Increasing |
| 31 | ELCSC 2 | 0.250 | Increasing |
| 32 | ELCSC 3 | 0.155 | Increasing |
| 33 | ELCSC 4 | 0.082 | Increasing |
| 34 | ELCSC 5 | 0.175 | Increasing |
| 35 | ELCSC 6 | 1.000 | Constant |
| 36 | ELCSC 7 | 1.000 | Constant |
| 37 | ELCSC 8 | 1.000 | Constant |
| 38 | ELCSC 9 | 1.446 | Decreasing |
| 39 | ELCSC 10 | 0.233 | Increasing |
| 40 | EFCSC 1 | 0.350 | Increasing |
| 41 | EFCSC 2 | 0.169 | Increasing |
| 42 | EFCSC 3 | 0.622 | Increasing |

Field study (2016)

(i) MTLCSC = MTN, Lagos state, Customer service center.    (ii) MTFCSC = MTN, FCT, Customer service center.    (iii) GLCSC = Glo, Lagos state, Customer service center. (iv) GFCSC = Glo, FCT, Customer service center.   (v) ALCSC = Airtel, Lagos state, Customer service center.    (vi) AFCSC = Airtel, FCT, Customer service center.        (vii) ELCSC = Etisalat, Lagos state, Customer service center.     (viii) EFCSC = Etisalat, FCT, Customer service center

**Appendix 5: Results of Input-oriented VRS Model: Pure Technical Efficiency – CSC in Lagos State and FCT**

| S/No | Name of DMU | Efficiency score |
|------|-------------|------------------|
| 1 | MTLCSC 1 | 0.82403 |
| 2 | MTLLCSC 2 | 1.00000 |
| 3 | MTLCSC 3 | 0.50204 |
| 4 | MTLCSC 4 | 0.42598 |
| 5 | MTLCSC 5 | 1.00000 |
| 6 | MTLCSC 6 | 1.00000 |
| 7 | MTLCSC 7 | 1.00000 |
| 8 | MTFCSC 1 | 1.00000 |
| 9 | MTFCSC 2 | 1.00000 |
| 10 | GLCSC 1 | 1.00000 |
| 11 | GLCSC 2 | 1.00000 |
| 12 | GLCSC 3 | 0.53913 |
| 13 | GLCSC 4 | 0.33280 |
| 14 | GLCSC 5 | 1.00000 |
| 15 | GLCSC 6 | 0.24869 |
| 16 | GLCSC 7 | 0.38500 |
| 17 | GFCSC 1 | 1.00000 |
| 18 | GFCSC 2 | 0.52236 |
| 19 | ALCSC 1 | 1.00000 |
| 20 | ALCSC 1 | 0.82773 |
| 21 | ALCSC 3 | 0.86750 |
| 22 | ALCSC 4 | 0.41111 |
| 23 | ALCSC 5 | 0.52116 |
| 24 | ALCSC 6 | 0.15809 |
| 25 | ALCSC 7 | 0.88889 |
| 26 | ALCSC 8 | 0.62366 |
| 27 | ALCSC 9 | 0.42041 |
| 28 | AFCSC 1 | 1.00000 |
| 29 | CAFSC 2 | 1.00000 |
| 30 | ELCSC 1 | 0.17723 |
| 31 | ELCSC 2 | 0.34265 |
| 32 | ELCSC 3 | 1.00000 |
| 33 | ELCSC 4 | 0.83333 |
| 34 | ELCSC 5 | 0.25278 |
| 35 | ELCSC 6 | 1.00000 |
| 36 | ELCSC 7 | 1.00000 |
| 37 | ELCSC 8 | 1.00000 |
| 38 | ELCSC 9 | 1.00000 |
| 39 | ELCSC 10 | 0.50469 |
| 40 | EFCSC 1 | 0.81853 |
| 41 | EFCSC 2 | 1.00000 |
| 42 | EFCSC 3 | 1.00000 |

Field study (2016)

Note:  (i) MTLCSC = MTN, Lagos state, Customer service center
        (ii) MTFCSC = MTN, FCT, Customer service center
        (iii) GLCSC = Glo, Lagos state, Customer service center
        (iv) GFCSC = Glo, FCT, Customer service center
        (v) ALCSC = Airtel, Lagos state, Customer service center
        (vi) AFCSC = Airtel, FCT, Customer service center
        (vii) ELCSC = Etisalat, Lagos state, Customer service center
        (viii) EFCSC = Etisalat, FCT, Customer service center

**Appendix 6: Results of Output-oriented CRS Model: Pure Technical Efficiency – CSC in Lagos State and FCT**

| S/No | Name of DMU | Efficiency score | Type of Scale |
|------|-------------|------------------|---------------|
| 1 | MTLCSC 1 | 0.919 | Increasing |
| 2 | MTLLCSC 2 | 1.000 | Constant |
| 3 | MTLCSC 3 | 1.159 | Decreasing |
| 4 | MTLCSC 4 | 1.500 | Decreasing |
| 5 | MTLCSC 5 | 1.000 | Constant |
| 6 | MTLCSC 6 | 1.000 | Constant |
| 7 | MTLCSC 7 | 0.750 | Increasing |
| 8 | MTFCSC 1 | 1.000 | Constant |
| 9 | MTFCSC 2 | 1.000 | Constant |
| 10 | GLCSC 1 | 1.000 | Constant |
| 11 | GLCSC 2 | 1.000 | Constant |
| 12 | GLCSC 3 | 1.250 | Decreasing |
| 13 | GLCSC 4 | 3.467 | Decreasing |
| 14 | GLCSC 5 | 5.000 | Decreasing |
| 15 | GLCSC 6 | 1.548 | Decreasing |
| 16 | GLCSC 7 | 2.500 | Decreasing |
| 17 | GFCSC 1 | 1.000 | Constant |
| 18 | GFCSC 2 | 15.790 | Decreasing |
| 19 | ALCSC 1 | 1.000 | Constant |
| 20 | ALCSC 1 | 0.509 | Increasing |
| 21 | ALCSC 3 | 4.453 | Decreasing |
| 22 | ALCSC 4 | 2.161 | Decreasing |
| 23 | ALCSC 5 | 1.600 | Decreasing |
| 24 | ALCSC 6 | 7.119 | Decreasing |
| 25 | ALCSC 7 | 1.125 | Decreasing |
| 26 | ALCSC 8 | 1.131 | Decreasing |
| 27 | ALCSC 9 | 1.500 | Decreasing |
| 28 | AFCSC 1 | 1.000 | Constant |
| 29 | CAFSC 2 | 1.000 | Constant |
| 30 | ELCSC 1 | 2.258 | Decreasing |
| 31 | ELCSC 2 | 1.875 | Decreasing |
| 32 | ELCSC 3 | 0.619 | Increasing |
| 33 | ELCSC 4 | 0.819 | Increasing |
| 34 | ELCSC 5 | 1.863 | Decreasing |
| 35 | ELCSC 6 | 1.000 | Constant |
| 36 | ELCSC 7 | 1.000 | Constant |
| 37 | ELCSC 8 | 1.000 | Constant |
| 38 | ELCSC 9 | 1.523 | Decreasing |
| 39 | ELCSC 10 | 0.714 | Increasing |
| 40 | EFCSC 1 | 0.875 | Increasing |
| 41 | EFCSC 2 | 1.000 | Constant |
| 42 | EFCSC 3 | 0.627 | Increasing |

Field study (2016)

Note:  (i) MTLCSC = MTN, Lagos state, Customer service center
(ii) MTFCSC = MTN, FCT, Customer service center
(iii) GLCSC = Glo, Lagos state, Customer service center
(iv) GFCSC = Glo, FCT, Customer service center
(v) ALCSC = Airtel, Lagos state, Customer service center
(vi) AFCSC = Airtel, FCT, Customer service center
(vii) ELCSC = Etisalat, Lagos state, Customer service center
(viii) EFCSC = Etisalat, FCT, Customer service center

**Appendix 7: Results of Output-oriented VRS Model: Pure Technical Efficiency – CSC in Lagos state and FCT**

| S/No | Name of DMU | Efficiency score |
|------|-------------|------------------|
| 1 | MTLCSC 1 | 1.31816 |
| 2 | MTLLCSC 2 | 1.77004 |
| 3 | MTLCSC 3 | 6.85950 |
| 4 | MTLCSC 4 | 2.23684 |
| 5 | MTLCSC 5 | 1.03088 |
| 6 | MTLCSC 6 | 6.61841 |
| 7 | MTLCSC 7 | 1.00000 |
| 8 | MTFCSC 1 | 1.00000 |
| 9 | MTFCSC 2 | 1.00000 |
| 10 | GLCSC 1 | 2.41006 |
| 11 | GLCSC 2 | 1.00000 |
| 12 | GLCSC 3 | 5.00000 |
| 13 | GLCSC 4 | 1.35645 |
| 14 | GLCSC 5 | 1.00000 |
| 15 | GLCSC 6 | 3.06832 |
| 16 | GLCSC 7 | 1.25000 |
| 17 | GFCSC 1 | 1.00000 |
| 18 | GFCSC 2 | 1.12572 |
| 19 | ALCSC 1 | 1.00000 |
| 20 | ALCSC 1 | 1.42514 |
| 21 | ALCSC 3 | 1.04384 |
| 22 | ALCSC 4 | 1.45181 |
| 23 | ALCSC 5 | 2.01338 |
| 24 | ALCSC 6 | 2.50000 |
| 25 | ALCSC 7 | 1.01563 |
| 26 | ALCSC 8 | 1.77857 |
| 27 | ALCSC 9 | 2.36111 |
| 28 | AFCSC 1 | 1.46341 |
| 29 | CAFSC 2 | 1.00000 |
| 30 | ELCSC 1 | 2.72928 |
| 31 | ELCSC 2 | 4.43624 |
| 32 | ELCSC 3 | 1.00000 |
| 33 | ELCSC 4 | 7.89973 |
| 34 | ELCSC 5 | 7.54541 |
| 35 | ELCSC 6 | 1.00000 |
| 36 | ELCSC 7 | 1.00000 |
| 37 | ELCSC 8 | 1.00000 |
| 38 | ELCSC 9 | 1.00000 |
| 39 | ELCSC 10 | 3.03833 |
| 40 | EFCSC 1 | 2.27835 |
| 41 | EFCSC 2 | 5.90625 |
| 42 | EFCSC 3 | 1.00000 |

Field study (2016)

Note:   (i) MTLCSC = MTN, Lagos state, Customer service center
         (ii) MTFCSC = MTN, FCT, Customer service center
         (iii) GLCSC = Glo, Lagos state, Customer service center
         (iv) GFCSC = Glo, FCT, Customer service center
         (v) ALCSC = Airtel, Lagos state, Customer service center
         (vi) AFCSC = Airtel, FCT, Customer service center
         (vii) ELCSC = Etisalat, Lagos state, Customer service center
         (viii) EFCSC = Etisalat, FCT, Customer service center

## Appendix 8: Construct Validity of the Research Items Using Correlation

### (A) Inter-item Correlations for Individual-tacit Knowledge

| | It is often difficult for me to explain the steps with doing my job | Writing down the procedures involved with my job tasks is difficult | Most times, I don't have to think too long about how to go about my job | Doing my job is more of a natural ability/skill to me |
|---|---|---|---|---|
| It is often difficult for me to explain the steps with doing my job | 1 | .784** | -.011 | -.184* |
| Writing down the procedures involved with my job tasks is difficult | .784** | 1 | .079 | -.075 |
| Most times, I don't have to think too long about how to go about my job | -.011 | .079 | 1 | .450** |
| Doing my job is more of a natural ability/skill to me | -.184* | -.075 | .450** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

### (B) Inter-item Correlations for Individual-explicit Knowledge

| | In order to improve my performance I often undergo personally sponsored trainings | Knowledge gained from journal and magazines have been helpful in making me effective at work | My educational background has largely contributed to my success on my job |
|---|---|---|---|
| In order to improve my performance I often undergo personally sponsored trainings | 1 | .381** | -.010 |
| Knowledge gained from journal and magazines have been helpful in making me effective at work | .381** | 1 | .166* |
| My educational background has largely contributed to my success on my job | -.010 | .166* | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## (C) Inter-item Correlations for Group-tacit Knowledge

|  | The way I carry out my job is largely guided by the organisational culture of my firm | Staff in this firm are encouraged to share experiences among one another | Most of the success i enjoy on my job is a result of the shared experiences gained from my colleagues | Staff of this firm often share stories about past successes and failures of their work | My colleagues are always willing to explain difficult work processes to me when I need them |
|---|---|---|---|---|---|
| The way I carry out my job is largely guided by the organisational culture of my firm | 1 | .493** | .248** | .327** | .255** |
| Staff in this firm are encouraged to share experiences among one another | .493** | 1 | .408** | .163* | .329** |
| Most of the success I enjoy on my job is a result of the shared experiences gained from my colleagues | .248** | .408** | 1 | .306** | .180* |
| Staff of this firm often share stories about past successes and failures of their work | .327** | .163* | .306** | 1 | .506** |
| My colleagues are always willing to explain difficult work processes to me when I need them | .255** | .329** | .180* | .506** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

## (D) Inter-item Correlations for Group-explicit Knowledge

|  | This organisation has a manual that guides how we perform our job | The firm's knowledge base is a very useful means for resolving most problems relating to my work | The firm encourages members to document their personal experiences as a way of helping colleagues |
|---|---|---|---|
| This organisation has a manual that guides how we perform our job | 1 | .222** | .190* |
| The firm's knowledge base is a very useful means for resolving most problems relating to my work | .222** | 1 | .503** |
| The firm encourages members to document their personal experiences as a way of helping colleagues | .190* | .503** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

## (E) Inter-item Correlations for Customer Satisfaction (Firm Perspective)

| | Our customers often express their desire for lower tariff on calls and toher products/services of this company | These past three years, our customer service center has recorded increased customer complaints | In these past three years, I can boldly say most questions customers ask have been responded to |
|---|---|---|---|
| Our customers often express their desire for lower tariff on calls and toher products/services of this company | 1 | .233** | .485** |
| These past three years, our customer service center has recorded increased customer complaints | .233** | 1 | .117 |
| In these past three years, I can boldly say most questions customers ask have been responded to | .485** | .117 | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

## (F) Inter-item Correlations for Organisational Effectiveness

| | Top management of my firm is quick to adapt to unanticipated changes | My firm is very responsive to new market demands | All units of this firm work in a coordinated pattern to achieve the same goal | Top Management are quick to adapt the firm's goals/objectives to changes in our market/industry |
|---|---|---|---|---|
| Top management of my firm is quick to adapt to unanticipated changes | 1 | .450** | .423** | .582** |
| My firm is very responsive to new market demands | .450** | 1 | .613** | .479** |
| All units of this firm work in a coordinated pattern to achieve the same goal | .423** | .613** | 1 | .489** |
| Top Management are quick to adapt the firm's goals/objectives to changes in our market/industry | .582** | .479** | .489** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

# Inter-item Correlations for Learning Orientation

**Inter-item Correlations for Commitment to learning**

| | 1 | 2 | 3 |
|---|---|---|---|
| Managers basically agree that our organisation's ability to learn is the key to our competitive advantage | 1 | -.152$^{*}$ | -.109 |
| The basic values of this organisation include learning as key to improvement | -.152$^{*}$ | 1 | .572$^{**}$ |
| Learning in my organisation is seen as a key commodity necessary to guarantee organisational survival | -.109 | .572$^{**}$ | 1 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Shared Vision**

| | 1 | 2 | 3 |
|---|---|---|---|
| All employees are committed to the goals of this organisation | 1 | .549$^{**}$ | .570$^{**}$ |
| Employees view themselves as partners in charting the direction of the organisation | .549$^{**}$ | 1 | .535$^{**}$ |
| There is total agreement on our organisational vision across all levels, functions, and divisions | .570$^{**}$ | .535$^{**}$ | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Open Mindedness**

| | 1 | 2 | 3 |
|---|---|---|---|
| We are not afraid to reflect critically on the shared assumptions we have made about our customers | 1 | .428$^{**}$ | .311$^{**}$ |
| We continually judge the quality of our decisions and activities taken over time | .428$^{**}$ | 1 | .055 |
| Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned | .311$^{**}$ | .055 | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Intra-organisational Knowledge Sharing**

| | 1 | 2 | 3 |
|---|---|---|---|
| We always analyze unsuccessful organisational endeavors and communicate the lessons learned widely | 1 | .426** | .390** |
| Top management repeatedly emphasizes the importance of knowledge sharing in our company | .426** | 1 | .392** |
| We have specific mechanisms for sharing lessons learned in organisational activities from department to department | .390** | .392** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

## Inter-Item Correlations for Entrepreneurial Orientation

**Inter-item Correlations for Innovativeness**

| | 1 | 2 |
|---|---|---|
| My firm has very many new lines of products/services marketed in the past 5 years | 1 | .140 |
| The top managers favor a strong emphasis on R&D, technological leadership, and innovations | .140 | 1 |

**Inter-item Correlations for Risk-taking**

| | 1 | 2 |
|---|---|---|
| My firm usually has a strong proclivity for high risk projects (with chances of very high returns) | 1 | .459** |
| Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives | .459** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Proactiveness**

| | 1 | 2 |
|---|---|---|
| In dealing with competitors, my firm usually initiates actions which competitors then respond to | 1 | .385** |
| In dealing with competitors, my firm is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc | .385** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Competitive Aggressiveness**

|  | 1 | 2 |
|---|---|---|
| My firm usually adopts a very competitive "undo-the-competitors" posture | 1 | .558** |
| My firm is very aggressive and intensely competitive | .558** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Autonomy**

|  | 1 | 2 |
|---|---|---|
| My firm has the ability and will to be self-directed in the pursuit of opportunities | 1 | .492** |
| My firm has the independent action of an individual or a team in bringing forth an idea or a vision and carrying it through to completion | .492** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

# Inter-item Correlations for Market Orientation

**Inter-item Correlations for Customer Orientation**

|  | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Top management of my firm encourage us to be committed to customers | 1 | .339** | .424** | .343** |
| We are passionate about understanding our customers' needs | .339** | 1 | .521** | .592** |
| Our firm consistently measure the level of our customers' satisfaction | .424** | .521** | 1 | .553** |
| As a firm we are passionate about creating customer value | .343** | .592** | .553** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item for Correlations for Competitive Orientation**

|  | 1 | 2 | 3 |
|---|---|---|---|
| Our firm responds rapidly to competitors' actions | 1 | .170* | .190* |
| Top managers of this firm are mindful of competitors' strategies | .170* | 1 | .546** |
| Top management of this firm always target opportunities for competitive advantage | .190* | .546** | 1 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

**Inter-item Correlations for Inter-functional Coordination**

| | 1 | 2 | 3 |
|---|---|---|---|
| The management of this firm encourage information sharing among departments and units | 1 | .476** | .431** |
| All functional units of this firm contribute to creating customers' value | .476** | 1 | .568** |
| Departments/Units integrate in designing and implementing strategies to help the firm | .431** | .568** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**(J) Inter-item Correlations for Knowledge-based Service Quality**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Promptness of staff to respond to my complaints | 1 | .429** | .371** | .345** | .247** | .297** | .351** | .295** | .435** |
| Accuracy of transaction | .429** | 1 | .559** | .316** | .332** | .326** | .365** | .459** | .393** |
| Speed of processing transactions | .371** | .559** | 1 | .393** | .433** | .403** | .320** | .379** | .378** |
| Staff attitude to customers | .345** | .316** | .393** | 1 | .462** | .384** | .476** | .272** | .348** |
| Security in transactions | .247** | .332** | .433** | .462** | 1 | .509** | .394** | .345** | .375** |
| Ease of communication | .297** | .326** | .403** | .384** | .509** | 1 | .466** | .385** | .406** |
| Attention and patience of staff | .351** | .365** | .320** | .476** | .394** | .466** | 1 | .434** | .499** |
| Range of products and services | .295** | .459** | .379** | .272** | .345** | .385** | .434** | 1 | .498** |
| Ability of staff communicating among themselves to resolve my complaints | .435** | .393** | .378** | .348** | .375** | .406** | .499** | .498** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

## (K) Inter-item Correlationsfor Knowledge-based Customer Satisfaction

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal quality | 1 | .588** | .422** | .353** | .303** | .274** | .316** | .392** | .305** | .367** | .572** |
| Voice call quality | .588** | 1 | .529** | .485** | .360** | .268** | .343** | .370** | .374** | .358** | .396** |
| Using advanced technology | .422** | .529** | 1 | .440** | .398** | .441** | .405** | .346** | .346** | .450** | .429** |
| Quality of call center services | .353** | .485** | .440** | 1 | .558** | .349** | .329** | .422** | .413** | .354** | .415** |
| Quality of services at retail/service shops | .303** | .360** | .398** | .558** | 1 | .518** | .464** | .524** | .489** | .470** | .349** |
| Having retail/service shops in many places | .274** | .268** | .441** | .349** | .518** | 1 | .546** | .437** | .443** | .434** | .289** |
| Mobile provider being modern | .316** | .343** | .405** | .329** | .464** | .546** | 1 | .598** | .450** | .410** | .328** |
| Mobile provider being friendly | .392** | .370** | .346** | .422** | .524** | .437** | .598** | 1 | .541** | .449** | .316** |
| Mobile provider keeping in touch | .305** | .374** | .346** | .413** | .489** | .443** | .450** | .541** | 1 | .547** | .298** |
| Having user-friendly website | .367** | .358** | .450** | .354** | .470** | .434** | .410** | .449** | .547** | 1 | .501** |
| Network/signal coverage | .572** | .396** | .429** | .415** | .349** | .289** | .328** | .316** | .298** | .501** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

**Appendix 9a**

**A.     Input-oriented CRS Model Slacks**

| DMU No. | DMU Name | Input Slacks | | | Output Slacks | | |
|---|---|---|---|---|---|---|---|
| | | Employees | Expenditure | Technology | Customers | Cases | Innovations |
| 1 | MTLCSC 1 | 0.00000 | 0.00000 | 0.00000 | 35.27945 | 22.87491 | 0.00000 |
| 2 | MTLLCSC 2 | 0.00000 | 1723.64322 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 3 | MTLCSC 3 | 0.00000 | 63460.22727 | 126136.35227 | 0.00000 | 0.00000 | 3.39773 |
| 4 | MTLCSC 4 | 0.00000 | 314291.66667 | 102916.66667 | 42.50000 | 0.00000 | 19.75000 |
| 5 | MTLCSC 5 | 0.00000 | 607247.82010 | 0.00000 | 449.92428 | 0.00000 | 0.00000 |
| 6 | MTLCSC 6 | 0.00000 | 30907.37341 | 0.00000 | 72.76962 | 0.00000 | 0.00000 |
| 7 | MTLCSC 7 | 0.00000 | 25375.00000 | 463750.00000 | 37.50000 | 0.00000 | 25.25000 |
| 8 | MTFCSC 1 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 9 | MTFCSC 2 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 10 | GLCSC 1 | 0.00000 | 49674.18851 | 0.00000 | 0.15709 | 0.00000 | 0.00000 |
| 11 | GLCSC 2 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 12 | GLCSC 3 | 0.00000 | 191000.00000 | 230000.00000 | 35.00000 | 20.00000 | 0.00000 |
| 13 | GLCSC 4 | 0.00000 | 428199.10122 | 0.00000 | 89.68824 | 0.00000 | 23.94341 |
| 14 | GLCSC 5 | 0.00000 | 592500.00000 | 225000.00000 | 50.00000 | 0.00000 | 69.00000 |
| 15 | GLCSC 6 | 0.00000 | 1893107.28745 | 5131072.55061 | 0.00000 | 21.65992 | 0.00000 |
| 16 | GLCSC 7 | 0.00000 | 451250.00000 | 522500.00000 | 85.00000 | 0.00000 | 42.50000 |
| 17 | GFCSC 1 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 18 | GFCSC 2 | 0.00000 | 0.00000 | 0.00000 | 50.23926 | 0.00000 | 0.00000 |
| 19 | ALCSC 1 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 20 | ALCSC 1 | 0.00000 | 185628.97629 | 6107605.32967 | 0.00000 | 14.01619 | 0.00000 |
| 21 | ALCSC 3 | 0.00000 | 6474602.27273 | 56092044.88636 | 0.00000 | 0.00000 | 54.88636 |
| 22 | ALCSC 4 | 0.00000 | 51273977.27273 | 3754544.31818 | 0.00000 | 0.00000 | 38.77273 |
| 23 | ALCSC 5 | 0.00000 | 67495.67630 | 0.00000 | 53.53014 | 0.00000 | 8.97614 |
| 24 | ALCSC 6 | 0.00000 | 0.00000 | 0.00000 | 28.95118 | 31.71386 | 0.00000 |
| 25 | ALCSC 7 | 0.00000 | 31106111.11111 | 8438888.88889 | 50.00000 | 0.00000 | 49.00000 |
| 26 | ALCSC 8 | 0.00000 | 0.00000 | 0.00000 | 16.14878 | 0.00000 | 0.00000 |
| 27 | ALCSC 9 | 0.00000 | 297750.00000 | 97500.00000 | 35.00000 | 0.00000 | 19.50000 |
| 28 | AFCSC 1 | 0.00000 | 0.00000 | 0.00000 | 42.83333 | 0.00000 | 0.36667 |
| 29 | CAFSC 2 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 30 | ELCSC 1 | 0.00000 | 4055185.56005 | 2306679.33198 | 0.00000 | 44.87854 | 0.00000 |
| 31 | ELCSC 2 | 0.00000 | 65416.66667 | 20833.33333 | 5.00000 | 0.00000 | 7.50000 |
| 32 | ELCSC 3 | 0.00000 | 0.00000 | 0.00000 | 5.09532 | 0.59593 | 0.00000 |
| 33 | ELCSC 4 | 0.00000 | 22289.87706 | 0.00000 | 2.83019 | 4.88177 | 0.00000 |
| 34 | ELCSC 5 | 0.00000 | 0.00000 | 0.00000 | 3.05107 | 2.75964 | 0.00000 |
| 35 | ELCSC 6 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 36 | ELCSC 7 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 37 | ELCSC 8 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 38 | ELCSC 9 | 0.00000 | 0.00000 | 0.00000 | 133.36578 | 81.49169 | 0.00000 |
| 39 | ELCSC 10 | 0.00000 | 161903.40909 | 555113.46591 | 0.00000 | 0.00000 | 8.96591 |
| 40 | EFCSC 1 | 0.00000 | 798250.00000 | 842500.00000 | 25.00000 | 0.00000 | 2.50000 |
| 41 | EFCSC 2 | 0.00000 | 0.00000 | 0.00000 | 172.26694 | 0.00000 | 0.00000 |
| 42 | EFCSC 3 | 0.00000 | 0.00000 | 0.00000 | 36.69907 | 11.96994 | 0.00000 |