Analysing the Effects of ICT Adoption &Use on knowledge Creation by SMEs: (A Case Study of Some Agric-SMEs in Nigeria)

By

Tom Roghoke Ajobo

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ABSTRACT

Nigeria has for decades placed enormous emphasis on diversifying its economy beyond oil and into sectors such as agribusiness and manufacturing. One of the strategic factors for stimulating economic growth in a developing economy, is the investment in the digital economy. In this respect, it is especially important for SMEs entrepreneurs to accept innovative technologies and new business models. Attitude of SMEs towards the introduction of innovation, point to their ways of thinking and affect the intention to use innovation in business.

The aim of this research is to analyse the effects of ICT Adoption and Use on knowledge creation by SMEs in Nigeria, with emphasis on some (Agric-SMEs in Nigeria). Over the years, there has been an increase in the adoption and use of Information and communication Technology (ICT) in organisations and businesses, and this has triggered some form of revolution in business practices. The world over, ICT has greatly transformed the way and manner in which companies and organisations conduct their activities and operations. However, there is considerable evidence to show that Small and Medium Sized Enterprises (SMEs), especially Agric-SMEs, in developing countries, particularly those in Sub-Saharan Africa (SSA) are yet to reap the full benefits offered by ICT, as compared to their counterparts in developed countries. Although, the contribution of SMEs, especially Agric-SMEs, is of notable importance to many countries' economy, yet those in developing countries like Nigeria, still lag far behind. For SMEs to survive and remain competitive in today's current highly competitive business environment, there is the need to adopt and use ICT effectively, in order to attain some level of competitive advantage, especially as it relates to Agric related businesses. This research investigates and analyses' the effects, advantages, and importance of adopting and utilisation of ICT, with reference to the Agro-Allied SME businesses in Nigeria, as a Case Study. A total of 30 Agric-SMEs owners/managers/employees were interviewed and contacted in Nigeria, but 20 of them cooperated, participated, and responded to the interview questions, from which 15 were finally selected and used as the Case Study of the research. It is presumed that Agric-SMEs adoption and use of ICT in Nigeria, will provide great opportunities to accelerate the country's socio-economic growth, as this will reduce the over-dependence on oil dominated mono-economy. Agriculture has always been considered an important sector for diversification, most recently as outlined in Nigeria Economic Recovery and Growth Plan (ERGP-2017-2020). Why has diversification preoccupied modern economic policy making in Nigeria? It is mainly because growth has largely been non inclusive and without jobs. Therefore, the diversification of the Nigerian economy towards modern and mechanised Agriculture, will offer Nigeria the chance to leapfrog some stages of development.

DEDICATION

This thesis is specially dedicated to God Almighty, who generously gave me the strength, health, and other resources to successfully accomplish this research amid other competing demands and challenges.

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List of Abbreviations and Acronyms

ADB – Agricultural Development Bank

AGSMEIS – Agri-business Small and Medium Enterprises Investment Scheme

ABP – Anchor Borrowers Programme

AFS – Agrifood System

BERR – Department of Business, Enterprise, and Regulatory Reform

BOA – Bank of Agriculture

BOI – Bank of Industry

CAC – Corporate Affairs Commission

CBN – Central Bank of Nigeria

CEO – Chief Executive Officer

CGS – Conditional Grant Scheme

CPRCN – Computer Professional Registration Council of Nigeria

CRM - Customer Relationship Management

ERP – Enterprise Resource Planning

GDP – Gross Domestic Product

GSM – Global System for Mobile Communication

ICT - Information and Communication Technology

IDCs – Industrial Development Centres

IMF – International Monetary Fund

IPPs – Independent Power Plants

IS – Information Systems

ISPs – Internet Service Providers

ITU – International Telecommunication Unit

NACRDB – Nigerian Agricultural Co-operative and Rural Development Bank

NBCI – Nigerian Bank for Commerce and Industry

NAFDAC – National Agency for Food, Drugs Administration and Control

NCC – Nigerian Communications Commission

NDE – National Directorate of Employment

NERFUND – National Economic Reconstruction Fund

NEXIM – Nigerian Bank for Commerce and Industry

NIDB – Nigerian Industrial Development Bank

NITDA- National Information Technology Development Agency

NRI – Network Readiness Index

OECD – Organisation for Economic co-operation and Development

PC – Personal Computer

ROI – Return on Investment

SCM – Supply Chain Management

SME - Small and Medium Sized Enterprises

SMEDAN – Small and Medium Sized Agency of Nigeria

SMEIS – Small and Medium Equity Investment Scheme

SSA – Sub-Saharan Africa

SSICS – Small Scale Industries Credit Scheme

UNCTAD – United Nations Conference on Trade and Development

UNESCO – United Nations Educational, Scientific and Cultural Organisation

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CHAPTER ONE

1.0 INTRODUCTION

Worldwide processes of globalisation, knowledge society and economy, affects the existence, activities and operations of separate countries, organisations, and individuals. The rapid development of information and communication technologies (which changes the existing business structures and ways of communication) extremely influenced business processes. It is a known fact that the adoption of and use of ICT represents fundamentals of competitiveness and economic growth for firms, organisations and even countries that can exploit them (Vehovar & Lesjak, 2007) (Higón, 2012))(Miller, 1988a) . In recent years there has been an increase in the adoption of Information and Communication Technology (ICT) in organisations, as the use of ICT causes some form of revolution in business practices. All over the world, ICT has greatly transformed the way companies conduct business. However, there is considerable evidence to show that Small and Medium Sized Enterprises (SMEs) in developing countries, particularly those in Sub-Saharan Africa (SSA), are yet to reap the full benefits offered by ICT as compared to their counterparts in the developed countries. Although the contribution of SMEs is of notable importance to many countries' economy, yet those in developing countries lag far behind. For SMEs to survive and remain competitive in the current highly competitive business environment there is a need to adopt and use ICT effectively, in order to attain some level of competitive advantage. The research focuses on analysing the effects of ICT adoption and use on knowledge creation by SMEs; with emphasis on Agric-SMEs in Nigeria. It is presumed that SMEs' adoption of ICT in Nigeria will provide opportunities to accelerate the country's socio-economic growth as it will offer Nigeria the chance to 'leapfrog' some stages of development. The importance of Small and Medium Sized Enterprises (SMEs) cannot be overlooked in the economic development of any country since SMEs play a critical role in every country's economic development and Nigeria is no exception.

The concept of SMEs is relative and dynamic. There is no universal definition of SMEs that is widely accepted as the definition is dynamic and depends largely on a country's level of development, (S. Aruwa & Gugong, 2007; Mutula & Brakel, 2007). The definition of SMEs differs from one country to another but is often based on employment, assets, or a combination of both. (Jutla et al., 2002), state that SMEs have been defined against various criteria such as the value of assets employed and the use of energy. Rahman, 2001) ascertains that SMEs are defined by several factors and criteria, such as, location, size, age, structure, organisation, number of employees, sales volume, worth of assets, ownership, through innovation and technology. Storey (1994) (Anyanwu, 2011)added that the number of employees is an appropriate measure of SMEs because of the differences in organisational structure that occur with size. Aruwa and Gugong (2007) affirm that each country tends to derive its own definition based on the role SMEs are expected to play in that economy. Varying definitions amongst countries may arise from differences in organisations at different levels of economic development. For example, the Department of Business, Enterprise, and Regulatory Reform (BERR, 2009)(Bogavac & Čekerevac, n.d.) uses the following definitions: Micro firm: 0-9 employees; Small firm: 0-49 employees; Medium firm: 50-249 employees; and large firm: over 250 employees. The European Union Commission (2014), also defines SMEs, using the same number of employees as used by BERR, but includes annual turnover. Micro enterprises are those having fewer than 10 employees and having an annual turnover not exceeding €2 million or an annual balance sheet total not exceeding €2 million. Small enterprises employ fewer than 50 people and have either an annual turnover not exceeding €10 million or an annual

balance sheet total not exceeding €10 million. Medium Sized Enterprises are those with fewer than 250 employees and have an annual turnover not exceeding €43 million.

In both developed and developing countries, Small and Medium Sized Enterprises (SMEs) play important roles in the process of industrialization and economic growth (Adekunle & Tella, 2008a). Over the past two decades, the economies of leading countries have increasingly evolved toward knowledge-based economies, relying less on traditional resources such as labour and capital for economic prosperity and wealth creation(S. Asongu et al., 2017). It is widely acknowledged that the creation of new knowledge, innovation, and technological changes drive prosperity in these countries. Accordingly, economic incentives based on new knowledge stimulate economic growth, improve the ladder of employment opportunities, provide higher wages, and ultimately enhance the country's competitiveness within the global environment. The appealing economic trends prevalent in many developed countries strongly depend on investments in new technology, high skilled labour, and high technology industries. These are essential ingredients for the development of a knowledge-based economy (African Development Bank., 2007). Whereas innovation has been substantially identified as a driver of economic prosperity and productivity in the developed world, the capacity to innovate remains relatively low in most African countries.(Anyanwu & Yameogo, 2015) The globalization of technology, however, presents new opportunities for development in developing countries if governments can transform political will into adequate economic policies needed for the building of knowledge-based economies (African Development Bank 2007). Moreover, for developing countries to build their potential as knowledge economies, substantial investments in human capital, high skilled labour force, and infrastructure for high-technology industries are imperative. The fostering of scientific technological collaborations and networks with developed countries is also required to enhance the competitiveness and international trade goals of corporations in developing countries (Lee and Kim 2009; Suh and Chen2007). In the light of the above, a recent stream of African-related studies has been consistent on the relevance of knowledge economy (KE) on the continent (Anyanwu, 2011); (S. A. Asongu & Nwachukwu, 2018b), Nyarko 2013; Andrés et al. 2015; Asongu 2015; Asongu and Tchamyou 2016). These include among others general discussions on KE (Rooney 2005; Lin 2006; Anyanwu 2012), innovation (Carisle et al. 2013), and information and communication technologies (Butcher 2011; (S. A. Asongu & Nwachukwu, 2018a). The above stream of narratives is consistent with the need for more scholarly research on factors encouraging knowledge creation (KC) in Africa with specific emphasis on SMEs in Nigeria. South Korea relied on KE in the doing of business to achieve its spectacular development (Suh and Chen 2007). As a research study, there is yet no study that has investigated the relevance of KE/KC in African business. Against this background, it is relevant to position an inquiry on the relevance of ICT adoption and use on (KE/KC) in African business with emphasis on Agric-SMEs in Nigeria, for the following reasons.

First, since Africa is increasingly nursing ambitions of KE projects, understanding the relevance of these projects in the doing of business in the continent would provide policy makers with the much-needed guidance. This point is even more crucial due to failed post-independence industrialization-based measures and thwarted structural adjustment policies of liberalization and privatization (Rolfe & Woodword, 2006) that have not substantially boosted African business (especially intraregional trade).

Second, knowledge-based African business growth holds high potential for the improvement of existing agricultural economies and development of value-added technology-based services

essential for economic prosperity, competitiveness, and adaptation to the challenges of globalization.

Third, KC potentially holds the promise of lifting the continent out of poverty through the much-needed investment opportunities and employment possibilities (to tackle soaring demographic change). While there are growing challenges in African business (Leke et al. 2010; Ernst and Young 2013), the transition from product-based economies to a KE typically involves measures such as long-run investment in education, modernizing the information infrastructure, innovation capability, and nurturing an economic environment that is conducive for market transactions. Considering the above, this study aims to assess how KE/KC affects Agric-(SMEs) business dynamics, notably: starting business, doing business, and ending business.

Fourth, SMEs contribute significantly to the economic growth and development of Nigeria. These contributions are remarkable as about 10% of the total manufacturing output and 70% of the industrial employment are by SMEs (Aina, 2007) . Also, (Ihua, 2009) states that about 97% of the entire enterprises in Nigeria are SMEs and they employ an average of 50% of the working population as well as contributing up to 50% to the country's industrial output. Information and Communication Technology (ICT) is regarded as a driver and enabler of economic development in most economies including Nigeria. ICT has brought about changes in the way businesses are conducted amongst SMEs as they play a major role in storing, retrieving, processing, and disseminating information (Apulu & Lathan, 2009). (Ifinedo et al., 2020) states that SMEs in Nigeria can increase their market reach, enhance customer service, and reduce both marketing and distribution cost through e-business. However, majority of Nigeria SMEs are not utilizing ICT which is the foundation of e-business due to some major barriers as identified in various studies.

1.1 Background to the Study

Micro and small-scale enterprises have been accepted worldwide as instrument of economic growth and development. No wonder that government, particularly in the developing countries has made tremendous efforts and establish policies to enhance the capacity of micro and small-scale enterprises (MSEs). However, despite government institutional and policies support to enhancing the capacity of small and medium scale enterprises, small and medium scale enterprises have fallen short of expectations. This, then, generated serious concern and scepticism on whether SMEs can bring about economic growth and national developments in Nigeria. SMEs are faced with significant challenges that compromise their ability to function and to contribute optimally to the economy.

Small and Medium Enterprises play key roles in transition and in developing countries (OECD, 2002). These firms typically account for more than 90% of all firms outside the white-collar jobs sector, constituting a major source of employment and generates significant domestic and export earnings. (Bennett, 2006) stressed that SME development emerges as a key instrument in poverty reduction efforts, therefore, SME obviously contributes to economic, social development and poverty reduction. World Bank review on small business activities establishes the commitment of the World Bank Group to the development of the SMEs sector as a core element in its strategy to foster economic growth, employment and poverty alleviation (World Bank Group, 2011) . This is because, SMEs constitute the driving force of such industrial growth and development, and this is

due to their great potentials in ensuring diversification and expansion of industrial production as well as the attainment of the basic objectives of development. Given the great potentials of SMEs to bring about social and economic development, it is of no surprise that the performance and financing SMEs is of huge concern to the government of different countries in the world (Okpara, 2004). SMEs in both developing and developed countries play important roles in the process of industrialization and economic growth, by significantly contributing to employment generation, income generation and catalysing development in urban and rural areas (Olutunla & Obamuyi, 2008a); OECD, (2004). For instance, statistics shows that Africa and Asia have most of their population living in rural areas where SMEs delivers about 20% - 45% of full-time employment and 30% - 50% of rural household income (Liedholm et al., 1994). However, managing and financing SMEs is a major catalyst and a key success factor for the development, growth and sustenance of any economy. Most government and business circles have come to recognize the importance of supporting and financing SMEs and have consequently agreed that their growth constitutes one of the corner stones of economic development (Olutunla,2008; OECD, 2004). Despite the numerous factors that challenge the survival and growth of SMEs in both developing and developed countries, finance has been identified as one of the most important factors (De Beukelaer, 2014). Having access to finance gives SMEs the chance to develop their businesses and to acquire better technologies for production, therefore ensuring their competitiveness, however, there is a huge challenge for SMEs globally when it comes to sourcing for initial and expansion capital funds from traditional commercial banks. (Isaac Oluwajoba Abereijo & Abimbola Oluwagbenga Fayomi, 2005) notes that most commercial bank loans offered to SMEs are often also limited to a period far too short to pay off any sizeable investment. In addition, banks in many developing countries prefer to lend to the government rather than private sector borrowers because the risk involved is lesser and higher returns are offered (Jacob Levitsky, 1997). Such apathy for the SMES have crowded out most private sector borrowers and increased the cost of capital for them.

Perhaps, no other development strategy has enjoyed as much prominence in Nigeria's development plans as the Small and Medium Scale Enterprises (SMEs) development strategy. In recent years, particularly since the adoption of the economic reform programme in Nigeria in 1986, there has been a decisive switch of emphasis from the grandiose, capital intensive, large scale industrial project based on the philosophy of import substitution to micro and small-scale enterprises with immense potentials for developing domestic linkages for rapid, sustainable industrial development. Apart from their potential for ensuring a self-reliant industrialization, in terms of ability to rely largely on local raw materials, small scale enterprises are also in a better position to boost and employ raw materials. Small and medium enterprises, are also in a better position to boost employment, guarantee a more even distribution of industrial development in the country, including the rural areas, and facilitate the growth of non-oil exports. According to the National Council on Industry (1991) cited in (Olajide et al., 2008), micro/cottage industry is an industry whose total project cost excluding cost of land but including working capital is not more than N500, 000:00 (i.e., US$50,000); while small scale industry is an industry whose total project cost excluding cost of land and including working capital does not exceed N5m (i.e., US$500,000). These definitions were further reviewed by the council in 1996, that cottage/micro industry is an industry whose total cost, including working capital but excluding cost of land, is not more than N1 million and a labour size of not more than 10 workers, while small scale industry is an industry whose total cost, including working capital but excluding cost of land, is over N1 million but mot more than N40 million and a labour size of between 11 and 35 workers. Small scale business started gaining prominence in Nigeria in the early 1970s when many personal enterprises started springing

up. Before this time, agriculture dominated the economy. There were a lot of agricultural small holdings before and during emergence of oil boom. Over 75 percent of agricultural holding were managed by the small farmers which comprise mainly family businesses. Government agricultural holdings were not more than 10 percent. Micro and small-scale businesses are catalyst in the socio – economic development of any country. They are a veritable vehicle for the achievement of national macroeconomic objective in term of employment generation at low investment cost and enhancement of apprenticeship training. (Osotimehin et al., 2012). In Kenya, for instance, (Kinuthia et al., 2013), submitted that "micro and small-scale entrepreneurs who include agriculture and rural businesses have contributed greatly to the growth of Kenyan economy". The sector contributes to the national objective of creating employment opportunities, training entrepreneurs, generating income, and providing a source of livelihoods for most low-income households in the country, accounting for 12-14% of GDP (Republic of Kenya, 1982, 1989, 1992, 1994). The catalytic roles of micro and cottage businesses have been displayed in many countries of the world such as Malaysia, Japan, South Korea, Zambia, and India among other countries. They contribute substantially to the Gross Domestic production (GDP), export earnings and employment opportunities of these countries. Small-scale enterprises (SMEs) have been widely acknowledged as the springboard for sustainable economic development. Apart from the fact that it contributes to the increase in per capital income and output, it also creates employment opportunities, encourage the development of indigenous entrepreneurship, enhance regional economic balance through industrial dispersal and generally promote effective resource utilization that are considered to be critical in the area of engineering economic development (Oyewumi et al., 2018). Micro and small-scale enterprises (MSEs) in Nigeria have not performed creditably well and they have not played expected significant role in economic growth. They equally have not influenced apprentice training to accelerate employment and poverty alleviation in order to foster Nigerian economic development. This situation has been of great concern to the government, citizen, operators, practitioners and organized private sectors. With the realization of the potentials of the MSEs, governments at different level in Nigeria have put up a lot of support programmes to promote and sustain their development. It is believed that massive assistance; financial, technical, marketing, and managerial from the government are necessary for the SMEs to grow. Governments have stepped up efforts to promote the development of SMEs through increased incentive schemes including enhanced budgetary allocation for technical assistance programmes.

Also, new lending schemes and credit institutions such as the National Economic Reconstruction Fund (NERFUND), World Bank-assisted small-scale enterprises loan scheme (SMES), Nigeria Export and Import Bank (NEXIM), the people's Bank of Nigeria (PBN) and the Community have been established by the federal government for the purpose of assisting the MSEs & SMEs to support and meet their finance needs. There have also been fiscal incentives, grants, bilateral and aids from multilateral agencies as well as specialized institutions towards making the micro, small and medium size business enterprises and apprenticeships schemes vibrant. It's of great concern that this vital sub- sector has fallen short of expectation. The situation is more disturbing and worrying when compared with what other developing and developed countries have able to achieve with their cottage businesses coupled with significant attention to apprenticeship training, knowledge creation and employment generation. It has been shown that there is a high correlation between the degree of poverty, hunger, unemployment, and economic wellbeing of the citizens of countries and the degree of vibrancy of the respective countries micro and small-scale enterprises (MSEs). Although micro and small-scale enterprises (MSEs) have been regarded as the bulwark for employment generation and technological development in Nigeria, this subsector is faced with

enormous challenges, one of which is in the areas of knowledge creation and technology transfer. The modern, technological, and economic environment which is dominated by globalization, hyper-competition, and knowledge and information revolution has revolutionized the way businesses are conducted (Pavic, Koh, Simson, et al., 2007). In the literature ((Adekunle & Tella, 2008b);(Apulu & O. Ige, 2011); Usman, 2011), Information and Communication Technology has been described as a catalyst for development in both developed and developing countries. According to (Apulu & Lathan, 2009) Information and Communication Technology is regarded as a driver and enabler of economic development in most countries. Accordingly, (Ghobakhloo et al., 2012) noted that Small and medium-sized enterprises (SMEs) account for major source of employment, technological advancements, and competitive advantages for both developed and developing countries. Information and Communication Technology has brought about changes in the way businesses are conducted amongst SME's as they play a major role in storing, retrieving, processing and disseminating information. As cited by Ghobakhloo, et al (2011), today's technological progressions, the implementation and application of IT is a significant driving force behind many socioeconomic changes (Dibrell et al., 2008a). As the utilization and commercialization of IT becomes more widespread throughout the world, the adoption of novel IT can generate new business opportunities and various benefits. Nowadays, both large organizations and small and medium-sized enterprises (SMEs) are seeking ways to reinforce their competitive position and improve their productivity (Premkumar, 2003). Accordingly, there is an increasing consciousness of the necessity to derive profit through investment in IT within SMEs. IT tools can significantly assist SMEs by supplying the required infrastructure, which is necessary for providing appropriate types of information at the right time. IT can also provide SMEs with competitiveness through integration between supply chain partners and inter-organizational functions, as well as by providing critical information (Bhagwat & Sharma, 2007) .

The background of the study highlighted several benefits derivable from Information and Communication Technology which affirms that Information and Communication Technology is germane to the growth and development of a business in any economy. Despite the number of identified benefits from the use of Information and Communication Technology to improve SMEs performance, several literatures (Apulu & Lathan, 2009) and others, still report that the adoption level is relatively low in Africa when compared to developed countries. (Ghobakhloo et al., 2012) also cited that prior IT literature has shown that only a small number of studies focused on the adoption and use of IT in SMEs (Grandon, 2004). Moreover, it has been found that in spite of the exponential growth of IT within SMEs, the rate of IT adoption by these businesses has remained relatively low (Online et al., 2005), and large organizations have noticeably profited more than SMEs in both IT-enabled improved sales and costs savings (Riquelme, 2002). The increase in the use of Information and Communication Technology (ICT) in organisations has significantly changed the way organisations operate and communicate. ICT plays a crucial role in the present knowledge-based economies and is applied in a wide range of areas in several organisations. The revolutions in the use of ICT have profound implications for economic and social development and have pervaded every aspect of human life (Shanker, 2008). Many organisations tend to rely heavily on ICT solutions in order to develop and grow their businesses (Asgarkhani & Young, 2010). According to (Spanos et al., n.d.), ICT can enhance, coordinate, and control the operations of many organisations and can also increase the use of management systems such as Customer Relationship Management (CRM) amongst others. Therefore, ICT is regarded as a vital tool for the efficient administration of any organisation and in the delivery of services to its clients. Ashrafi and Murtaza (2008) state that organisations around the globe are now utilising ICT not just for cutting

costs and improving efficiency, but also for providing better customer service. Similarly, (Buhalis & Deimezi, n.d.), states that businesses can now interact more efficiently with the use of ICT. Sharing and disseminating information is a key role played by ICT which also assists in increasing the supply of information within organisations. According to (Spanos et al., n.d.), buyers and sellers can share information and transfer goods across national borders with the use of ICT, which helps to increase access to global supply chains. This brings about openness and transparency in organisations (Dreyer et al., 2006). (Shanker, 2008) further states that the use of ICT in many organisations has assisted in reducing transactional cost, overcoming the constraints of distance by cutting across geographic boundaries thus helping to improve coordination of activities within organisations. (Isabel Jiménez-Zarco et al., 2006) also added that ICT plays an important role in acquiring, creating, and managing knowledge as it enables the diffusion of organisational data that can be crucial for effective decision making and control at all levels. Likewise, ICT helps in organisational planning and improves organisational flexibility.

1.2 Research Justification and Why Nigeria

This research evolved because of the researcher's discontent from private business experience, which shows that there is low level of development amongst SMEs in Nigeria, particularly Agric-SMEs, since many of them still operate and manage their businesses using traditionally based approaches rather than adopting and using modern technologies. Several weaknesses were identified in the research area which include the lack of a detailed report that identifies key factors affecting ICT adoption and use in Nigerian SMEs, factors that inhibits successful adopters from effectively utilising and benefiting from ICT use, and realising the influence, impact of training and innovation on knowledge creation.

1.2.1 Why Study ICT Adoption by Agric-SMEs on Knowledge Creation in Nigeria?

The adoption of Information and Communication Technology (ICT) tools in Nigeria has sparked a revolution in business practices. However, the widespread use of ICT by Small and Medium Enterprises (SMEs) in organizational operations and business practises remains abysmally low, slowing socioeconomic growth and sustainable development. Therefore, the main objective of this study is to identify, highlight and analyse the challenges affecting the adoption of ICTs by SMEs, especially Agric-SMEs in Nigeria.

The term ICT – Information Communications and Technology refers to technologies that relate to collecting, storing, processing and transmitting information. Therefore, ICT can be referred to as a tool used by organizations to efficiently administer and deliver services to its various clients (Damian Nyakuma et al., 2016). The study by (Ashrafi & Murtaza, 2008a), demonstrate that firms around the world adopt ICT not only for efficiency improvement and cost reduction but also for improved customer service delivery. (Buhalis & Deimezi, n.d.), showed that ICT can ensure the efficient interaction and cohesion of business operations. Furthermore, ICT can play key roles in the disseminating of information and sharing which ultimately increases

information supply within organizations. The findings of (Spanos et al., 200 states that ICT usage spurs the sharing of information and goods transfer carried out by buyers and sellers across international borders, which help global supply chains increment. Organization transparency and openness are ensured by this, (Dreyer et al., 2006). Consequently, many organizations use ICT in transaction cost reduction, averting distance constraints by cutting across different international boundaries thus helping in the improvement of various organizations activities, (Isabel Jiménez-Zarco et al., 2006), Currently, the availability of modern ICTs ranging from mobile phones, software, and applications associated such as "VOIP" (Voice over Internet Protocol) are available in many countries and represent the most rapid growth is the use of mobile phone. (Apulu & Lathan, 2009). Hence, the adoption and utilization of ICT has had tremendous organizations benefits.

Organizations including SMEs are undergoing extraordinary changes now and are searching for channels to stand out in order to improve their competitive advantage through innovation, training and knowledge creation. Therefore, Small and Medium Sized Enterprises (SMEs) in Nigeria are searching relentlessly for ways to create and deliver the desired values to customers through ICT usage. Organization's strategies and coordination have been shaped with the effective use and support of ICT. (Hui et al., 2017). According to (Kyobe, 2004) the effective adoption and ICT utilization be the provision of competitive advantage to organizations with use of ICT resources mainly software and hardware. Strategic gains used by modern organizations to improve and strengthen key areas are aided by the adoption of ICT (Golding et al., 2008a). In addition, SMEs" performance are improved by the adoption of ICT; however, despite the high increase in growth rate diffusion of digital technologies globally in recent years, ICT usage within SMEs remains low especially in Nigeria (Shah Alam, n.d.). Hence, the combination of problems relating to habits and attitudes caused by environmental factors, government instability and frequent government policy changes contribute to Nigerian SMEs performing below expectations (Bright et al., n.d.). United States is way ahead in terms of adoption of ICT compared to developing countries like Nigeria (Q. Zhu et al., 2007). There are quite a handful of contributions towards sustainable economic development harnessed by SMEs; however, the challenges Nigerian SMEs experience have negative effect on their ability to adopt and utilize of ICT applications (Apulu & O. Ige, 2011).

Several studies relating to ICT adoption by SMEs, (*ONGORI*, n.d.), still advocates on the need to further research on other key factors that hinder the effective adoption of ICT in different contexts around the globe. However, the area of ICT adoption by SMEs is still under-researched especially in developing countries and Nigeria is no exception. (Bartholomew et al., 2009), state that the benefits brought about by the emergence of ICT applications have not been fully explored in the developing economies of the world. Therefore, more emphasis needs to be placed on the adoption of ICT by SMEs based on its potential to improve competitiveness and business performance particularly in the face of the rapidly changing and globalized world. As a result of the above-mentioned issues on the adoption of ICT in Nigeria, this study aims to identify and analyse the factors responsible for ICT adoption and use on knowledge creation among SMEs in Nigeria. It will further analyse the extent to which the adoption of ICT can be improved among Nigerian Agric-SMEs.

The growing reliance of organizations on ICT has become paramount and important in the drive for change in recent times (Elhendawi, n.d.). ICT has been defined as a technology which

facilitates communication and assists in capturing, processing, and transmitting of information electronically. Hence ICT can be described as "the array of primarily digital technologies designed to collect, organize, store, process and communicate information within and outside an organization" (A. Aruwa & Gugong, 2012). Consequently, ICT is now typically considered as an enabler of organizational change (Davenport, 1993). The term ICT in business is often divided into two types of product namely traditional computer-based technologies and sophisticated (advanced or more recent) digital communication technologies that allow people and organizations to communicate and share digital information (Apulu, I and Latham. A. 2011). Current technology assist businesses to share and disseminate relevant information amongst users concurrently, achieve higher levels of interaction and functionality customization (Dai, W. 2010). With the help of current technologies, operational cost of organizations is reduced; customer satisfaction levels are enhanced, thereby improving managers decision making and the quality of information they use. (Apulu et al., 2011) opine that the rapid development in ICT has significantly influence the normal way of doing businesses in many organizations. (Jutla et al., 2002) posits that ICT has created a digital revolution which has made the world seemingly smaller thereby improving its potential for global socioeconomic growth.

1.2.2 Why focus on a Developing Economy like Nigeria?

SMEs constitute essential ingredients in the lubrication and development of any economy. SMEs play a major role in economic growth in the Organisation for economic cooperation and development (OECD) area, providing the source for most new jobs, (E. M. Agwu & Murray, 2015) . Over 95% of OECD enterprises are SMEs, which account for 60%-70% of employment in most countries (Bennett, 2006). As larger firms downsize and outsource more functions, the weight of SMEs in the economy is increasing. In addition, productivity, growth and consequently economic growth is strongly influenced by the competition inherent in the birth and death, entry and exit of smaller firms. This process involves high job turnover rates and churning in labour markets which is an important part of the competitive process and structural change. Less than one-half of small start-ups survive for more than five years, and only a fraction develops into the core group of high-performance firms which drive industrial innovation and performance. This underscores the need for governments to reform their policies and initiate conditions that have a bearing on firm creation and expansion, with a view to optimizing the contributions that these firms can make to growth.

In Nigeria, the contribution of SMEs has been recognized as main sustenance of the economy because of their capacity in enhancing the economic output and enhances human welfare. The problems bedevilling the SMEs in Nigeria are multi-faceted. (Kehinde Oluwafemi et al., n.d.). Empirical report shows that an estimate of about 70% of the industrial employment is held by SMEs and more than 50% of the Gross Domestic Product is SMEs generated (Fatoki & Odeyemi, 2010). Given the seminal role of SMEs to the economy of Nigeria, various regimes of government since independence in the 1960s, have focused on various programmes and spent immense amount of money with the primary goal of developing this sector, these have however

not yielded any significant results as evident in the present state of the SMEs in the country. (Mambula, 1997) SMEs are generally very susceptible and only a certain number of them manage to survive due to several factors such as difficulty in accessing credits from banks and other financial institutions; harsh economic conditions which results from unstable government policies; gross undercapitalisation, inadequacies resulting from the highly dilapidated state of Infrastructural facilities; astronomically high operating costs; lack of transparency and corruption; and the lack of interest and lasting support for the SMEs sector by government authorities, to mention a few (Taiwo, n.d.).The situation is equally prevalent in the Nigerian economy where commercial banks often prefer to lend to government, trade in foreign exchange (FOREX), and financing buying and selling. A banker in Nigeria aptly put such preferences that "the banks are not a charity; hence why should they take risks with SMEs when they can make good money elsewhere". These preferences and tendencies of the commercial banks have worsened the lack of financing for SMEs which has also affected their economic growth. The Financial systems in every country play a key role in the development and growth of the economy, although the ability to play this role effectively and efficiently largely depends on the degree of human capital development and the financial system. The traditional commercial banks which are key players in the financial systems of nearly every economy, have the potential to pull financial resources together to meet the credit needs of SMEs, however, there is still a huge gap between supply capabilities of the banks and the demanding needs of SMEs. In Nigeria, the situation is even more prevalent as noted by (Olutunla & Obamuyi, 2008b). SMEs in Nigeria have not performed creditably well and hence have not played the expected vital and vibrant role in the economic growth and development of Nigeria. However, the role played by SMEs, notwithstanding their development, is everywhere constrained by inadequate funding, infrastructural deficit, innovation, technological knowhow, poor management etc. So, there is therefore the need to address these underlying and critical issues and challenges facing Agric-SMEs in Nigeria.

Entrepreneurial opportunities abound in Nigeria's agricultural sector which need to be harnessed, utilized and maximized for sustainable economic growth. This study identifies the opportunities in agripreneurship and the role of green entrepreneurship in achieving sustainable economic growth in Nigeria. Climate change, global warming and other related environmental challenges presently pose as a threat to sustainable economic growth in Nigeria's agricultural sector. However, these environmental challenges have also created opportunities for green entrepreneurship in Nigeria. (Otache, 2017)**.** Over the years, the population growth across the

globe increased the production and consumption of goods and services leading to the depletion of the natural resources and causing severe damage to the environment. Some of the serious repercussions of environmental damages include global warming, increased environmental pollution and decline in the flora and fauna (Chen and Chai, 2010). Various countries in the world realized the threats to the environment and began working hard to minimize the harmful effects of business activities on the environment. The realization, concern and conscious actions towards the environment led to the emergence of sustainable development which emphasizes the need to promote sustainability. (Otache, 2017)

1.2.3 The Nigerian Economy and the Agriculture Sector.

Nigeria has the potential to be among the 20 largest economies in the world by 2025 (Sanusi, 2003). As of 2011, the economy is ranked 30th in the world in terms of purchasing power parity. It is the sixth largest producer of petroleum in the world, the eighth largest exporter and has the 10th largest proven reserves, while the revenues made from oil provide the highest source of income for Nigeria. Nigeria has the largest economy in the West African region and the third largest economy in Africa. In 2000, Nigeria made over 98 per cent of its earnings from export, about 83 per cent from federal government revenue and 70 per cent of Nigeria's GDP was accounted for by oil and gas export (CBN Report, 2005). Despite the country's vast oil wealth, the majority of Nigerians are poor with 71 per cent of the population living on less than one dollar a day and 92 per cent on less than two dollars a day. Although the country is rich in natural resources, its economy cannot meet the basic needs of the people. Such disparity between the growth of the GDP and increasing poverty is indicative of a twisted distribution of Nigeria's wealth. The 2007 United Nations Human Development Index ranks Nigeria 158 out of 177 countries; this is a significant decrease in its human development rank of 151 in 2004. About 64 per cent of households in Nigeria consider themselves to be poor, while 32 per cent of households say that their economic situation has worsened over a period of one year (Kale, 2012). In the 1960s, Nigeria's agricultural sector was a beacon of hope for its contribution to local production, foreign exchange earnings and employment opportunities. Almost 30 years later, the sector still played this pivotal role, although the oil sector usurped its position as the leading foreign exchange earner. The oil boom led to its decline in terms of its contribution to economic growth. Agriculture's share in the nation's GDP was 60 per cent at the time of independence but by the turn of the 21st century, it had dropped to 26 per cent. Some of the other factors that led to the decline of the agricultural sector in Nigeria were inappropriate and unstable economic policies, and the almost complete neglect of the sector at national and regional levels. Nigeria's agriculture has also suffered from years of corruption,

mismanagement, and poorly designed programs and policies. Nigeria is no longer a leading exporter of cocoa, groundnuts (peanuts), rubber and palm oil. Cocoa production, mostly from obsolete varieties and overage trees, is stagnant at around 180,000 tons annually but 25 years ago, it was 300,000 tons. Once the largest producer of poultry in Africa, commercial poultry output has declined from 40 million birds per annum to 18 million birds per annum. (Ajayi. B, 2016).

In order to produce a report that will address these challenges and setbacks, the following **objectives** are outline below.

1.3 Research Objectives

1. To analyse and determine the benefits and effects of ICT adoption and use on knowledge creation by Agric-SMEs in Nigeria.

2. To consider the drivers and inhibitors hindering ICT adoption and use by Agric-SMEs in Nigeria.
3. To investigate the effects of ICT adoption and use on knowledge creation by Agric-SMEs, in skills acquisition and organisation learning (OL).

4. To examine the influence of knowledge creation practices on performance and productivity in Nigeria Agric-SMEs.

1.4 Research Questions

1. To what extent does ICT adoption and use on knowledge creation benefit Agric-SMEs in Nigeria?

2. What are the drivers and inhibitors to ICT adoption and use in Agric-SMEs in Nigeria?

3. To what extent does knowledge creation practices and skills acquisition impact on the performance Agric-SMEs in Nigeria?

4. To what extent does knowledge creation impact on efficiency and productivity in Nigeria Agric-SMEs?

1.5 Statement of Research Problem

Previous research in the western context have however revealed that many factors have contributed to a low or high level of Information and Communication Technology adoption for

improved performance of SMEs. According to (Ghobakhloo et al., 2011), in looking for reasons for such differences in IT adoption in SMEs, unique characteristics of these businesses can be highlighted. SMEs generally have limited access to knowledge and market information and suffer from globalization constraint (Madrid-Guijarro et al., 2009). In addition, management techniques such as financial analysis, forecasting and project management are rarely used by SMEs (Dibrell et al., 2008b). A tendency to employ generalists rather than specialists, reliance on short-term planning, informal and dynamic strategies, and decision-making process, plus an unwillingness to develop the use of standard operating procedures are other distinctive characteristics of SMEs (L Thong et al., 1996). However, it is the restricted resources controlled by SMEs, commonly referred to as resource poverty ((Thong Omega, n.d.)) that is the major differentiator between SMEs and large organizations. Compared with large organizations, SMEs are relatively weaker at various levels (i.e., organizational, managerial, technological, individual, and environmental). Therefore, IT adoption and usage in SMEs is at a disadvantage (Kannabiran, 2012). Considering the low level of ICT adoption (Apulu & Lathan, 2009) in Sub-Saharan Africa and Nigeria in particular and environmental, socio-economic, and demographic differences that exist in the composition of SMEs across regions. It is therefore imperative to investigate the effects of ICT adoption and use by SMEs, so as to gain an insight into barriers and various factors that will influence knowledge creation in a knowledge economy (KE).

Over the past few decades, there have been noticeable differences in the business practices and strategies of organizations both large and small, the world over. One key area is the use of novel Information and Communications Technologies (ICT) ranging (from mobile and social solutions, cloud computing, online buying and selling, data analytics, and many more), to offer a new range of opportunities in the knowledge economy. Available evidence shows this has greatly provided good source of competitive advantage by businesses especially small and medium enterprises (SMEs) in different sectors across different context. Firms that effectively adopt ICT are characterized by a high intensity of utilization of these technologies to improve business operations, invent new business models, sharpen business intelligence, and engage with customers and stakeholders (Apulu, 2012a). This is therefore the idea of knowledge creation which is a key element of organizational learning (OL). (Hubber, 1991) state, OL consists of knowledge acquisition, information distribution, information interpretation, and organizational memory. Interestingly, these are the reasons for ICT use by organizations as they design and develop ICTs which offer opportunities for enhancing strategic learning (Thomas et al., 2001). Research has shown that firms overcome learning traps by employing emerging, novel, and pioneering technologies, but how learning is undertaken through these technologies is unknown (Small & Irvine, 2006).

In addition, earlier studies on OL have expressed concerns about the lack of empirical research with respect to small- and medium-sized enterprises (SMEs) when analysing OL (Chaston et al., n.d.). Learning in organizations is closely related to knowledge creation and OL should be concerned with new knowledge acquisition and creation (Crossan et al., 1999). OL is gaining increasing mention in the literature as a mechanism for assisting SME survival (Chaston et al., 1999). Due to their specificities, SMEs show a particular behaviour with regard to the creation, development, sharing, protection and transmission of knowledge (Basly, 2007b). Firm size may influence knowledge acquisition (Yli-Renko et al., 2001), in the sense that an organization with several hundred employees will naturally have a more difficult time in sharing knowledge

among individuals and groups than a firm with only a few employees (Bontis et al., 2002). Although a lot of research on OL describes the application within large firms (Chaston et al., 1999), the focus here, is on SMEs. Small businesses are fully aware of the need for OL (Chaston et al., 1999), they are likely to be knowledge generators and their organic structure and culture may foster knowledge innovations. In short, the literature shows that different dimensions of OL are negatively correlated to firm size, indicating that OL is higher and more important for SMEs (Templeton et al., 2002). Following the conceptualization of OL presented by (Hubber, 1991), the focus is on knowledge creation as an articulated construct for the OL concept. The theory of organizational knowledge creation proposes that new knowledge is created through processes of conversion between tacit and explicit knowledge (Erden et al., 2008). Through the conversion process, tacit and explicit knowledge expands in both quality and quantity (Nonaka et al., n.d.-a), thus improving corporate performance. To explore knowledge creation, this study adopts (Hoe, 2006) SECI (socialization, externalization, combination, internalization) model. This model seems to have been accepted by the academic community as universally valid in conception and in application (Glisby & Holden, 2003). As a result, authors from diverse research areas such as OL, new product development, and ICT, have used this model to conduct their investigations (S. W. Chou & He, 2004). In both developed and developing economies, SMEs are of great importance for economic growth, employment, and wealth creation. For example, in Europe, SMEs represent around 99% of the total number of firms (European Commission, 2004). This is about the same in Africa with SMEs making up the larger share of businesses and Nigeria is no exception. The limited amount of research about ICT adoption in SMEs has been attributed to the fact that SMEs started to use ICTs relatively recent (Caldeira & Ward, 2002a). ICT investment in SMEs, especially that related to Internet technologies, continues to grow because these technologies are being applied more and more to conducting business activities within the firm's boundaries and with external business agents—customers, suppliers, business partners, etc. (Lopez-Nicolas & Soto-Acosta, 2010). ICT seem to be helping SMEs in knowledge creation by the provision of tools that are low cost, easy to use, and very effective. As a result, researchers, and practitioners face pressure to answer how ICT has to be implemented in SMEs to outperform traditional work practices. In this sense, learning and unlearning are important for change and innovation in organizations (Blaalid, n.d.) because, as suggested by (Lopez-Nicolas & Molina-Castillo, 2008), the better a firm understands the process of creating new knowledge and discarding obsolete knowledge, the more likely the firm will be to develop innovation behaviour. OL in the form of accumulated knowledge from past experiences and from stakeholders (customers, suppliers, business partners, etc.) may be critical for how processes should be re-designed around ICT by fostering the learning of effective practices and the unlearning of the obsolete ones (Starbuck & Stern, n.d.). Moreover, having a proper ICT infrastructure can facilitate knowledge creation. However, it does not necessarily mean that this knowledge is created and transformed into OL, since knowledge will not necessarily circulate freely firm-wide just because accurate ICT to support such circulation is available (Seely Brown, n.d.). Actual ICT use may be an important link to OL. This study therefore distinguishes between ICT adoption and ICT use. The former represents the implementation of ICTs to support business operations and decision making, while the latter considers the different business uses that ICTs can adopt – such areas as: informative, communicative and workflow dynamics.

So, on the one hand, several factors have been identified as preventing SMEs adopting knowledge creation practices and on the other hand, arguments abound to show ICTs are

weakening the weight of these factors, reducing the human and financial barriers that hinder their adoption. Following on from this, the main aim of this study, therefore, is to investigate further the effect of ICT adoption and ICT use on fostering knowledge creation in SMEs. This study aims to contribute to the body of knowledge in the field of knowledge creation in SMEs, particularly, Agri-SMEs, using ICT by investigating critical areas relevant to this development.

A summary of the findings from previous studies indicates that, research into ICT adoption and use by SMEs needs to:

- account for the complex network and interplay of the varying interpersonal relationships which can influence the decisions of small firm owner-managers.
- recognize the characteristics of the relationships among owner-managers, employees, family and various external parties (such as trust and the level of dependency).
- Effectively account for the influence of the various technological sources of influence;
- treat small firm decision-makers as heterogeneous individuals, rather than assuming they are a set of adoption factors which apply to every small firm.

1.6. Research Scope

The scope of this research focuses on Agric-Small and medium scale enterprises (ASMEs) in Nigeria. The research investigates and analyses the effects of Information Communication Technology (ICT) adoption and use on knowledge creation by Agricultural SMEs in Nigeria. The research also considers the drivers and inhibitors hindering ICT adoption and use by SMEs in Nigeria on organisational learning (OL), performance, productivity, and processes. This research concentrates on Agric business related SMEs, since they play a significant and vital role in the Nigerian economy, also significantly contribute to the country's non-oil sector and industrial development. Other research that are like this have been conducted in countries like, Ghana, South Africa, Kenya, Botswana, Rwanda, and Cameroun.

1.7 Intended Research Contributions and Motivations

This research evolved as a result of the researcher's discontent from experiences which shows that there is still low level of human capital development and capacity building amongst SMEs and Agri-SMEs in Nigeria, since many of them still operate using traditionally based approaches rather than adopting modern technologies. Several weaknesses have also been identified in this research area which include the lack of a detailed reports that identifies key factors militating against ICT adoption and knowledge creation policies and strategies in Nigerian SMEs, factors that inhibit successful adopters from effectively utilising ICT, and also factors that affect ICT users from further adopting sophisticated ICT applications and systems.

In order to produce a detailed report, the following objectives were proposed: to analyse and determine the benefits and impact of ICT adoption and use on knowledge creation by Agric-SMEs in Nigeria; to consider drivers and inhibitors militating against ICT adoption and use by Agric-SMEs in Nigeria; to investigate the effects of ICT adoption and use on knowledge

creation by Agric-SMEs in skills acquisitions and organisational learning, to recommend success strategies that would stimulate and increase the adoption of ICT in Nigerian SMEs.

1.7.1 Theoretical Contributions

A systematic review of previous studies on ICT adoption and use shows the use of different models and theoretical perspectives with varying limitations. For example, using Technology-Organization-Environment (TOE) and IT impact literature as the guiding theoretical lenses, (Srivastava et al., 2006) examined the facilitators of ICT adoption and development and highlighted the importance of such factors as: national ICT infrastructure, the quality of national human capital, as well as national environment (institutional and macro-economic variables) as critical for realizing the benefits of ICT in improving national business competitiveness. (Jeon et al., 2006), used the innovation adoption approach in a related study. Similarly, (K. Zhu et al., 2006a) used the process of innovation diffusion to examine three assimilation stages for use of technology namely: initiation→adoption→routinization with emphasis on importance of factors such as competition, firm size, economic and regulatory environments, as well as level of technology readiness and integration. (Parker & Castleman, 2009a) mention that various theoretical frameworks underpin the understanding of IT adoption behaviour in an organization. Amongst them, are Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), Innovation Diffusion Theory (IDT), Technology Organization-Environment (T-O-E), Decision Maker-Technology-Organization-Environment, 'Rogers'- Diffusion of Innovation theory (DOI), as well as the Actor-network theory (ANT). Worthy of note however, is that there is no apparent agreement in the literature on or critical analysis of which theories (independently or in combination) best explain SMEs-ICT decisions especially when this is considered with knowledge creation. (Amidu et al., n.d.) noted that these commonly used theories, are largely based on deterministic, reductionist and dualist approaches, they fail to account for the complex socio-technical nature of SME adoption and use of technology.

Small and medium enterprises (SMEs) are regarded as the engine of growth of the world economy because they contribute to more than eighty per cent of a nation's economic growth and account for more than ninety per cent of the entire businesses (Offstein & Childers, n.d.). According to (Jagoda et al., 2010), SMEs play a significant role in creating employment opportunities in many countries across the globe. E-commerce/ICT has become a medium by which organisations particularly SMEs may gain competitive advantage in the global environment. E-commerce platforms allow SMEs to overcome their limitations by affording them the opportunity to extend beyond their geographical reach and secure new market opportunities (Jagoda 2010). Despite the many benefits ICT offers, SMEs in developing countries are still far away from achieving e-commerce success (Rahayu & Day, 2017). According to (Idris et al., 2017a) 'Literature shows that there are fewer research studies on ICT

adoption/knowledge creation in developing countries compared to their developed counterparts. In addition, those that exist have mostly used innovation adoption theories that were designed in developed countries context. As a result, the understanding of what drives a sustainable e-commerce/ICT adoption amongst SMEs in developing countries is still limited'. In this study, there is the contention that a contributing factor is the lack of theoretical framework that may explain the contextual characteristics that are particular to SMEs in each part of the world. For instance, there are some known important contextual characteristics that affect SMEs in developing countries such as poor infrastructure, lack of government policy and cultural issues that the prevailing models do not capture. This research aims to critically analyse prevailing innovation adoption theoretical models with the view of understanding the extent of their appropriateness for understanding SMEs ICT adoption and knowledge creation in developing countries. Survey of existing literature shows that there are certain models that dominate SMEs ICT adoption research. These models are Technology Acceptance Model (TAM); Unified Theory of Acceptance and Use of Technology (UTAUT); Diffusion of Innovation Theory (DOI); Technology Organisation Environment (TOE); Theory of Planned Behaviour (TPB); Resource Based Theory (RBT). After the evaluation of the aforementioned theories, the integration of frameworks is the way forward for understanding the contextual issues associated with ICT adoption and knowledge creation in developing countries SMEs. This research critically evaluates the dominant models to understand their appropriateness in explaining SMEs-ICT adoption and knowledge creation in developing countries.

(a)Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) has underpinned many studies related to Information systems (IS) adoption (Nyoro et al., 2015). TAM was established by (Davis, 1989) to describe user adoption of new technology innovation in organisations. Davis' TAM model posits that perceived usefulness (PU) and perceived ease of use (PEOU) are the two most important determinants of technology adoption. Perceived usefulness is defined in the model as the degree to which a person is certain that the continuous usage of a particular system will enhance his or her job performance. While perceived ease of use is the extent to which a person believes that using a particular system would be free of physical and mental effort. Several IT researchers have used TAM as a model for understanding ICT adoption in organisations including SMEs. For example, TAM has been used as the model to assess the usefulness and ease of using e-commerce amongst SMEs in Malaysia, Singapore and Thailand manufacturing and service industries (Nezakati et al., 2012). TAM has also been used to investigate the effect of perceived system risk on the behavioural intention of tourism organizations in Algeria to use e- commerce. Both studies commended TAM to be a useful model to understand and explain a user's intention to adopt ICT.

Evidently, TAM is a key model that has been applied in much SME research for explaining the use, behaviour, and attitude to ICT adoption (Nezakati et al. 2012). However, despite the model's influential role in information systems research including ICT adoption, the model has several shortcomings. According to (Nistor et al., 2014), TAM primarily focuses on perceived usefulness as the most acceptance indicator without considering the actual use of the technology. This is problematic because Nistor et al. (2014), suggest that there was no

significant relationship between a person's expressed intention and actual use behaviour. Therefore, it is equally important to study actual use of technology rather than just perceived use, which TAM currently offers. (Parker & Castleman, 2009b) also observed that TAM is not suitable for understanding ICT adoption in SMEs on its own, as it does not take the contextual factors of SMEs into account. Thus, one might support Parker & Castleman (2009) assertion because SMEs in developing countries have other complex issues such as infrastructural and social issues rather than just their behavioural intentions.

(b) Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model is an extension of Technology Acceptance Model (TAM) introduced by (Venkatesh et al., 2003) to bring together alternative view on users and innovation acceptance. The UTAUT model has four major constructs such as performance expectancy, effort expectancy, social influences and facilitating conditions. Performance expectancy according to the model is the degree to which an individual believes that the use of a system will translate into increases in work performance. Effort expectancy is the extent to which a system is perceived to be easy to use. Social influence refers to the extent to which individuals perceive that influential people believe they should use a new system. Facilitating conditions refers to the availability of infrastructure to support the use of a system. These four constructs are moderated by gender, age, experience, and voluntariness of use. Venkatesh et al. (2003) argued that examining each of these constructs in the real world allows researchers and practitioners to assess a person's intention to use a specific system.

UTAUT has been applied or modified to understand ICT adoption in developing countries context. For instance, (Ndayizigamiye, 2013) used UTAUT to explore the determinant of ICT adoption in South Africa using a sample of 180 Small, Medium and Micro Enterprises (SMMEs). The author's finding revealed that social influence, effort expectance and performance expectancy are determinant of ICT adoption within the selected SMMEs whereas the facilitating conditions did not influence the decisions of ICT adoption. UTAUT model has been commended by various scholars for its ability to explain more than 70% of technology acceptance behaviour compared to other models that explain as little as 40% and its ability to determine the acceptance of impending new technology.

Even though the UTAUT model has been well received by many researchers (like its predecessor TAM), several shortcomings exist. Firstly, behavioural intention has a weak predictive and explanatory power to deal with uncertainties and unanticipated events between the times the intention is formed and when the behaviour is performed (Venkatesh & Bala, 2008). Another limitation is that behavioural intention is not a reflection of a person's internal belief and does not represent the external factors that may affect the performance of behaviour. As a result, the UTAUT model does not capture the various external and internal stimuli that alter intentions overtime (Venkatesh et al. 2008).

(c) Diffusion of Innovation Theory (DOI)

The Diffusion of Innovation Theory was introduced by (Rogers, n.d.) to explain the rate and stages of innovation adoption. According to DOI theory, diffusion is the way by which an

innovation is communicated through certain channel overtime in a particular social system. 'Rogers' DOI theory suggests that an individual's decision about an innovation is not an immediate act but a process that occurs over time, consisting of a series of actions. These innovation processes are knowledge, persuasion, decision, implementation, and confirmation. According to Rogers (1995), Knowledge arises when an individual is exposed to an innovation and able to understand it. Persuasion happens when individuals form favourable or unfavourable attitudes towards an innovation. Decision is made when individuals engage in activities that lead to acceptance or rejection of an innovation. Implementation takes place when individuals put innovation into use. The theory further posits that the rate of adoption is impacted by five attributes namely, relative advantage; complexity; compatibility; observability; and trial ability. In the DOI model also categorises adopters into, innovators, early adopters, early majority, late majority and laggards. In the DOI framework, innovators are those who want to be the first to try an innovation. Early adopters represent opinion leaders. Early majority are people who rarely lead. Late are those who are sceptical about adopting innovation. Laggards are conservative people who are bounded by their traditions.

DOI theory is one of the most cited diffusion theories in SME- ICT adoption literature even though the model did not address ICT directly (Parker & Castleman, 2009c). It has been applied in a number of SME adoption studies. For example, (Poorangi et al., 2013) used the theory to explore and explain the different dimensions of the adoption of ICT amongst SMEs in Malaysia. The authors found a majority of DOI adoption factors (relative advantage, compatibility, observability, and trial ability) were influential in ICT adoption. Furthermore, Poorangi et al. (2013) claimed that their findings were consistent with DOI postulation except for the fact that complexity does not significantly affect ICT adoption. Even though Rogers' DOI theory has been commended for its explanatory power and applied in some SMEs-ICT adoption studies such as (Moghavvemi et al., n.d.) it has also been subjected to criticism.

The DOI theory has also been criticised for not been able to address the issues and dynamic social setting in SMEs (Parker & Castleman, 2009). Similarly, Lawrence (2010) observed that 'DOI is a variance model and cannot adequately explain the contextual issues that are associated with ICT adoption in SMEs'. Therefore, Rogers' DOI theory on its own may not be sufficient to explain all the contextual issues such as limited resources and customers readiness associated with ICT adoption by SMEs in developing countries.

(d) Technology Organisation Environment (TOE)

The Technology Organisation Environment (TOE) framework was developed by Tornatzky and Fleischer (1990) to explain the factors that affects a firm's decision to adopt innovation. The framework posits that technological innovation in organisations is influenced by three factors specifically: the technological, the organisational and the external environment. Organisational factors consist of informal and formal methods, communication processes, and size of the organisation. The environmental factors comprise of characteristics such as government regulation market structure and technology infrastructure. Technological context encompasses availability and features of the technology.

TOE has been used in studies related to ecommerce adoption in SMEs. For instance, (Huy, 2012) drew upon the TOE framework to identify factors influencing ecommerce adoption in 926 Vietnamese SMEs. They found that lack of skilled personnel, scarcity of resources, communication barriers between SMEs and supporting groups, limited option for online

payment and cultural barrier with online shopping were the main factors influencing e-commerce adoption in Vietnam. Huy et al. (2012) commended the TOE framework as serving as a foundation for understanding the internal and external factors that could influence e-commerce adoption for all types of SMEs in Vietnam. One of the limitations of TOE in relation to SMEs in developing countries is that some of constructs in the adoption predictors are presumed to be more applicable to large organisations due to their affluence of resources. For this reason, TOE on its own is not sufficient in explaining the adoption of SMEs (Awa et al. 2012). Therefore, Awa et al. (2012) suggested that the integration of TOE and TAM would offer a richer theoretical lens for understanding the adoption of ICT by SMEs in developing countries. The same point was also echoed by (Gangwar et al., 2014) after conducting a critical literature review on TOE and TAM. Despite their suggestions it is not clear that the integration of both theories would be appropriate since both theories largely ignore the contextual issues of SMEs in developing countries.

(e) Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) is an extension of the Theory of Reasoned Action (TRA) that was established by (Ajzen, 2011). The theory posits that there are three constructs that can be used to predict intention to use an innovation. These constructs are perceived behavioural control, subjective norms, and attitude toward behaviour. The perceived behavioural control is described as the extent to which a person feels able to enact the behaviour. Subjective norms characterise a person own evaluation of social pressure to perform the target behaviour while attitude in the theory refer to a person overall evaluation of the behaviour. TPB has been applied or modified to understand ICT adoption in the context of developing countries. For example, (Uzoka et al., 2007) used the theory to investigate the behavioural factor that influences ICT adoption using Botswana as a case study. The authors found perceived advantages, accessibility, management support, internet and complexity, to have a major influence on ICT adoption decision, while perceived disadvantages and other facilitating conditions do not affect ICT/e-commerce adoption decision. Uzoka et al. (2007) noted that their findings tend to agree with the TPB. However, attitude seems to weigh more than subjective norm and perceived behavioural control.

According to Parker and Castleman (2009) the strength of TPB is that it measures and predicts actions in the immediate future. However, the theory has been criticised for its inability to capture the complex interrelationships between the SME owner, government, agencies, customer and other stakeholders (S & C, 2011). Parker and Castleman (2009) have also argued that TPB largely ignore the contextual nature of SMEs. For that reason, Parker and Castleman (2009) suggested that researcher seeking to explore e-commerce adoption in SME will requires explanatory theory rather than individualist prediction that TPB currently offers. It is observed that, 'TPB only focuses on user behaviour and largely ignores other factors that shape SMEs e-commerce adoption such as resources, customer readiness and infrastructure'. One might assume that TPB on its own cannot be used to understand ecommerce adoption in SMEs in developing countries (Idris et al., 2017b).

(f) Resource Based Theory (RBT)

The resource-based theory was introduced by (Barney, 2001) to explain how and why firms develop the capability to gain and sustain competitive advantage in its market and industry. RBT posits that in order for a firm to have a sustainable competitive advantage, the firm's resources must be valuable, inimitable, non-substitutable and non-transfer. According to (Ray, 2003), these resources can be gained internally, or firm can choose to exploit external resources. In the ICT adoption literature, RBT has been used to understand how businesses create value from IT assets and organisation skills. For instance, (K. Zhu et al., 2006b) used RBT to investigate causal relationships among strategic initiative, information technology related resources and e-business implementation process in 56 Chinese enterprises. The authors found that information sharing capabilities are intermediate and a transferable force that helps in translating information technology related organisational resources into the collaborative process capabilities. Zhao et al. (2008) further claimed that their study findings laid credence to RBT postulation. One important advantage of RBT is that it highlights the capabilities that any firm, as well as SMEs must possess in order to adopt ICT, which include tangible and intangible resources (Parker and Castleman, 2009). However, RBT's limitation is that it assumes resources are used to full capacity in all firms, which is frequently not the case for SMEs because they often lack resources, skills, and flexibility (Rivard et al. 2006). Given the nature of SMEs in developing countries, one could assume that RBT on its own may not capture the interplay that happens within them.

(g) The need for integration of theoretical framework

Table 1 Model's Characteristics

	TAM	UTAUT	DOI	TOE	TPB	RBT
Perceived usefulness	✓					
Perceived ease of use	✓		✓			
Perceived behavioural control					✓	
Subjective norms					✓	
Attitude toward behaviour					✓	
Performance Expectancy		✓				
Effort Expectancy		✓				
Social Influence		✓				
Facilitating Conditions		✓				
Technological resources				✓		✓
Size of organisation				✓		
Communication process				✓		
Slack				✓		
External technological infrastructure				✓		
Government regulation				✓		
Industry characteristics				✓		
Communication process				✓		
Financial resources						✓
Relative advantage			✓			
Compatibility			✓			
Trialability			✓			
Observability			✓			

A review of prior ICT adoption and use literatures by SMEs in both developed and developing countries is summarised and mapped in Table 1, (Idris et al., 2017c) , suggests that the prevalent theoretical models when used on their own do not provide a lens to explain the contextual issues of SMEs in developing countries. Moreover, it also appeared from the literature that there is no consensus which theory/model can sufficiently explain ICT adoption in developing countries by SMEs. Instead, the existing studies we looked at generally use only one or two of these models to formulate their research models. (Abdulhakeem et al, 2017).

More specifically, it was found out from the literature that TAM, UTAUT and TPB are deterministic models since they focus only on users and neglects the various interplay of other factors that shape ICT adoption and use amongst SMEs in developing countries. Literature also revealed that DOI, and RBT largely ignore the contextual issues of SMEs in developing countries. In contrast, the literature suggests that TOE framework may serve as a starting point for understanding this because it considers the organisational, technological, and environmental impediment (Ghobakhloo et al. 2011). This analysis is supported by (Sila & Dobni, 2012) assertion that a theoretical model for SMEs ICT adoption and use needs to consider factors that affect the tendency to use and adopt ecommerce, which is embedded in the technology, organisation, and environmental circumstance of a business.

However, one of the limitations of TOE highlighted by (Awa et al., 2012) is that it does not provide a lens for inspecting the nature of relationships and the complex social contexts in

which SME in developing countries make decisions. For this reason, one might suggest that an additional model could be combined with TOE to form a theoretical framework for this context. One such model is the Perceived E-readiness Model (PERM) developed by (Molla & Licker, 2005): although it is less commonly used. This model posits that a multi perspective of assessment of managerial, internal organisational and external contextual issues can provide meaningful predictors for ecommerce adoption in developing nations. PERM assumes that the interaction of all the perspectives create a more dynamic framework for understanding the unique environment of organisations in developing countries.

The PERM therefore could complement TOE by providing an explanation of the interplay and social structure in which SMEs in developing countries operates. Examination of the literature shows that a few studies have applied or modified PERM for SMEs ICT adoption. In addition, the model is often cited in research papers for theoretical purpose without actual application in studies.

There appears to be a synergy between PERM and TOE, because both of them advocate the consideration of technology, organisation, and environmental circumstances of an organisation as the major determining factors for ICT adoption. Unlike TOE, PERM does not consider each factor separately, but rather considers the interplay amongst various factors and captures changes that are relevant to organisations in developing countries. PERM therefore provides a useful lens to investigate SMEs adoption of ICT because it considers interaction and structural characteristics that affect ICT adoption and use in developing countries:

As asserted by (Idris, et al 2017), PERM captures an organisation's perception, comprehension, potential benefits, and risk of ICT, which are referred to in the model as innovation imperative attribute. Secondly, it encompasses the ICT knowledge and commitment of SMEs decision-making bodies, which is known as the managerial imperative attributes. Thirdly, it considers major organisational element, such as business infrastructure, business process and governance, which are known as the organisational imperative attributes (Molla and Licker, 2005). Fourthly, researchers applying PERM such as Tan et al. (2007) have used the model to distinguish between adopters and non-adopters of ICT in a developing country context. For this reason, (Idris, et al 2017) one might suggest that PERM could help researchers to identify various patterns of ICT adoption by SME in developing countries, leading to an understanding of why ecommerce adoption is successful in certain SMEs but not others. Despite the usefulness of PERM for understanding ICT adoption in developing countries, its main limitations are that it excludes important industry descriptors, such as sector and firm size, Tan et al. (2007), whereas this aspect has been covered by TOE. Therefore, integrating the theoretical models to understanding ICT adoption in developing countries SMEs allow TOE to act as the overarching model and PERM to be lens for contextualising the various interactions that take place inside and outside the SMEs. The rationale here is that understanding ICT adoption of developing countries SMEs requires models that are flexible enough to capture changes (Ghobakhloo et al. 2011: Huy et al. 2012).

Therefore, to explore and explain knowledge creation in SMEs following ICT adoption and use by Agro SMEs, this present study intends to adopt the Nonaka and Takeuchi' SECI (socialization, externalization, combination, internalization) model, (Nezafati et al., 2009) which seems to have been accepted by the academic community as universally valid in conception and in application This model seems to be about the only one that combines the

aspects of ICT adoption and use, with clear links to Organisational Learning (OL and knowledge creation (KC). This model is made up of four intertwined activity modes for knowledge creation: Socialization (S, Externalization (E, Combination (C, and Internalization (I.

-- Socialization seeks to share tacit knowledge among individuals by converting it into new tacit knowledge. For example, mentoring and apprenticeships instruct tacitly through observation, imitation, and practice (H.-T. Chou et al., n.d.).
--**Externalization** codifies tacit knowledge into explicit concepts, as in writing instruction manuals.
-- **Combination** converts explicit knowledge into more systematic sets, for instance by integrating existing information extracted from databases and creating new knowledge (Chou et al., 2005).
-- Internalization is a process of embodying explicit knowledge into tacit knowledge through a series of iterations in which concepts become concrete and are ultimately absorbed as an integral belief or value. In all of these, OL takes place as individuals participate in the processes involving SECI model, since by doing so, their knowledge is shared, articulated, and made available to others (Marwick, 2001).
In today's competitive global economy characterised by knowledge acquisition, the concept of knowledge management has become increasingly prevalent in academic and business practises Knowledge creation is an important factor and remains a source of competitive advantage over knowledge management (Turk et al., 2015). (Salihu, n.d.), argues that today's economic environment is characterized by a high degree of turbulence due particularly to rapid technological changes and increased competition between companies. In such context, firms' survival is based on their capacity to successfully adapt their strategies in response to the environment's changes. Along this line, continuous innovation is the key to meeting changing customer needs and sustain competitive advantage (Drucker, 1995, (Turriago-Hoyos et al., 2016). Hence, in order to develop their innovation capabilities, firms have to invest more resources to constantly seek, create and exploit new knowledge that may allow them to build new ideas of products or services, production technology or procedure, marketing or organizational practices or either managerial strategy (Gunday et al., 2009; Skerlavaj et al., 2010). Indeed, as stated by Drucker (1993), in today's knowledge society, the main challenge for companies is to raise knowledge productivity. Furthermore, according to Wang and Wang (2012), the sharing of both explicit and tacit knowledge within companies is intrinsically associated to their innovation speed and quality. Drucker (1993) pointed out in addition that to innovate, companies have to generate new knowledge and to abandon obsolete ones. In this perspective, the relationship between knowledge creation and firm's innovation has been the focus of a numerous theoretical and empirical studies. The majority of these research concluded that knowledge creation and organisational learning are a fundamental predictor of innovation (Garcia-Morales et al., 2008; Miller and Morris, 1999; Nonaka, 1991; Nonaka and Takeuchi, 1995; Nonaka et al., 2006; (Sankowska, 2013); Wang and Wang, 2012). In particular, (li & Gao, 2003a) claimed that knowledge creating companies are the most successful companies. Through their investigations within industrial Japanese companies, they configured a knowledge conversion theory that explains how these companies achieve knowledge creation. The cornerstone of Nonaka (1991) and Nonaka and Takeuchi (1995)'s theory is the SECI model. Which is based on four modes of knowledge conversion.

'Today Organisational learning, Innovative capabilities, and the capability to create and utilize knowledge are the most important source of a firm's sustainable competitive advantage (Nonaka et al 1994) however, it seems that we are still far from understanding the process in

which an organization creates and utilizes knowledge. We need a new knowledge-based theory that differs 'in some fundamental way' (Nonaka & Toyama, 2003). It is asserted by these researchers that part of the difficulties in establishing a new theory is that management scholars and practitioners often fail to understand the essence of the knowledge-creating process. They conceptualize knowledge creation as a dialectical process, in which various contradictions are synthesized through dynamic interactions among individuals, the organization, and the environment (Nonaka & Toyama, 2002). Knowledge is created in the spiral that goes through seemingly antithetical concepts such as order and chaos, micro and macro, part and whole, mind and body, tacit and explicit, self and other, deduction and induction, and creativity and efficiency (Win et al., 2015). They argued that the key to understanding the knowledge-creating process is dialectic thinking and acting, which transcends and synthesizes such contradictions. 'Synthesis is not compromised, rather, it is the integration of opposing aspects through a dynamic process of dialogue and practice'. They also highlighted the need to understand that knowledge creation is a transcending process through which entities (individuals, groups, organizations, etc.) transcend the boundary of the old into a new self by acquiring new knowledge. In the process, new conceptual artefacts and structures for interaction are created, which provide possibilities as well as constrain the entities in consequent knowledge-creation cycles. Thus, the entities coexist with the environment because they are subject to environmental influence as much as the environment is influenced by the entities. This conceptualization of the interdependent connection between the entities and structure is like the Structuration theory. In today's knowledge-based economy, knowledge is recognized as a primary ingredient for sustaining companies' survival (Colombelli et al., 2013) and competitiveness (Nonaka et al., 2006). Sveiby (2000) pointed out pertinently that the wealth of the firms lies in their ability to benefit from knowledge. The same idea was advocated by Nonaka and Takeuchi (1995) who emphasized the role of knowledge creation process (KCP) as the key success factor of companies. The theoretical framework on this, is the basis on which to analyse knowledge creation within the firm, based on Nonaka (1991) and Nonaka and Takeuchi (1995)'s theory. In fact, Nonaka (1991) noted that the innovation capacity of Japanese companies such as Honda, Canon, Matsushita, and Sharp are based on "their unique approach to manage the creation of new knowledge". In the extension of Nonaka (1991)'s work and through their book 'Knowledge-Creating Company', Nonaka and Takeuchi (1995) claimed that knowledge can be created and shared through an interactive process including socialization, externalization, combination, and internalization (SECI). In this process, interactions take place in two levels: an interaction between actors that amplify knowledge from individual to groups and then to organization and an interaction between two types of knowledge (tacit and explicit).

1.8 The Concept of Knowledge Creation Process in Organisation

In 1995, Nonaka and Takeuchi proposed a model for creating knowledge in organizations. They argued that the success of many Japanese firms depends on their ability to create new organisational knowledge through a cyclic model of continuous interactions and transformation of tacit and explicit knowledge on three levels: individuals, groups, and organizations. This

occurs through the four processes of socialisation, externalisation, combination, and internalisation, as depicted in their SECI model.

(a) Why is SECI model selected?

This model has become widely accepted by scholars and widely quoted in approaches to classifying, creating, documenting, sharing, and transferring knowledge, from a (knowledge management) KM perspective, (Aurum et al., 2008).

Theoretical framework:

The model of creation of knowledge more popular and widely cited in Knowledge Management is probably the Nonaka and Takeuchi´s model (Nonaka 1994; Nonaka et. al. 1994; Nonaka & Takeuchi 1995; Nonaka et. al. 2000; Nonaka & Toyama 2003). Nonaka & Takeuchi (1995) explain it in their book "The Knowledge-creating company", i.e., how Japanese companies in the 80s were innovated by interacting the explicit and tacit knowledge. It pays close attention to the process of knowledge creation and begins by distinguishing two dimensions in this process of creation:

The epistemological dimension, to distinguish between tacit and explicit knowledge has its origin in Polanyi (1958, 1967). This classification is most used, and it has been further developed by Nelson & Winter (1982) in his evolutionary theory of the firm, and by other authors as Kogut & Zander (1992), Hedlund (1994), Grant (1996), Teece (1998) and Zack (1999), among others. Distinction between tacit and explicit knowledge should not be considered as two separate types of knowledge, but as two possible states of knowledge (Guía, 1999). Tacit knowledge is a "set of subjective perceptions, intuitions, rituals, insights that are difficult to express in a semantic, auditory or visual way" (Byosiere, 1999, 82) and therefore, it is difficult to formalize, communicate and share with others, and consequently to be copied. It is deeply rooted in an individual action and experience, as well as in ideals, values or emotions that a person takes (Nonaka, 1991; Nonaka & Takeuchi, 1995; Nonaka & Konno, 1998) and in his context. Explicit knowledge is structured knowledge, bit ambiguous and easy way to improve. It is objective, rational, theoretical, systematic, and can be transmitted more quickly, easily and with less cost. Competitive advantages based on it are easier and less hard to imitate. It is expressed in a formal and systematic language, written, auditory or visual way because it can be collected and shared as data, formulas, specifications, and manuals (Byosiere, 1999).

The ontological dimension recognizes different fields of knowledge, classifying knowledge as individual (it exists in the minds and physical abilities of individuals, it is specific in context and personal) and social (it lies in rules, procedures, routines, and norms that are often shared collectively at a group, organizational and interorganizational level) (Nonaka, 1994; Nonaka & Takeuchi, 1995). Individual knowledge is embodied in the person, so it is vital for creation (Nonaka & Takeuchi, 1995; Grant, 1996) and it can be the sustenance of collective knowledge (Von Krogh et al., 1994) because it incorporates into their common heritage skills such as oral, written and body language that facilitate its collective transmission. Collective knowledge is more than the sum of individual knowledge (Fiol & Lyles, 1985). It is shared by the members of an organization, and therefore it does not depend on any individual. It is critical for the survival of a firm (Spender, 1996). Currently there is no unanimity about the number of existing levels of knowledge, so we can find papers in which there are four different knowledge agents: individuals, groups, organization and the interorganizational domain - customers, suppliers, competitors- (Nonaka, 1991; Nonaka & Takeuchi, 1995) or just the first three (Crossan et al., 1999). The fourth level reflects relational learning, which encourages more fruitful development of this activity in terms of quality and quantity, because the relationship with suppliers, customers, competitors, associations, and other organizations allows the company and its members expand their vision, information base, their learning, and this leads ultimately to knowledge. But there is an agreement about each level to have tacit and explicit knowledge (Martínez & Ruíz, 2006).

Thus, knowledge is created when there is the transformation of tacit knowledge of individuals into explicit knowledge at group and organizational level (Nonaka, 1994; Nonaka & Takeuchi, 1995) and each member of such groups internalize it, making it tacit knowledge again. Then we analyze the process of transforming individual knowledge into organizational. This means knowledge conversion, which is part of the spiral of knowledge. It also considers four possible modes of conversion for the two

types of knowledge: socialization, externalization, combination and internalization.(Ramírez et al., 2011)

The SECI model: Nonaka and Takeuchi's Model of knowledge Creation Process

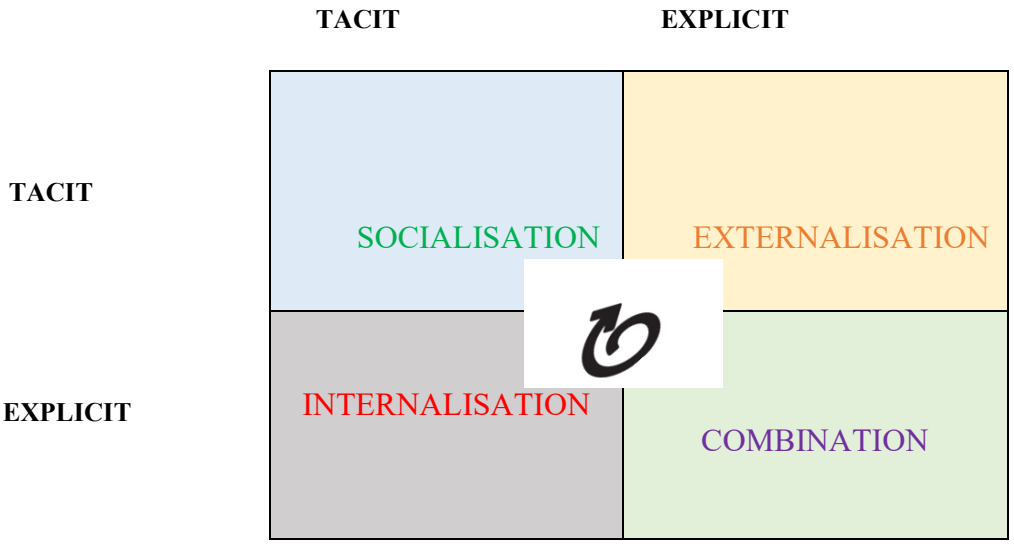

Figure 1 The SECI Model

Source: Nonaka & Takeuchi (1995, p.62). Fig.1

Socialization process converts tacit knowledge into new tacit knowledge through shared experience and this takes place through every social and cultural process linked to ongoing organizational activities (Martín-de-Castro et al., 2008). Socialisation typically occurs in a traditional apprenticeship rather than from written manuals or textbooks. Although it may also occur in informal social meetings outside of the workplace, where tacit knowledge such as world views, mental models and mutual trust can be created and shared and beyond organizational boundaries through the interaction with customers and suppliers (Nonaka et al., 2000).

Externalization process articulates tacit knowledge into explicit knowledge, which happens when the firm expresses formally its internal rules of functioning or when it explicitly sets organizational goals and is captured by writing it down or on computer. When tacit knowledge is made explicit, knowledge is crystallized thus allowing it to be shared by others and to become the basis of new knowledge (Nonaka et al., n.d.-b).

Combination process converts explicit knowledge into more systematic sets of explicit knowledge. Explicit knowledge is collected from inside or outside the organization and then combined, edited, or processed to form new knowledge while combination is the process of converting said explicit knowledge into more complex and systematic sets of explicit knowledge. The new explicit knowledge is then disseminated among the members of the organization and creative use of computerised communication networks and databases can facilitate this mode of knowledge conversion. When the auditor of a company collects information from throughout the organisation and puts it together in a context to make a financial report, that report is new knowledge in the sense that it synthesises knowledge from many different sources in one context (Nonaka et al., 2000).

Internalization process embodies explicit knowledge into tacit knowledge, suggesting that we internalize the explicit knowledge to our tacit knowledge. By internalising any creation of

explicit knowledge is shared throughout an organisation and converted into tacit knowledge by individuals. Internalisation is closely related to `learning by doing', for example, training programmes can help trainees to understand an organization and themselves or reading documents or manuals about their jobs and the organisation, trainees can internalise the explicit knowledge written in such documents to enrich their tacit knowledge base. This tacit knowledge accumulated at the individual level can then set off a new spiral of knowledge creation when it is shared with others through socialisation (Nonaka et al., 2000).

According to (Heisig et al., 2016), several literature reviews pointed out successful applications of SECI model within different business context in this sense. (Rodringues et al. 2006) approved the use of the SECI model across the IT sector. Besides, Martin-de-Castro et al. 2008) investigated the use of the SECI model in some knowledge intensive firms in USA and Spain. Examples of these firms were computer and electronic product manufacturing, internet publishing and broadcasting, telecommunications, and internet service providers, web search portals, and data processing services. In construction organisations, suggestions were made to support the use of SECI, the socialisation process in particular, and the vital implication of SECI to underlined mechanisms for innovation (Eliufoo, 2008).

Furthermore, using the SECI model in the multi-organisational projects was approved to create a shared multi organisational context to facilitate knowledge capture, sharing and value creation (Rice and Rice, 2005). Also, SECI has been used within Cuban higher education system and as a road-mapping technique for technology-enhanced professional training (Kamtsiou et al., 2006.

From the above discussion, it has been noted that there are considerable empirical studies conducted to prove the validly of SECI in different kinds of organisations or sectors. However, as far as the researcher is aware, no studies have used this model in Agric-Business or investigated the validity of implementing this model in Agric-SMEs.

1.9 Structure of The Research/Thesis

Chapter 1 covers the introduction of the research, background of the study and has presented the research aim and justification, which is aligned with the research topic. This chapter has also put forward the research objectives, research questions and statement of the research problems and provides a background to the intended research theories and contributions.

Chapter 2 focuses on the review of related literatures and discuss some important aspects of the research topic in broad perspective not limited to the context-Nigeria, but also about previous research studies on ICT adoption and use in relation to knowledge creation. It also considers research studies on SMEs and provides background information on the adoption and use of ICT by Agric-SMEs.

Chapter 3 present the conceptual framework on ICT adoption and use by SMEs on knowledge creation, with specific emphasis on Agric-SMEs. Against this backdrop, this research is aim at developing a framework for analysing the effects of ICT adoption and use on knowledge creation by Agric-SMEs in Nigeria. The rapid advancement in ICTs has brought with it an enormous business challenges and opportunities. One of these challenges is the demand for ICTs skills and expertise. Coping with skills shortages poses a serious challenge across all developed and developing economise. Therefore, there is the need to analyse the drivers and inhibiting factors hindering ICT use and knowledge creation by SMEs.

Chapter 4 presents the geographic context of the country under study and provides an insight on Nigeria as a developing and the most populous country in Africa. Nigeria officially the Federal Republic Nigeria, is in West Africa with an estimated population of over 200 million. (Victory et al., 2022).

Chapter 5 discusses the research methodology and evaluates the selection of the research method adopted and highlighting the philosophical assumptions that are relevant to this study. The chapter also outlines the underlying research assumptions that guide Information Systems research and justifies the choice of a qualitative research methodology. In addition, the research design, rationale for the chosen approach and its suitability for the research are discussed.

Chapter 6 presents the data collection methods and analysis for the research. The chapter includes background information about the Agric-SMEs interviewed participants and their experiences regarding the adoption and use of ICT on knowledge creation. In addition, an overview of emerging themes from the interviews and the results of the findings are presented.

Chapter 7 discusses the research findings and relates them to the existing literatures on ICT adoption and use by Agric-SMEs and their impact on knowledge creation, knowledge acquisition, and the benefit to organisational success strategy.

Chapter 8 summarises the overall findings, conclusion, and recommendation of the research. The chapter presents the research outcomes, including the achievement of the research questions and objectives. Subsequently, the chapter provides the contributions to knowledge made by the research, specifically focussing on ICT adoption and utilisation on knowledge creation by Agric-SMEs within Nigeria. The limitations of the research are also presented and some areas for further research were identified.

Chapter 2: LITERATURE REVIEW

2.0 Introduction

Many studies have looked at ICT adoption and use in SMEs from different theoretical lenses in different contexts (Caldeira & Ward, 2002b). So also, other studies (Chaston, Badger, & Sadler-Smith, 1999; Basly, 2007; Lopez-Nicolas, & Molina-Castillo, 2008) have looked at organizational learning which has knowledge creation as a key element. The view is that ICT has evolved from its traditional back-office role towards a strategic role, supporting new business strategies. Firms now use ICT to create strategic advantages. These advantages arise from organizational learning in the adoption and use of these novel technologies. A look at the SMEs Agric-business literatures show majority of the studies emphasize post-organization and post-technology formation phases, paying less attention to the early phases of innovation development such as opportunity emergence and formation. Also, studies from e-

entrepreneurship literature have investigated such early phases to some extent but emphasize the personality of entrepreneurs and organization development, paying less attention to technology and its development. There is growing literature in both of these areas.

(Peppard et al., 2000), highlight the notion of 'core competences' with examination of the skills and resources required by firms to successfully build and leverage technologies. Available evidence suggests that while some SMEs have successfully engaged in ICT (Dibrell et al., 2008), others have been slow to adopt technologies especially those in developing economies (Brown and Lockett, 2004; Bengtsson et al., 2007). In the area of OL and specifically as it relates to knowledge creation, this has been mentioned in the literature as a mechanism for assisting SME survival (Lopez-Nicolas, & Molina-Castillo, 2008) such that due to their specificities, SMEs show particular behaviour with regard to the creation, development, sharing, protection, and transmission of knowledge (Basly, 2007a). The literature shows that different dimensions of OL are negatively correlated to firm size, indicating that OL is higher and more important for SMEs (Templeton et al., 2002). According to ((Erden, Von Krogh, & Nonaka, 2008; Geisler, 2009), the theory of organizational knowledge creation proposes that new knowledge is created through processes of conversion between tacit and explicit knowledge – where both knowledge expands in quantity and quality to improve corporate performance.

2.1 An Overview of Developed and Developing Countries

A developed country is a term that is used to distinguish between the more industrialised nations, including most Organisation for Economic Co-operation and Development (OECD) member countries, and developing or less developed countries. The developed countries are sometimes collectively designated as Group B countries or the North, because most of them are in the Northern Hemisphere (Zhou, n.d.). Developed countries are also referred to as industrial countries, industrially advanced countries, and high-income countries, in which most people have a high standard of living. Sometimes developed countries are also regarded as countries with a large stock of physical capital whereby most people undertake highly specialised activities. Depending on the definition, developed countries may also include middle-income countries with transition economies, as these countries are highly industrialised (World Bank Group, 2004).

A developing country is regarded as an economy with low-to-middle per capita income. Such countries constitute approximately 80% of the global population, representing about 20% of the world's economies (Adelabu & Akinwumi, 2008a). Developing countries refer to a broad range of countries that generally lack a high degree of industrialisation, infrastructure and other capital investment, sophisticated technology, widespread literacy, and advanced living standards among their populations as a whole (Apulu, 2012b). Developing countries are sometimes collectively designated as the Third World and sometimes as the South, because a large number of them are in the Southern Hemisphere (Apulu, 2012b). Many terms and definitions have been used to refer to and categorise countries. The World Bank classifies developing countries as countries with low or middle levels of Gross National Product (GNP) per capita. However, Bannock (2005) describes developing countries as countries that have not yet reached the stage of growth of industrialisation, where people live on far less money, and often lack basic public services when compared to highly developed countries. According to

Aleke et al. (2009) developing economies are still struggling to catch up with ICT applications as opposed to its heavy deployment in the developed economies. Several countries with transition economies are sometimes grouped with developing countries based on their low or middle levels of per capita income and sometimes with developed countries based on their high industrialisation.

Sub-Saharan Africa (SSA) is described as a region that is technologically backwards and economically vulnerable (Udo & Edoho, n.d.-a), hence the region has been left behind in the dawn of the new era that is characterised by the advances in ICT. Although it is believed that to some degree the digital divide is everywhere, researchers (e.g., (Otte & Knips, 2005) advocate that it is more pronounced in SSA countries than elsewhere in the world. According to (Gyamfi, 2005), SSA is regarded as the least advanced region in the world in terms of ICT, thereby leaving the region in the deepest end of the digital divide. In the present era of globalisation, the adoption and effective utilisation of ICT could act as a "lifeline" that would enable SSA to join the battle for economic, social, and political empowerment in the information age. (Anabaraonye et al., n.d.) states that digital technologies have been integrated into virtually every aspect of education, commerce, health, governance and civic activity and have become factors in creating wealth worldwide. Nonetheless, regarding the importance of ICT to national development, disparities exist among nations, including Nigeria, in terms of access to and use of these technologies. (Anabaraonye et al., n.d.) further states that the disparities are usually exacerbated by structural inequalities or social characteristics of individuals such as their income, education, occupation, age, gender, ethnicity, and location.

A report by the world economic forum- (Dutta et al., 2011) entitled "Global Information Report 2010/2011" shows that despite increased uptake and positive trends in the world, SSA's networked readiness continues to be poor, with most of the region lagging in the bottom half of the Network Readiness Index (NRI) rankings. There are only two Sub-Saharan economies, Mauritius (45th) and South Africa (61st), in the top of the NRI. Tunisia consolidates its leadership in North Africa at 35th place, while all other countries in the region follow a downward trend, except for Morocco (83rd), which went up five places. Nigeria was placed at 104 in the study's comparison of 138 countries that make up 99% of the World's total GDP. Nigeria is still lagging in its use of ICT according to the report by the World Economic Forum (2011). Therefore, concerted efforts are required to pull SSA out of the deep end of the divide and there is a need for e-readiness in SSA countries.

2.2 SMES In Nigeria

Small and medium scale enterprises have long believed to be catalyst for economic growth and national development, both in developed and developing countries. Nigeria remains the hub for most entrepreneurs and investors. In fact, Nigeria is one of the largest economies in Africa (Okafor et al., 2020), the number one destination for foreign direct investment in Africa and one of the fastest growing economies in the world. That is why South African and Chinese companies are scrambling to invest in Nigeria.

The performance and effectiveness of small and medium scale enterprises as an instrument of economic growth and development in Nigeria has long been under scrutiny. This intense scrutiny has been against the backdrop of the low performance and inefficiency that characterized small and medium scale enterprises particularly in assessing its role on economic growth and development (Abiodun, n.d.). Despite government institutional and policies support to enhancing the capacity of small and medium scale enterprises, small and medium scale enterprises have fallen short of expectations. This has generated serious concern and sceptics on whether SMEs can bring about economic growth and national developments in

Nigeria. The concern is even more disturbing when comparing SMEs in Nigeria with other countries particularly where SMEs has become harbinger of economic reconstruction and transformation, (Ihua, 2009). In the case of Nigeria, small and medium scale enterprises have performed at very abysmal level. This low performance has further exacerbated poverty, hunger, unemployment, and low standard of living of people in a country whose economy is ailing. The current problems of hunger, poverty and unemployment have undermined the capacity of the economy and small and medium scale enterprises are mechanism for intervention to addressing these long-term problems of the economy, (Abiodun, n.d.). Unfortunately, SME have not been able to propel economic growth and development which are quintessence of mitigating the effect of Poverty, hunger, unemployment, and low standard of living in Nigeria's economy. The challenge of addressing the problems of hunger, poverty and unemployment is even more worrisome when considering the possibility and actualization of the millennium development goals by the country in 2020. If Nigeria is to achieve the millennium development goals by 2020, one of the sure ways, is to enhance the capacity of its SMEs, (Abiodun, 2020). The 3 core issues identified by the millennium development goal such as hunger, poverty, literacy, maternal and mortality rate would not be achieved unless the problems of SMEs are clearly tackled. The challenges and problems of small and medium scale enterprises are tied to some economic, social, political, technological variables and the challenges that generally characterized the nation's economy. Some of the challenges and problems include high level of unemployment, high poverty incidence, and low industrialization capacity, lack of finance, inconsistent government policies, inadequate infrastructures and insecurity of the business climate among others. Nevertheless, the internal characteristics and dynamics of small and medium scale enterprises too, have also interacted with some economic variables to undermine the capacity of the economy of Nigeria. Issues of low level of entrepreneurial skills, poor management practice, inadequate equity capital and lack of information among other problems. In spite of these problems and challenges, the current economic reform process ongoing in Nigeria aimed at reducing poverty, unemployment and strengthening of basic institutions and sub sector of the economy target at improving and enhancing the capacity of small and medium scale enterprises is beginning to show a renew optimism on small and medium scale enterprises as instrument of economic growth and development (Abiodun, F. 2020). There are estimated over 200 million people in Nigeria, and Nigeria is been predicted to overtake that of United States of America by the year 2050, (Okafor et al., 2020). Now, what this means is that the market is big enough to absorb any product, provided enough marketing and awareness is created. Another positive impact of the population statistics is that there is cheap labour. One of the reasons China grew to become an industrial hub is because of her large population, which in turn can be an advantage, with respect to cheap cost of labour and market availability. Nigeria is fast developing and growing too, so there is a huge need for innovative products and change in business activities and strategies (Ajaero, T. 2019**).**

In every economy, small and medium scale enterprises have been seen has a pivotal instrument of economic growth and development either in developed or developing economies. Several studies have confirmed this, ((Ogujiuba et al., 2004), Onugu; 2005, Ihua; 2009). Data from the federal office of statistics in Nigeria affirmed this importance when it reveals that about 97percent of the entire enterprises in the country are SMEs and they employed an average of 50% of the working population as well as contributing 50 percent of the country industrial output, (Abiodun, F.2011). As (Ariyo, 1999) and Ihua (2009) averred, SMEs in Nigeria are not only catalyst of economic growth and development but are also the bedrock of the nation. Although small business activities had existed since the period of independence in Nigeria, however, conscious effort on small and medium scale enterprise as instrument of economic

and national development started in 1970-1979 when Nigeria adopted the policy of indigenization through its national development plan programme. The development plan articulated the need for the Nigerian economy to be self-reliant through industrialization, entrepreneurial development employment generation and development through increasing export trade. (NDP, 1970). The federal government singled out small and medium scale enterprises as the key area of intervention. This was premised on the government desire of giving support to small scale industries in the country as a measure of meeting up with its commitment to the development plan and the indigenization policy. The intention was that it would be a reaction against the dominance of the economy by the international capitalist entrepreneur and on the account that revitalizing small and medium scale enterprise would enhance the capacity of the indigenous capitalist class, as a potential player in economic growth and national development.

In its intervention effort, government promulgates different regulations for the basis of protecting the small-scale industries. Some of the regulations include Nigeria Enterprises Promotion No. 3 of 1977, Patent Right and Design Act No 60 of 1979, Custom Duties (dumped and subsided goods Act No. 9 of 1959, Industrial Promotions act No. 40 of 1979, Industrial development Tax Act No. 2 of 1971 among others, (Alawe, 2004). Apart from the promulgated act, government supported SMEs through favourable investment policies, institutional and fiscal policies, protective business law and financial incentives to encourage the national development and indigenization policy which small and medium scale are very central to. Several micro lending institutions were established to enhance the capacity and development of small and medium scale enterprises. Such microcredit institutions include Nigeria Bank for commerce and industry (NBCI), National Economic Reconstruction Funds (NERF), People`s Bank of Nigeria (PBN), Community Bank (CB) National Export and Import Bank (NEIB) and the liberalization of the banking sector to enhance the banking institutions for effective participation in the growth and capacity building of small and medium scale enterprises. (Ogujiuba; et. al 2004).

Government also established the Raw Materials and Research Development Council (RMRDC) of finance and research institutions in 2001, the research report of this institution is useful to SMEs and business organization in their product choice decision, product development delivery strategies to increase SMEs business effectiveness and efficiency (Fatai, n.d.). To complement this effort, government also created some polytechnics and university to provide manpower scheme and set up some manpower training institutions. Such as Centre for Management Studies (CMS), Administrative Staff College of Nigeria (ASCON), Industrial Training Institute (ITI) etc. (Obokoh et al., 2015), Several recommendations and findings of these institutes and centres were geared towards developing small and medium scale enterprises. In addition to this, the government through the bankers' forum at the initiative of CBN as an interventionist strategy also established small and medium industry equity investment scheme (SMIEIS) in 2001. This scheme requires banks to set aside 10 percent of their profits before tax to fund SME in an equity participation framework. In 2002, government further intervened to enhance the capacity of SMEs through direct policy as consisting of direct investment and the establishment of more SMEs, promotion institution agencies, technological development institutions, credit lending institutions, technical and management institutions and the provision of infrastructures such as industrial estate, nationalization of foreign firms and provision of incentives and subsidies for the promotion of small and medium scale companies. **(**Alawe 2004**).**

The establishment of anti-corruption bodies such as Economic and Financial Crime Commission (EFCC) and Independent Corrupt Practices Commission (ICPC), investment in

power generation, road maintenance and construction and enactment of pension funds were additional efforts geared towards improving the SMEs sector, (Onugu, 2015). Despite the participation and efforts of the government in developing SMEs, the contribution index of manufacturing to GDP was 7% in 1970-1979 (Odedokun, 1981). In 2004, a survey conducted by manufacturer association of Nigeria revealed that only about 10percent of industries run by its members are fully operational. Similarly, Joshua (2008) contends that about 70 percent of the small and medium scale enterprises in Nigeria are between operational or on the verge of folding-up, while the remaining 30 percent operate on low level capacity and are vulnerable to folding up in the nearest future. In 2009, the constraint was further compounded by a sharp drop of manufacturing to GDP of 4.19 percent while industrial capacity utilization dropped to 48.8percent. (National Bureau of Statistics, 2009). This portends danger for the Nigeria economy given the fact that manufacturing industries are critical agent of real growth and development for the country. According to (Jide, Mike,2010) Acting Director General of the Manufacturing Association "the debris of dilapidated manufacturing concerns across the country is the outcome of years of harsh operating conditions". He averred that despite the small and medium industries equity investment scheme, funding has posted a serious threat to SMEs. He therefore concluded by saying 30percent of SMEs have closed, while about 60percent are ailing and only 10percent operate at a sustainable level.

It is worrisome that despite the incentives, favourable policies, regulations and preferential support by government aimed at improving small and medium scale enterprises, SMEs, has performed below expectation in Nigeria. While the challenges associated to small and medium scale enterprises and their failure has been widely acclaimed. Some of these include lack of planning, inimical government regulations, poor marketing strategies, lack of technical know-how, and lack of capital (Obokoh et al., 2015). Yet some of the challenges of the SMEs are induced by the operating environment (government policy, globalization effects, financial institutions etc) others are functions of the nature and character of SMEs themselves. (Basil, 2005).

In Nigeria, the National council of Industries refers to SMEs as business enterprises whose total costs, excluding land, are not more than two hundred million naira (₦200m) (Basil, Onugu, 2005). However, the Small and Medium Sized Development Agency of Nigeria (SMEDAN) defines SMEs based on the following criteria: a micro enterprise as a business with less than 10 people with an annual turnover of less than (₦5m) naira, a small enterprise as a business with 10-49 people with an annual turnover of (₦5m to ₦49m) naira; and a medium enterprise as a business with 50-199 people with an annual turnover of (₦50m to ₦499m) naira. This research adopts the definition of SMEDAN (2005).

Table 2 SMEDAN Definition

Size of Category	**Number of Employees**	**Assets (₦million) Excluding Land/Buildings**
Micro Enterprises	Less than 10	Less than ₦5million
Small Enterprises	10 to 49	5 Less than ₦50million
Medium Enterprises	50 to 199	50 Less than ₦500

2.3 Challenges of SMEs In Nigeria as an Emerging Market

In Nigeria, most SMEs give up their businesses within their first five years of establishment and a smaller percentage of these SMEs go into extinction between the sixth and tenth year. As a result, only about 5-10% of young SMEs survive, thrive and grow to maturity (Onuorah,

2009). Similarly, Adelaja (2010) comments that SMEs have the problem of lack of continuity whereby in most cases, immediately the owner, proprietor or entrepreneur dies or loses vision or commitment, most small-scale enterprises die. Most entrepreneurs do not have the required management expertise to carry through once the business starts growing. Olorunshola (2003) describes the challenges facing Nigerian (SMEs) as enormous and states that this includes inadequate and inefficient infrastructural facilities as well as costs of operation. Consequently, Onuorah (2009), Olorunshola (2003) and Ayanda and Laraba (2011), identify insufficient capital as traceable to the reluctance of banks to give out loans to Nigerian SMEs and therefore a hindrance to their development. Also, there is the issue of lack of adequate credit for SMEs in Nigeria, which is due to poor documentation of business and project proposals as well as inadequate collateral by SME operators. Small businesses in Nigeria, the gross under-performance of small businesses have undermined their contributions to the nation's economic growth and development (Central Bank of Nigeria, 2014). Before the advent of the colonial administration, majority of Nigerians are predominantly small business owners who engaged themselves in one form of small business or the other, majorly agriculture. During this period, (Toyin et al, 2014) agricultural produce, like cocoa from the south-west, rubber and palm oil plantations from the east and groundnut pyramid from the core north were the main sources of wealth. Thus, small businesses through which the country's wealth was generated were accorded due attention and unwavering support (Adisa, 2008). However, the post-independence period witnessed a massive transformational change. The governance of the Nigeria states and its economy seized to be in the hands of the British government, and Nigeria discovered hidden oil treasures in some part of the country. The eventual discovery of oil in Nigeria is widely consented, most especially among the lower-class majority who dominated the small business in agricultural sector, as bad occurrence. This is because the sector was totally neglected and hence paralysed hundreds of thousands of small businesses both in the rural and urban area (see Organisation for Economic Co-operation and Development (OECD), 2009). Successive Nigerian government since then right up to 2008 have focused on the oil generated revenue with very little or no attention given to the small businesses at the grass root level. In 2008, the economic downturn hit so many small businesses hard that many of them went into oblivion. By the turn of the century, however, all these had combined to produce a chorus of complaint from small business owners and stakeholders at all levels across the country.

Furthermore, several studies have indicated that thousands of small businesses start up every year but significant numbers of them fail before or by the first year of their operation while majority shut down before their second year (Dickenson, 1981 Almus, 2004; Persson, 2004). This assertion is also supported by Van Praag (2003: 21) who succinctly puts it thus: Of every 100 start-ups only 50 firms survive the first three years. The rate of small businesses dissolution is alarming that researchers have enjoined authorities to come to their aid in order to reduce unemployment and boost the gross domestic product output. Consequently, White (2005) and Marlow (2005) also argue that venturing into small business is very risky and that the rate of small businesses failure in developing countries such as Nigeria is very high. However, the topmost priority in this study is to fill the research gap in the literature by making a significant contribution towards advancing our understanding of the realities of small businesses in Nigeria through knowledge creation processes. Understanding the size, components, and benefits of SB to citizens' life, most especially people at the grass root level, is an important factor to be considered in defining small scale business. With the current rate of unemployment and poverty level in Nigeria, small business has become source of livelihood to millions of Nigerians. About 60% of all the business established in Nigeria is on small scale level (Okeke,

Ezenwafor, and Femiwole, 2013). However, just like other social science subject, the concept of small business does not have acceptable or uniform definition (Nel and Simpson, 2011).

Most small businesses are managed by their owners because they could not afford to hire expertise to run the businesses for them (Rajaram, 2008). Consequently, small business owners perform so many operational tasks and management functions themselves (Kirsten, 2013), which may often result in business failure (Ihua, 2009). The independent and private ownership (sole proprietorship or partnership) of small business always promote uncertainty, (Keasey and Watson, 1993). This invariably means that small business success or failure squarely depends on the sole ability of the owner(s) without the shield of limited liability. SB owners may be personally liable for the business misfortunes such as debts (Carter and Jones-Evans, 2006). In this regard, Akande (2006) also argue that small businesses heavily rely on owner(s) skills, knowledge, ability, and personal characteristics for the prosperity of the business. Nevertheless, small business, across the developed world, still account for a significant fraction of industrial build up. They play some defined roles in the economy that support and strengthen the growth of a nation (Mwobobia, 2012). Undoubtedly, small business is very crucial to a nation's healthy economy, and their competitiveness is indispensable to nation's success and growth (Wong and Aspinwall, 2004: 46).

According to the Global Entrepreneurship Monitoring (GEM), many Organisations for Economic Co-operation and Development (OECD) countries have seen small businesses ownership rate increase in the last thirty years. However, access to starting and operating finance remains the most significant challenges for their creation, survival, and growth (OECD, 2009). This problem is further exacerbated by the 2008 economic, downturn which wiped off trillions of dollars of financial wealth (World Bank, 2009). During this period, the rate of loan rejection for small businesses sky-rocketed, and rate of loan repayment also became unbearable (Fraser, 2010). Consequently, performance and activities of small business in Nigeria since the global economic meltdown has been very low (Okeke, Ezenwafor, and Femiwole, 2013). Although government at different level have come up with different policies (e.g., National Poverty Eradication Programme (NAPEP), Nigerian Agriculture People's Bank (NAPB), National Directorate of Employment (NDE), National Economic Empowerment Development Scheme (NEEDS) to boost the performances of small businesses in order to alleviate the level of poverty and enhance economic development. However, despite all these policies and government agencies, small businesses have failed to perform optimally up to the required, thus, significant gap still exist between their contributions and their potentials (Akanke and Ojokuku, 2008). Most small businesses literature concentrate on the financial problems of small-scale businesses (Adisa, 2008), but this study has, in relation to the Nigerian context, identified other problems such as lack of adequate funding, inadequate infrastructural facilities, lack of proper business and management knowledge, poor record keeping and information management, inability to distinguish business capital from personal money. Therefore, the key challenge here is the issue of human capital development and capacity building through knowledge creation.

In recent time in Nigeria the growing rate of small businesses is characterized with high rate of unemployment and the increasing rate of graduates from different institutions without correspondent employment opportunities and consequently, the society is gradually getting to the stage where the average graduate is willing and ready to go into business (Ahmed, 2006). Small scale enterprise is usually managed in by the owners or relatives of the business. Most of the ownership structure being sole proprietorship and partnership. The sources of fund are majorly from the owners' savings, borrowing from friends, relatives and banks (Ekpenyong

and Nyong, 1992). In Nigeria, government also provides soft loans to the small-scale businesses.

However, the definition of small-scale business in Nigeria by the central bank does not reflect the typical characteristics of Nigerian small-scale enterprises in terms of their capital base and number of employees (Ekpenyong and Nyong, 1992). Whereas the Central Bank of Nigeria defined small-scale enterprises as having an annual turnover not exceeding 500,000 naira but many small businesses in Nigeria had a capital base of less than 100,000 naira. This was contained in its Monetary Policy Circular No. 22 of 1988, but a typical small business in Nigeria has less capital investment. There is, therefore, the need to redefine small business in Nigeria. The originator of the business according to Adeyemi (2014) often plays the double role of owner as well as responsibility for planning, directing, coordinating the activities that lead to the creation or production of business value.

Another major characteristic of small-scale enterprises in Nigeria is the difficulty they experience in raising adequate capital for their businesses (Adeyemi, 2014). External sources are difficult to be assessed from finance houses and banks. Even where the banks agree to provide fund for these businesses, the conditions or collateral for these loans are always difficult to be met by the business owners. Small enterprises with a small capital base tend to use the informal financial institutions. Chukwuemeka (2006) pointed out that about 80% of small enterprises are not thriving as a result of poor financing and other problems associated with it. Therefore, small businesses are often found in certain areas of the sector particularly due to their financial ability, and human resource capabilities and opportunities presented by the economy and not necessarily because of their passion or expertise (Adeyemi, 2014). Most of the Characteristics and Challenges of Small Businesses in Africa: An Exploratory Study of Nigerian … 5 businesses were engaged in service-related activities. According to the survey carried out by Ekpenyong, and Nyong (1992), few of the small business owners had tertiary education (16 per cent) while the majority had primary and secondary education (84 per cent). Many of them had no previous experience in business before embarking on their current business activity.

Many of the small businesses in Nigeria find it difficult to survive because the death of the owner might lead to the death of the business. According to Scholes, Westhead, and Burrows (2008) transfer of ownership is very important to the continuity and success of small business. The inability of small business owners to transfer the business successfully to another person may lead to the closure of the business. Moreover, small businesses are affected by limited financing, poor management skills, infrastructure, and regulatory issues. These factors affecting small business owners may have negative impact on the small business growth.

2.4 Strategic Approach to ICT Adoption and Use by SMEs

Small businesses irrefutably remain critical to the development of any nation's economy as they are an excellent, source of employment generation, help in development of local technology, and develop indigenous entrepreneurs (Erdem and Erdem, 2011; Alaye-Ogan, 2012). The importance of small businesses to the citizens' standard of living and the nation's general growth cannot be overemphasised. Even co-existence of large-scale industries is seen as dependent on healthy activities of small businesses (Fabayo, 2009). However, small businesses in Nigeria have not been able to add value to the economy due to many challenges confronting their operations. It is important to note that an increasing amount of development plans that have been inaugurated by successive government in Nigeria to empower small businesses have not lived to their expectations (Sule, 1986). Carolina Lopez, et al, (2010)

established that researchers such as Henderson and Venkatraman's (1999) argues that ICT is evolving from its traditional back-office role towards a strategic role, supporting new business strategies. Raymonds and Blili (1997) determined the need to implement ICT strategies in SMEs. They proposed ICT strategies based on experiences from large firms and suggested the incorporation of ICTs in SMEs to create strategic advantages. Poon and Swatman (1999) reported on Internet use in SMEs and found that although use of e-mail is very popular for business communications and document transfer, there is almost no integration between the Internet and back-end systems. More recently, Bhagwat and Sharma (2007) conducted a survey on 210 Indian SMEs and observed an increasing trend in the use of ICTs, but also the absence of ICT capabilities in these firms to compete in today's global market.

Firms can use ICT for different, but compatible uses. These are related to offering information communications and exchange of information, and the automation of internal business processes. For the particular case of Internet applications (Soto-Acosta & Merono-˜ Cerdan, 2006), in general terms, three ICT use orientations are identified: ICT informative-orientation, ICT communicative orientation, and ICT workflow orientation. In ICT, informative orientation, technologies in a company are mainly employed to provide and distribute corporate or commercial information to diverse stakeholders (Huzingh, 2000). In this sense, ICT can be used as a corporate channel for information dissemination and data access across functional boundaries and organizational levels (Bafoutsou & Mentzas, 2002). Therefore, ICT informative orientation is defined as the use of ICT to provide one-way company electronic information directed to one or more stakeholders. ICT communicative orientation, besides allowing cost reduction in comparison to traditional communication tools, offers a unique and integrated opportunity for interacting with several business agents (both internal and external to the organization). In this regard, all these ICTs facilitate the exchange of information, collaboration, and the possibility of establishing close relationships (Kalakota & Robinson, 2000). Thus, ICT communicative orientation is defined as the use of ICT for two-way information exchange. In the new economy, work has shifted from the creation of tangible goods to the flow of information through the value chain (Basu & Kumar, 2002). The establishment and development of workflow technologies has played a fundamental role in this transition. ICTs, and especially Web technologies, provide great opportunities for the automation of processes, Fischer, 2004). Thus, ICT-workflow orientation involves the establishment of predefined electronic processes through corporate technologies.

The above literature suggests that ICT cannot improve organizational performance in SMEs if it is not used appropriately. That is, ICT-based processes should be re-designed in ways that outperform traditional work practices. Here, organisational learning (OL) may play an important role through, for instance, knowledge creation, acquisition of new knowledge and elimination of obsolete knowledge. Daka, et al (2016) 'apart from having widespread usage among households, ICTs are widely used by SMEs and multinational companies all across the world. This has resulted in the general increase of ICT facilities such as Internet servers. In 1994, Internet content was hosted on about 10,000 web servers. By 2006, more than 100 million servers were operating. In 2008, 187 million websites were operating, and the number increased to 234 million in 2009 and 255 million in 2010. In 2011 online, commercial revenues were 25% higher than in the previous year and the sixth consecutive year in which growth occurred'. "By any measure, the internet has been one of the fastest growing commercial phenomena in history" (Kessler, 2011, p. 17). The internet has changed the social aspect of society especially among the young people. Online access has spurred the

development of social networking services, particularly among teenagers. Social networking also operates through a variety of online services that allow individuals to use mobile phones to send out reports of daily activities. Social networking mobile applications such as twitter, WhatsApp and Facebook are obtained from websites online. The WhatsApp mobile application has found wide adoption for sharing messages, photographs and documents at all levels of human interaction (Stone & Richtel, 2007). Facebook emerged as the most popular social networking service (Kessler, 2009). In February 2010, the service reported more than 400 million users, a number equivalent to the third most populous country in the world, larger than the United States. The number of users passed 500 million in July 2010 and 750 million by mid-2011. More than 250 million users accessed the service in 2011 with mobile devices. By late 2010, Facebook had become not only the largest social network in the world, but the third largest social website of any kind (Kessler, 2011). Blogging and micro blogging became popular in the early 21st century. Twitter, a micro blogging service that takes advantage of the Internet, was created in 2006 by a group working at Odeo, Inc. (Sagolla, 2009). The group created Twitter while attempting to develop a technique of communicating short text messages by mobile phone. The messages, or tweets, consist of 140 characters. By March 2011, Twitter registered 175 million users, equivalent with the seventh most populous nation in the world (Kessler, 2011). When an innovation has been adopted by individuals it's more likely to find broad adoption at firm level too. Locke (2004) carried out a study to establish the impact of ICTs on small scale businesses in New Zealand. The study revealed that there is a vivid relationship between ICT and the growth of small businesses, the nature of this relationship, and how it is affected when considering other factors found to have significant impact upon the ICT-growth relationship. It was found that high levels of internet adoption coupled with moderate adoption of cellular phones were encouraged by small scale business in New Zealand in order to promote growth in profit margins (Locke 2004). The research revealed that, 65 percent of the businesses experienced growth in sales levels and 57 percent achieved an increase in profitability over a twelve-month period. The least frequently realised improvement in performance was an increase in market share, with 54 percent of the sample having achieved growth in such terms. For the sample businesses that experienced an improvement in market share over the period of three years, half made high use of cellular phones and 40 percent made high use of the internet. This was not significantly different to a slightly lower 42 and 36 percent respectively for businesses that experienced growth in market share. However, the extent to which small and medium enterprises are taking advantage of ICTs demands further investigation tailored to the Nigerian industry. Nigerian SMEs can emulate the strides undertaken by SMEs in New Zealand to establish new trends of ICT adoption in Nigeria despite the different economic environments prevailing in the two countries.

2.5 Formulating ICT Policies for Developing Countries

The role of information and communication technology (ICT) has been discussed as critical to the promotion of global development efforts, in particular sustainable development efforts in developing countries. Work by agencies such as Info Dev and the U.N. ICT Task Force has been geared to the role of ICTs in achieving the Millennium Development Goals enunciated by world leaders in September 2000 (United Nations, 2004; World Bank, 2003). In addition, many individual researchers, including Afullo (2000), Edoho and Udo (2000), Kah (2002), and

Qureshi (1998), often doing ground-breaking work, have pointed to the critical importance of examining ICT policies for developing countries. However, information systems studies examining ICT policy formulation for developing countries are lacking.

The overall objective of this study is to begin remedying some of the insufficiencies in the study of ICT policy formulation in the areas of Agric-SMEs. Particularly, the intention to improve the understanding of the process of ICT adoption policy formulation for developing countries, accomplished by key participants such as, government officials, policy consultants, and policy researchers. The idea is to use Nigeria Agric-SMEs as a case study, in form of explorative and descriptive research and adopting a qualitative analysis approach, to understanding the main drama occurring in the content of discussion within an emerging economy hosted on a policy of inconsistencies over the years. Several researchers are studying information infrastructure, especially the Internet and its implementation, in developing countries. Afullo (2000) studied the information infrastructure in Africa and contends that the issues influencing Internet penetration include infrastructure, pricing, policies, literacy, income, and education. He suggested that the issues of Internet accessibility in Africa can be remedied with effective implementation of formulated policies. He suggests that formulated and implemented policies, including "liberalization, unrestricted market access, eradication of under investment and inefficiency through privatization and private sector involvement and tariff reform" (p. 211), will be helpful in enhancing Internet access in Africa (2000).

In another study Edoho and Udo (2000) argue that poverty is a major challenge that restrains developing countries from utilizing ICTs (citing Africa as an example). They highlight the fact that, given the low per capita income and declining standards of living, policy makers focus their policy formulation and policies on meeting the basic needs of the poor. They further observe the absence of infrastructure makes ICT adoption and utilization extremely difficult. They go on to note that the continuous electricity breakdowns with prolonged power outages disrupting business operations, as well as the concentration of the infrastructure mostly in the urban areas available to an elite few, perpetuates poverty which contributes to inter-ethnic strife and civil war devastating these countries (Edoho & Udo, 2000).This imbalance in infrastructure access poses difficulties for policy makers in these developing countries, thus finding themselves concerned less with formulating ICT policies, investing in or prioritizing ICTs. They scarcely see the connection of ICTs with poverty reduction and development efforts, and often fail to formulate policies that are holistic and capable of incorporating ICTs to enable socioeconomic development.

Information and communication technology (ICT) policies need to be comprehensive, considering local norms, values, and culture; holistic; and thoughtfully connected to socioeconomic needs, poverty reduction, and improvement of quality of life in developing countries. The formulation and implementation of quality ICT policies at the country level is therefore critical to the achievement of developmental goals. It is also generally assumed that the best quality policies ensue from processes that are flexible, collaborative, account for all the major stakeholders, and produce an output which is itself flexible given the dynamism of the environment (Kah, 1999).

Kah (2002), also notes that policies that are slow to be implemented and rigid, and that attempt to satisfy the goals of a single stakeholder group, such as the private sector, are disruptive to ICT utilization in developing countries. This is especially true in environments where a large

chunk of the profitable ICT market is urban and benefits a minority of the population. Collaboration and information sharing in the policy formulation process strengthen the impact and quality of the policy and its implementation. Combining advocacy and governance issues with that of culture and the acceptance of ICTs, Qureshi (1998) argues that information access and sharing are enabling factors in building civil associations in Africa. However, a "culture of communication and sharing of information" must be developed before effective networking among civil servants and stakeholders can have any significant impact (Qureshi, 1998). Kah (2002), It is our position that a culture of information sharing has to be developed if the potential benefits of ICT are to be realized. In many developing countries civil servants are very protective of information, tending to hoard and restrict access to it as a way of making themselves indispensable in their organizations and ensuring their job security. Given the limited number of trained and skilled personnel in developing countries, especially in sub-Saharan Africa country like Nigeria, this practice hinders human resources capacity development. Qureshi further argues that the poor can better their lives by having access to information. Therefore, civil society and stakeholders, could benefit if civil servants would share their information with others, especially through poverty alleviation projects that coordinate and network using (ICT) electronic communication (Qureshi, 1998).

One of the many challenges to the public and private sectors in developing countries is to put together clear policy instruments that reward participants in the private sector who are viable economic entities that demonstrate responsibility, capability, and innovation, and create demand for products and services as these firms and industries mature. One possible solution to helping developing countries adopt ICTs is an alliance among the public sector, the private sector, the community, and other stakeholders that forms a consensus around these criteria. Because technology advances quickly and impacts these criteria, creating a way to amend the policies and in the process avert the emergence of oligopolistic or monopolistic practices, is critical. Research interest in the maturation process of ICT policy in developing countries and its impact on economic development is growing (Bhatnagar & Bjorn-Andersen, 1990; Bhatnagar & Odedra, 1992; Nidumolu & Goodman, 1996; Odedra, Lawrie, Bennett, & Goodman, 1993; Odedra & Madon, 1993). This agenda could be immensely advanced by the creation of appropriate partnerships and through enriched collaborative schemes which support those partnerships and promote the sharing of information, ideas, and best practices with respect to ICT policy and its implementation. Therefore, the underlisted should be adopted.

1. Farmers' Field Schools should be established in all Ministries of Agriculture to enhance on-the-field training of farmers to adopt modern agricultural practices

2. The Central Bank of Nigeria (CBN) should frequently organize conferences and workshops for entrepreneurs in agribusiness in order to improve management skills

3. Manufacturers of agricultural machineries should provide ongoing training workshops for equipment operators to enhance their capacity to function efficiently. (International food and Agric-business management (IFAMA & Penda, 2020).

2.6 Human Capital, Knowledge Creation, & Economic Incentives for Developing Countries

An investment in people is vital to transforming businesses in Nigeria, so that, a vibrant and entrepreneurially driven agricultural sector can flourish. Previous failures in large private-sector projects in Nigeria have resulted from the low-level investment into human capital development of agricultural businesses, economic instability, and security. The development of the agricultural sector and smallholder farmer requires collaboration among governmental policymakers, educational institutions, and private industry. The talent gap in science must be closed for a new generation of agricultural business entrepreneurs to transform the numerous challenges into opportunities. (Penda, 2012).

Favourable business opportunities can be found in Nigeria's agricultural sector in the areas of production, storage, processing, and marketing. Some of the major crops produced include rice, maize, cassava, soya bean, beni seed, groundnut etc. The country is self-sufficient in tomato, onion, pepper, and okra production. Nigeria also has abundant resources for livestock and fish. Although agricultural investment opportunities exist in these areas, most start-up enterprises hardly survive beyond three years. This is due to the high cost of production, poor macroeconomic framework, high investment capital, uncoordinated government policies and the high risk of engaging in agricultural business. In order for economic growth and social advancement to thrive in Nigeria, an investment in human capital is required to build a productive, competitive and functional workforce. (IFAMA, 2012).

In the 1960s, Nigeria was an agricultural economy. It was among the world's leading producers of cocoa, palm oil, groundnuts, cotton, rubber, and hide &skin. Agriculture sector contributed over 60% to the GDP. Today, agriculture contributes 40% to the GDP while oil contributes only 13% to the GDP. Nigeria has diverse and rich vegetation capable of supporting a heavy population of livestock. The country is blessed with reasonably abundant rainfall of between 300mm – 4000mm per annum, as well as an extensive coastal region that is very rich in fish and other marine products. Nigeria has 79 million hectares of fertile land of which only 46% of these have been cultivated. Fertilizer consumption of 7kg/ha is one of the lowest in the world. There is low livestock production and high fish imports of about 700,000MT annually. Unfortunately, there is one extension worker to every 25,000 farm families compared to best practice of one to every 500-1000. The country record reports 15% - 40% in losses due to inability to process agricultural products. (NFRA, 2008).

Human capital plays a critical role in economic growth and development because human beings occupy the centre of production, distribution, and consumption chain. From a macroeconomic perspective, the accumulation of human capital productivity, facilitates technological innovations, increases returns to capital and makes growth in agriculture more sustainable. The productive workforce in Nigeria's agriculture is aging and needs to be replaced with young, educated farmers that will introduce innovation and modernity into agricultural practices. Education is essential as the supplier of trained manpower and a prerequisite to accomplishing entrepreneurial goals. Agricultural ventures must be attractive, profitable, and sustainable to induce economic growth. These major attributes can be achieved through scientific research to develop quality inputs, improve agronomic practices, and develop good management skills etc. Likewise, agricultural extension services ought to be upgraded to provide the education needed to modernize production practices and change

our past ways and perception of agriculture as a provider of home food to a feasible business opportunity. The concept of Farmers' Field School offers a vital solution to developing a more productive workforce in the agricultural sector. During the period from 2004-2015, Nigeria experienced sustained high growth rates, but employment responded rather sluggishly. The structure of unemployment remained basically the same during this period as agriculture self-employment continued to dominate the country's labour market. The 7 % growth in the agricultural sector reflects an increase in crop production derived from the expansion of farmlands, rather than increased productivity. Although sustaining and improving upon the recent expansion is important, strengthening both forward and backward linkages among the sectors is a more critical for business growth and poverty reduction through increased employment and income generation. (FMA, 2018).

Nigeria has a population of over 200 million people, of which about 49.1 % are women. The total number of vulnerable groups (women, children, the aged and persons living with various forms of challenges and disabilities) constitute about 70 % of the entire population. To address the issue of training a youthful workforce, particularly in the agricultural sector, the Nigerian government is collaborating with many international organizations, agencies and institutions in running training programs to develop young farmers and replace the aging ones. The Senate of the University of Agriculture-Makurdi has approved the establishment of the first ever Department of Agribusiness and Management in a Nigerian university to enhance human capital development for managing agricultural enterprises. The Federal Government of Nigeria has also introduced compulsory courses in entrepreneurship for students in all Nigerian universities. These combined efforts will certainly improve agricultural business landscape in Nigeria. (Penda, S. T. 2012).

It is imperative to provide professional development opportunities to enhance the capacity of Nigerians to develop entrepreneurial skills and Agric-businesses. Currently, Nigerian education is not functional or responsive to entrepreneurship development in agriculture. Executive capacity is low, as most of the employees have inadequate professional and requisite technical skills, especially in the areas of modern farming and agriculture. The deplorable state of the nation's infrastructure has continued to rise, and this is adversely affecting agricultural business in Nigeria. Low technology in the agricultural sector has hindered the creation of new high-value products that generate employment and incomes comparable to those in high-performing economies. The Nigerian Government must play a major role in promoting gender equality and advancement of women as an integral part of all political, social, economic and cultural development initiatives undertaken by the country. Larger initiatives are also needed which target youth in agriculture in order to improve agricultural business. (FMA,2018).

The over dependence on oil with little attention to agriculture and other sectors is responsible for the poor performance of the Nigerian economy. Today, oil and gas accounts for over 80 % of the nation's export revenue. Deliberate government policies should be introduced to provide a conducive environment for agricultural business to be profitable. Policies to enhance Human Capital Development in Agricultural Business should aim to secure the food and feeding needs of the nation; build the capacity for value addition; utilize available agricultural resources and advance technologies, which accelerate growth in the agricultural sector. Agricultural training institutions should develop curricula and teaching models that

increase productivity and continually improve production to meet consumer needs. The agricultural business environment should be made attractive in order to increase participation from youth and women in agricultural enterprise development. These combined initiatives will help transform Agric-businesses and attract new ventures in Nigeria so that a vibrant and entrepreneurially driven agricultural sector can flourish. (IFAMA, 2020).

(S. Asongu et al., 2017), the positioning of this inquiry is motivated by at least three main trends in contemporary African development literature, namely:

(i) the growing relevance of knowledge economy (KE) in the twenty-first-century development; (ii)
(ii) the lagging position of African countries in terms of KE and,
(iii) the need for countries in the continent to catch-up with frontier KE nations, in the light of gaps in the literature. The underpinnings are developed chronologically.

First, today KE is central to addressing competitive challenges imposed by the globalisation phenomenon. Hence, in this contemporary era, for countries to be prosperous and remain competitive in the global economy, they must adjust and adapt to competitive rules that are particularly linked to KE-based advantages. No wonder that KE has been central in the reports by and strategic plans of the Organisation for Economic Co-operation and Development since the beginning of the third millennium (Weber,2011).

Second, despite the growing importance of KE in Africa, compared to other regions of the world, the overall knowledge index of the continent has been falling since the beginning of the third millennium ((Anyanwu & Yameogo, 2015)). This trend is disturbing because Asian and Latin American countries have been engaging in calculated steps that emphasise the importance of KE in their pursuits of regional and national initiatives (Tchamyou, 2017). Hence, it is not surprising that the patterns of development in the inter-national arena are constantly shaped by Europe and North America which have understood the dynamics of KE. In the catch-up process, the historic trend that was established by Japan has shaped the pattern of the New Industrialised Asian Economies (Hong-Kong, Singapore, South Korea and Taiwan) as well as Malaysia and China. It is within this framework that Asian economies have been experiencing substantial progress towards knowledge-based economies from 'product-based economies' in the post-industrialisation era. It is also along this prism that the East Asian Miracle has inspired a recent stream of KE literature on the catch-up process, essentially because lagging countries can learn successful lessons from frontier nations (Asongu,2017; Kim,2013).

Third, whereas the East Asian Miracle has been the object of recent scholarly attention, the KE literature on lessons from frontier East Asian countries to laggard African nations is sparse. While Asongu (2017) has focused on lessons from South Korea1to specific fundamental characteristics of African development (e.g., legal origins, income levels, religious-domination, inter alia), we argue that focusing on fundamental features leads to blanket policies and blanket measures that are unlikely to be effective unless they are contingent on country-specific analyses. South Korea as a frontier nation is worthwhile because the country was less developed than most countries in Africa during colonial independence (see Tran,2011). The underlying literature is fundamentally motivated by the imperative to

articulate research on KE that provide lessons and strategies with which to reduce the gap between lagging countries and their benchmark counterparts in KE (Bizri,2009; Chavula,2010; Lightfoot,2011; Makinda,2007). As far as we have reviewed, contemporary literature on lessons from the Newly Industrialized Asian countries (like South Korea) on Africa is sparse. The purpose of this study, therefore, is to bridge the gap by assessing country-specific differences and discussing corresponding policy implications. The fact that the relationship between Korea and Africa has been comparatively less studied in contemporary development literature (see Kim,2013) may be traceable to some scepticism in the literature about the relevance of South Korea as a development model for other developing countries: 'There is some scepticism about Korea as role model of development as the Korean model involved a considerable degree of state activism, unacceptable in today's global environment'(Lee,2009, p. 1).Consistent with Suh and Chen (2007), the economic development that South Korea has been enjoying since the 1960s has enabled the country to rise dramatically to a high-income industrialised country from a low-income agricultural nation. The authors suggest that the economic miracle of the country is considerably traceable to the accumulation of know-how instead of traditional features of production: capital and labour. The narrative maintains that Korea achieved its knowledge-focused development by, inter alia: substantially investing in education and training; improving modern infrastructure; employing intensive research and development (R&D) to enhance innovation; articulating incentives to economic activities and improving institutional regimes that are favourable to investment which are knowledge-related. With this underpinning in mind, Korea's economic miracle substantially relied on KE: an experience which can offer valuable lessons to African economies in their current pursuit of knowledge-based economies.

Noticeably, the positioning of this study contributes to the literature in at least three ways. First, a KE diagnosis is provided by assessing KE gaps (between South Korea and specific-African countries) and suggesting compelling catch-up strategies with which to reduce identified gaps. Second, a unique opportunity also emerges from the study of examining whether the impressive economic growth that African nations have witnessed over the past decades has been accompanied by some form of convergence in KE. Third, int he light of a growing body of work on the central role of KE in the 21st development (seeLightfoot,2011; Makinda,2007; Tchamyou,2017), the comparison between frontier and peripheral countries could provide specifically targeted practical lessons to African countries currently while achieving knowledge-based economies. The intuition for convergence in KE is typically in line with the literature on cross-country income convergence which has been considerably documented within the context of neoclassical growth models and recently extended to other domains of economic development (Bruno, De Bonis, & Silvestrini,2012; Mayer-Foulkes,2010). It is within the underlying framework that the theoretical background on convergence has been employed in the modelling of strategies against software piracy (Asongu,2013) as well as the soundness of financial markets and optimal currency areas (Asongu,2013b; Bruno et al.,2012). Their study employs the four dimensions of the World Bank's Knowledge Economy Index (KEI), namely: information and communication technology (ICT), economic incentives and institutional regime, education, and innovation. The use of suggested dimensions of KE also builds on shortcomings in existing literature in which only few components of the KEI are employed (see Bizri,2009; Britz, Lor, Coetzee, & Bester,2006).

2.7 ICT Growth & Performance of Agricultural SMEs In Nigeria

In both developed and undeveloped economies, the participation of Agri-allied small and medium scale enterprises (SMEs) in promoting economic growth and value chain, is seen as critical to the development of any economy. Agri-Allied SMEs are strategic to the realization of value chain activities such as primary and secondary activities. The need to involve the Agri-allied small and medium scale enterprises in promoting economic growth and transformation cannot be over-emphasized. The value chain activities on Agro-SMEs produce provides ample opportunity for revenue generation, employment generation and effective post-harvest management. The value chain concept and ICT application are not properly applied in Agro-Allied SMEs in Nigeria, the concept of value chain is too broad, and some managers are confused on the right value chain and ICT activities to choose in their operations, either as primary or secondary value chain activities. Previous studies such as (Okoye & Akenbor, 2014) study the impact of value chain and ICT adoption on the performance of Agro-Allied businesses in Nigeria using secondary data. The knowledge obtained from the study will enlighten Agro-Allied SMEs to understand the need for and importance of participating in the value chain business to reduce the increase in annual wastages of produce, boost supply of raw material, control the buying power of the customers, minimized the threats of new competitors, reduced the threats of alternative product and enhance the performance of Agro Allied SMEs in order to increase productivity, efficiency, effectiveness and increase output. (Lumi & Opasunju, 2016). This research will also be useful to the various tiers of Government, the CBN, SMEDAN and other established government Agencies in enhancing their regulatory and supervisory roles as well as formulation of policies to ensure that measures are put in place to increase Agro Allied SMEs performance in promoting value chain and overcome challenges associated with entry barriers and to enhance the performance of SMEs in Nigeria. Students wishing to carry out research in the area of value chain and the performance of Agro Allied SMEs for academic purpose, professional bodies and researchers shall also benefit immensely from the study. (Lumi, P. R and Opusunju, I. 2016).

Agribusiness in Nigeria is booming in recent times due to the increased awareness of the need for food security and sustainable food production in the country. Some agribusiness companies in Nigeria have risen to this and made tremendous strides in the Nigerian agribusiness industry. These companies have exploited technology and innovations, an understanding of the people and the drive to meet a need and impact lives to build a booming industry in the most populous African nation. They have not just thrived for solving problems, they have also impacted a great number of people to a better livelihood directly and indirectly.
In no order, here is a list of top 10 Agribusiness companies in Nigeria:
Top Agribusiness Companies in Nigeria.
Source : 10-agribusiness-in-nigeria 2020.

1. Flour Mills of Nigeria, is a household name in the Nigerian Agri-space. Powered by a vision to be the leading food and Agro-allied group in Africa, Flour Mills of Nigeria has interests in

almost all the departments of Agriculture. As a result, FMN farms and work with farmers across the value chains.
Their strides in Agri-inputs, processing, off taking and farming are designed to produce and supply products of superior quality and value to the market, thereby, enriching the lives of consumers, customers, communities, employees, and all stakeholders. Flour Mills of Nigeria has been around for a long time and their impact in the Nigerian Agri-space is indelible.

2. OLAM Nigeria's drive cannot be hidden! With offices and operational units across all geopolitical zones of Nigeria, OLAM has a wide and growing network of farmers, suppliers, wholesalers, local buying agents (LBAs), customers and service providers. Today, these networks encompass approximately 500,000 farmers and have created tens of thousands of jobs in indirect employment. OLAM's quest to create living landscapes where prosperous farmers and thriving communities live in harmony with healthy eco-systems seems to score points. In 2013, OLAM invested in a 10,000-hectare farm with integrated mill which directly employs 950 people from the surrounding communities. The farm also supports an 'out-grower program' whereby surrounding rice-growing communities are supported by the Olam farm with training, pre-finance, fertiliser, and seeds in order to improve their paddy yields. Currently, 7,000 farmers are engaged in the program aimed at producing rice for the domestic market thereby boosting self-sufficiency.

3. Babban Gona is one of the biggest aggregator companies in the country. They provide four key services required for smallholder farmer members to be successful including Financial Services, Agricultural Input Services, Training & Development for farmer groups and Marketing Services. These services are rendered in the hopes of helping 1 million smallholder farmer members make more money by 2025. Another thing we appreciate about Babban Gona is that they serve their members in ways that minimize negative environmental impacts. This is a win for sustainable agriculture.

4. Stallion Group is a respected rice-processing company. They go further to provide seeds and other inputs for farmers to encourage rice cultivation. They also buy back the produce from the farmers. Stallion has established world-class rice mills at strategic locations, to promote milling locally in Nigeria. The company works with the farming community and encourages them to use the most recent technologies and practices in farming for increased local production of paddy and other Agric-based products and thus fosters food sufficiency. Besides rice production, Stallion Group is involved in sesame farming, seeds, and fertilizers.

5. SeedCo Nigeria Limited is a seed production and distribution company that has made a huge impact. They develop and market certified crop seeds, like hybrid maize seed, cottonseed, wheat, soya bean, barley, sorghum and more. These seeds are designed to add real and consistent value, giving farmers the opportunity to have food surplus, resulting in a good standard of living. Seed Co's hybrid seeds boost immunity, resistance or tolerance to diseases and reliable high yield performance.

6. Dangote is a household name that is synonymous with quality. Although Dangote Group has a sugarcane farm among other produce, it launched a fertilizer business in 2019. Dangote will partner with out-growers (smallholders and contract rice farmers) to cultivate and grow rice paddy and sugarcane.

7. Besides fertilizers, the BUA Group is big on sugar. The firm intensified efforts to reverse sugar importation into Nigeria, hence, BUA Sugar. BUA Sugar's primary business is the

refining of imported and locally sourced raw sugar. The refinery is structured to generate its own power during the process of converting molasses to sugar. Another win for the environment! BUA Group is also a familiar name in the cooking oil industry.

8. Indorama Fertilizers is a major urea fertilizer producer and distributor in West Africa. Besides making their fertilizer products available at an affordable cost, Indorama is an innovative company that is passionate about boosting crop productivity for farmers. They do this to help to minimize the food grain deficit in Nigeria and other countries. In fact, Indorama Agronomic Services is focused on making plants grow, with fertiliser and high-efficiency plant nutrients technology. They use their science to create technologies that can optimise farmers' fertiliser investments. These technologies also provide a one-stop crop management information resource tor the farmers.
This service provides detailed content on crops, best crop management techniques, fertilizers & pesticides, and a host of other agriculture-related material to boost crop productivity. Generic information enriches farmers with common topics on agriculture like Soils, Seeds, Nutrients, Fertilizers. It also teaches best management practices for optimum crop production and profits. Indorama's fertilizer plant has also generated lots of job opportunities contributing to the economic prosperity of Nigeria.

9. Farmcrowdy identifies as Nigeria's First Digital Agriculture Platform that empowers rural farmers. They live up to this promise by providing rural farmers with improved seeds, farm inputs, and training on modern farming techniques. FarmCrowdy goes on to provide a market for the sale of their farmers' produce. With this, they give farmers the capacity to farm more acres and by extension, increase food production and security in Africa.
Still in its fourth year, Farmcrowdy has empowered over 25,000 small-scale farmers across Nigeria. FarmCrowdy is out to empower local farmers, positively impact their lives and their families while boosting food production and sustainability in Nigeria. They finished 2019 looking good as they bagged the "Africa's Innovative Business of the Year 2019" award by the British Awards for African Development. They also won the International Award 2019 for "Innovative Ideas and Technologies in Agribusiness".

10. Agromall supports efficiency in agricultural production using various digital solutions to optimize best agricultural practices, enhance financial inclusion of the rural economy and foster effective interactions between small holder farmers and other agricultural actors. They exist to make sure that agricultural value chain participants such as farmers, input suppliers, out grower anchors and off-takers work well with each other and achieve results that are beneficial to all and the communities they work in.

These are top 10 agribusiness companies in Nigeria. They are chosen not only because they provide innovative services to both smallholder farmers and the public in general, but also because they have surpassed the profitability of agribusiness in Nigeria to make an impact in the livelihoods of people, directly and indirectly. Finally, these companies have a penchant for sustainability both for the farmers and for the environment. This is very important in the wake of climate change. In 2020, Ignitia trusts these companies will make even more impact all around.

2.8 Making Agro-Allied SMEs Achieve Sustainable Productivity in Nigeria

Resource mobilization is key for attaining sustainable increase in productivity of an organization. Sustainable development touches on the importance of intergenerational equity, ensured by conserving resources for future generations, which is one of the major features that distinguish sustainable development policy; hence, the overall goal is the long-term stability of the economy and environment, which is only achievable through the integration and acknowledgement of economic and social concerns throughout the decision-making process (Emas, 2015). In this research, sustainable development primarily concerns the substitutability of Small and medium scale enterprises involved in diverse sphere of agro-allied businesses in Nigeria and the absence of strategic entrepreneurship management techniques to ensure access and efficient utilisation of capital and needed resources for transforming creativity to innovative ventures, stimulate industry competitiveness, develop local capacity utilization through value chain systems for economic development and intergenerational equity; which recognizes the long-term scale of sustainability in order to address the needs of future generations. Emas, (2015) explains that sustainable development is anchored on weak and strong sustainability concept; while the weak sustainable development explains that only the aggregate level of capital matters: man-made or manufactured capital is an adequate alternative to natural capital. Strong sustainability, on the other hand, recognizes the unique features of natural resources that cannot be replaced by manufactured capital. Globally, agriculture plays a dominant role in the growth and development of every nation's economy; hence, the importance is anchored on the fact that it serves as the bedrock of survival of the human race, provides variety of food for the world's populace, earns foreign exchange Revenue through export of surplus produce (Elikwu & Tende, 2017); provides raw materials for the industrial sector, promotes technological advancement and employment for ever increasing population (Ikechuwu & Ndubuisi, 2020a). However, much remains to be learned about the inter-relationship between agriculture value chain and sustainable development of small and medium scale enterprises in Nigeria. Howbeit, Zubeiru (2018) states that, it is a widely recognized fact that increased productivity in agriculture increases broad base development capacity, especially in the less advanced countries. Corroborating the above assertion, it is opined that in most developing countries, agriculture is both the main traditional pursuit and the key to sustained development of modern economy, as diversification of the economy; employment and technological advancement have gone simultaneously with agricultural progress. Hence, any stagnation in agriculture translates to poor economic performance, while rising agricultural productivity leads to industrialization.

Nigeria is greatly endowed with variety of agricultural produce which can provide stimulus for the growth of processing industries. Value addition in agricultural produce provides ample opportunities for revenue generation and employment creation. Value addition is a vital component of the overall strategy towards addressing agricultural productivity, curbing post-harvest losses and ensuring food security (FAO, 2012). Processing agricultural produce into various innovative products promotes market acceptability and gives the products high economic value (Onwualu, 2012) which increases productivity and contributes to economic growth. Value chains are the full range of activities required to bring a product or service from conception, through the intermediary phases of production and delivery to final consumers. The value chain concept is no doubt revolutionizing the agriculture industry, as focus has

shifted from agricultural production to consumer demand, marketing, and the coordination of product flows from producer to consumer (Olagunju, Babatunde&Salimonu, 2012) and (Ikechuwu & Ndubuisi, 2020b). Hence, value chains reside at the core of high-impact and sustainable initiatives focused on improving productivity, competitiveness, entrepreneurship, and development of small and medium enterprises.

Small businesses represent a veritable vehicle for the achievement of national economic objectives of employment generation, increased productivity and development of entrepreneurial capabilities including indigenous technology. Other intrinsic benefits of vibrant SMEs include access to the infrastructural facilities occasioned by the existence of such SMEs in their surroundings, the stimulation of economic activities such as suppliers of various items and distributive trades for items produced and or needed by the SMEs (Olagunju, 2013), stemming from rural urban migration, enhancement of standard of living of the employees of the SMEs and their dependents and contribute to economic diversification and social stability. In both developed and emerging economies, the participation of small and medium scale enterprises (SMEs) in promoting agricultural value chain is seen as critical to the development of any economy. Thus, from the foregoing, the need to develop SMEs in promoting sustainable development of the various small business operators within the agricultural value chain cannot be over-emphasized; hence, there is the need to empirically analyses strategic entrepreneurship management and its' effects on sustainable development of agro-allied small businesses in Nigeria. (J. C. et al., 2020).

Over the last two decades, owing to the rapid and steady decline in strategic and creative thinking, decline in proper decision making by entrepreneurs and policy makers, and the absence of the capacity of small business owners to simultaneous exploit opportunities innovatively to create competitive advantage for business sustainability, emphasis in entrepreneurship literature has centred on basic managerial skills for entrepreneurs; later came the advocacy for accounting skills needed to boost entrepreneurial competencies. However, reports of high rate of business failures owned by entrepreneurs with adequate funds, accounting and managerial abilities calls for further investigations. A review of extant literature showed relationship between production capabilities and development of small-scale manufacturing enterprises, entrepreneurial skills in resource acquisition strategies and profitability of SMEs ((Mohammed et al., 2021) & Nzelibe, 2014). However, there is no available literature within the strategic entrepreneurship management construct, focusing on resource mobilisation capacity as it affects, ICT adoption and use on knowledge creation by agro-allied small businesses in Nigeria.

2.9 Dynamics of Knowledge Creation & Organisational Learning

The dynamics of knowledge creation processes represent a major research topic in management studies. The interpretation of the different tools and models as enablers for knowledge creation has important implications for achieving innovation, namely in lean product development contexts in today's competitive global economy characterized by knowledge acquisition, the concept of knowledge management has become increasingly prevalent in academic and business practices. Knowledge creation is an important factor and remains a source of competitive advantage over knowledge management (Jaleel & Verghis, 2015). Constructivism holds that

learners learn actively and construct new knowledge based on their prior knowledge. Therefore (*Lave-Wenger-Situated Learning-Part I,* n.d.), 1991), there needs to be a shift in locus of constructing knowledge from the individual to collective construction. The concept of knowledge building communities has emerged recently as a foundation for re-examining pedagogical approaches in education. To understand the true nature of knowledge, it is necessary to recognize that tacit and explicit knowledge are essential to knowledge creation (Nonaka & Takeuchi, 1995), Knowledge can be created through conversion between tacit and explicit knowledge by four different modes. The four modes of knowledge conversion are created when tacit and explicit knowledge interacts with each other. It is in this very act of conversion from tacit to explicit knowledge that learning is created. Educators must understand the dynamic nature of knowledge itself in order to practice effective knowledge management in multi-disciplinary contexts. (Sajna & Alie, 2015) it is also crucial for educators to focus on effective methods of delivering content, the media used, and the overall quality of the instruction materials. Information technology facilitates knowledge management practices by disseminating knowledge and making codified knowledge retrievable. The study therefore tries to analyse the effectiveness of ICT adoption in developing the knowledge creation ability in SMEs, which forms part of the critical element of organisational learning.

In this situation, knowledge has become one the most important intangible assets for the firm since it is accumulated through organizational learning, and is difficult to imitate (Winter, 1987; Prahalad & Hamel, 1990; Leonard-Barton, 1992, 1995; Henderson & Cockburn, 1994; Nonaka, 1994; Kogut & Zander, 1996; Nonaka & Toyama, 2003; García et al., 2007). To maximize the value of knowledge is important for managers (Uziene, 2010) since knowledge management allows the firm to influence core competences and obtain competitive advantage in a long term, the creation of knowledge within organization being of particular importance for this process (Nonaka, 1994; Nonaka & Konno, 1998).

To have the capacity to generate new knowledge is vital for organizational learning (Nonaka & Konno, 1998). Nowadays, successful organizations are considered those that have the capacity to learn and do it quickly (Stalk et al., 1992). Possessing an ability to learn and anticipate in markets is currently a core competence because we face a process of introducing new products with shorter half-life and greater competition, which requires a rapid response capacity to retain and capture new customers beating competitors, so with this purpose firms must use a learning initiative targeted to different markets (Day, 1992, 1994). All their aspects suggest the ability to learn to be major sustainable competitive advantage (Senge, 1990; Day, 1992; Kiernan, 1993).

Contemporary knowledge society attaches much importance to the concept of knowledge management. Views of learning are strongly focused on ideas of student-centeredness and social contexts for learning where learning occurs as a socio-cultural system, within which learners interact and receive scaffolding through the help of others. These ideas are grounded in socio-cultural theories of learning of Vygotsky (1978) and more recently in communities of practice theories. According to communities of practice theories, ‘learning is an inherently social and participatory activity, conversational in nature, and where participation involves mutual engagement with other members of the group in negotiating meaning.’ (Lave, 1991).

Choy et al. have stated that ‘A community can provide the social interactions and relationships which are essential for learners to collaboratively construct shared knowledge.’

(Scardamalia & Bereiter, 2006) suggest that ‘there needs to be a shift in locus of constructing knowledge from the individual to collective construction. They argue that education needs to be refashioned in a fundamental way so that students are initiated into a knowledge creating culture and see themselves as part of a global effort to advance knowledge.’ According to McLoughlin et.al, 2007) Web technologies can play a crucial role in fostering knowledge building in communities or networks and aid in the pre-eminence of content creation over content consumption and the collaborative production of knowledge. Grant (2014), is of the opinion that these occur through a shared goal of developing and sharing ideas publicly with peers, offering critiques and alternative explanations. If our task is to transform educational practices, we have to provide some new ideas about how students’ active engagement, meaningful learning and knowledge advancement could be facilitated. Although (Ward et al, 2009) there is widespread agreement about the importance of transferring knowledge into action, we still lack high quality information about what works, in which settings and with whom. While there are many models and theories for knowledge transfer interventions, the majority are still untested, meaning that their applicability and relevance is largely unknown.

Furthermore, knowledge is considered the key to innovation and competitiveness in the contemporary manufacturing world. It is a vital asset for organizations, allowing them to gain sustainable competitive advantage over their rivals (Hislop, 2009). In addition, it is often claimed that knowledge creation will determine whether businesses can capitalize on this valuable asset (Tsai & Huili, 2007). It becomes of primary importance not only ‘owning’ knowledge, but also above all being able to manage it, influencing therefore the phases of its creation, storing, diffusion and transfer (Pezzillo Iacono, Martinez, Mangia, & Galdiero, 2012). If this latter opinion is only partially shared among knowledge management scholars, there are several streams of thought on why knowledge is needed, what is its role within an organisation and what are the right tools to create and share it. Reflections on knowledge creation spread within literature around mid-1990’s, replacing or overlapping issues such as organizational learning, database management and information management (Brix, 2017), and still do not seem to have found a precise and suitable accommodation. (Paolo Canonico, et al, 2020).

Previous researchers have suggested several different theoretical models to understand the dynamics of knowledge creation processes, including Nonaka (1994), Boisot (1999), Nonaka, Toyama, and Konno (2000), Nissen (2006) and Brix (2017). Nonaka and Takeuchi (1995) theoretical framework of Socialization–Externalization–Combination–Internalization (SECI) provides a fundamental (and well-known) model to analyse knowledge creation practices. The SECI model was used by Nonaka and Takeuchi (1995) to provide a thorough explanation of how Japanese car manufacturers create innovation dynamically, and secure competitive advantage (Chérif & Makhlouf, 2016). The interpretation of the different tools and methods as enablers for knowledge creation is a key issue in knowledge-oriented studies on lean product development (LPD) (Solaimani, Talab, & van der Rhee, 2019). This relies on a set of engineering and work organization principles and techniques, many of which were pioneered by Toyota. Their overall objective is to achieve shorter lead-times, reducing costs and

delivering higher quality than traditional product development approaches (Letens, Farris, & Van Aken. 2011).

2.9.1 Knowledge creation and the SECI model

Previous studies on knowledge creation have developed interesting research questions about the conditions that facilitate knowledge creation, how to encourage knowledge creation (Tsai & Huili, 2007), and organizational mechanisms that may allow individuals to develop knowledge collectively within the organization (Chen, Liu, & Xie, 2012). However, there are relatively few contributions discussing opportunities and limitations on context-specific mechanisms of knowledge creation in particular industries (Yang, Fang, & Lin, 2010). To understand the influence of context in knowledge creation, it is essential to appreciate that knowledge has two forms (tacit and explicit). Explicit knowledge may be reified and therefore can be communicated, processed, transmitted, and stored relatively easily. Tacit knowledge, however, is only known by an individual and is difficult to transfer to other individuals. It is embodied in actions, attitudes, commitments, emotions, and behaviour, but is very hard to convey through language. Tacit knowledge cannot be separated from the environment because the environment provides knowledge with meaning. Nightingale (1998) noted:

"This tacit background enables us to "see as" rather than simply "see", as we actively interpret our experiences rather than passively receive information...this tacit background knowledge gives us the capacity to interpret information and comprehend things that cannot be codified, like how to ride a bicycle. Thus, tacit knowledge is both the background of interwoven experience and the automatic capacity we have to relate experience to it" (p. 693). The process of the creation and transfer of knowledge depends on the interaction between tacit and explicit knowledge, according to a logic defined as "knowledge conversion" (Nonaka & Takeuchi, 1995). There are two main elements of this process, the social dimension, and the dynamic dimension. The social dimension reflects the fact that individuals are never completely isolated from social interaction. The cognitive approach, in which individuals are considered to be thinkers, is therefore tempered with a strong sociological influence, because tacit and explicit knowledge exist through a social conversion process (Nonaka & Takeuchi, 1995).

The dynamic dimension is given by the interaction between the two forms of knowledge. Having singled out the cognitive processes necessary for creating knowledge, Nonaka and Takeuchi (1995) then attempted to analyse the social conditions that favour the creation of knowledge. They described a concept called ba, explaining that it was a physical (e.g., office, dispersed business space), virtual (e.g., e-mail, teleconference), or mental (e.g., shared experiences, ideas, ideals) space, or any combination of these. Nonaka and Konno (1998) noted: "What differentiates ba from ordinary human interaction is the concept of knowledge creation. Ba provides a platform for advancing individual and/or collective knowledge" (p. 40). Nonaka and Toyama (2007) commented that:

"The essence of ba is the contexts and the meanings that are shared and created through interactions which occur at a specific time and in a specific space, rather than a space itself.

Ba also means relationships of those who are at the specific time and the specific space" (p. 23).

In ba, social interchange can take place and generate knowledge. Ba therefore becomes a shared and dynamic context, constantly affected by change drivers. It is a working space in which fruitful interactions be- tween individual subjectivity and other participants' objectivity meet. Knowledge is therefore generated through social interaction. Certain organizational conditions may favour the creation of knowledge from both a practical and a conceptual point of view (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995; Nonaka, 1994). Appropriate interventions may therefore affect a firm's ability to innovate and solve problems.

The SECI model proposes four different forms of interaction that lead to four forms of knowledge production or conversion. The interaction follows an evolutionary path that may be seen as an ongoing spiral, as the interaction continues over time. The four modes of knowledge conversion (Nonaka et al., 2000) are:

• **Socialization** is the creation of new tacit knowledge from other sources of tacit knowledge through social interaction. It requires sharing the same experience through joint activities such as being together, spending time together, or living in the same environment.

• **Externalization** enables the conversion of tacit knowledge into explicit forms. Through this process, tacit knowledge is expressed and translated into forms like concepts, hypotheses, diagrams, models, or prototypes, so that it can be understood by others.

• **Combination** is the creation of new explicit knowledge by merging and synthesizing existing explicit knowledge. Knowledge is ex- changed and combined through media such as documents, meetings, or communication networks.

• **Internalization** is the conversion of the organization's explicit knowledge into individual and group-level tacit knowledge. When knowledge is internalized into individuals' tacit knowledge, in the form of shared mental models or technical knowhow, it becomes an asset (Vaccaro et al., 2010). Individuals typically obtain tacit knowledge through hands-on experience. It is useful to consider that existing knowledge (either at team or organizational level) may be exploited to deal with problems by exploring, defining, and developing solutions. Within the SECI model the ba plays a vital role: participants in the ba take action to solve specific work problems, but also develop their collective knowledge dynamically, through the four phases of the SECI model. Environment and organization interact, creating knowledge. Knowledge is therefore created (instead of just processed) through a nexus of interaction between people, problem-solving actions, and tasks.

2.10 Managing Knowledge Creation Processes for Value Creation

The rapid advancement in Information and communication technologies (ICTs), has brought enormous business opportunities as well as challenges to organisations. Nowadays, organizations have realized that knowledge, its effective use and the fast acquisition and utilization of new knowledge represent the only source of sustainable competitive advantage. In fact, an effective exploitation and management of knowledge resources are the basis of the development of those capabilities that ground the organization's capacity to deliver successfully targeted value propositions. During recent decades, there has been a growing interest in the processes of management of knowledge resources. Currently the debate on knowledge management processes is still lively. The dynamics which link knowledge processes to value creation, the valuation of their impact on organizational performance and the role of some organizational and technological resources as enablers or restraints of successful knowledge management emerge as relevant topics to be investigated. This introduction aims to develop some theoretical and managerial reasons explaining the importance of an effective management of knowledge processes to deal with the uncertainty, change, and turbulence of the current socio-economic scenario. (Khan Khilji et al., n.d.).

In the last decades, the pressure of global competition, the increasing product complexity, the relevant technology progress, the strong customer orientation has gradually forced companies to improve their capability to create and deliver value. Looking for new differentiators and drivers of bottom-line performance, companies have recognised the relevance of knowledge resources and their management as key sources of competitive advantage (Chase, 1998; Lev and Daum, 2004; McGaughey, 2002; Nahapiet and Ghoshal, 1998; Peteraf and Bergen, 2003; Sullivan, 1999; Teece, 2000, 2007). In line with the main strategic thoughts provided by the resources based-view (RBV), the competence-based view (CBV) and the knowledge based-view (KBV), companies have realised that their sustainable competitive advantage results both from the possession of resources that are hard to transfer and accumulate, inimitable, not substitutable, tacit in nature, synergistic, not consumable because of their use and the ways of combining and developing them. The importance attributed to the deployment and exploitation of knowledge resources to support and drive organizations' performance improvement is proved by the attention that, in the last decades, many companies have paid to the implementation of knowledge management initiatives. The knowledge management research stream is rich of case studies and empirical research investigating and illustrating the managers' interest for managing knowledge within organizations. It is possible to report many different knowledge management initiatives implemented within organizations with a wide range of managerial and strategic purposes. However, nevertheless the rich case record, it is still difficult to clearly assess why by managing knowledge resources companies can improve their performances and progress their value creation dynamics. In addition, it appears quite difficult to prove the return on investments of knowledge management initiatives due to the difficulty to rationally demonstrate and measure the benefits related to the development of knowledge resources. (Villalta et al., 2012). Understanding if the development of knowledge resources and the implementation of knowledge management initiatives can really make a difference within an organization, requires, among other things, to clarify the role of knowledge resources and knowledge processes into the company's value creation dynamics and to explore the direct and indirect network of relationships linking knowledge resources to organization's

capabilities, organisational processes, performances objectives and strategic value propositions. This is an important issue, first, because not all organization's knowledge resources have the same strategic relevance, and their importance can change over the time and accordingly to the evolution of the organization and of its business. Many knowledge resources within some organizations are just commodities, while in other organizations they can represent critical sources of value. The management attention must be focused on those knowledge resources which represent strategic assets within the organization due to their relevance for the achievement of company's business and performance objectives. Furthermore, a clear understanding of the strategic relevance of organizational knowledge resources allows to define better focused knowledge management strategies as well as to think knowledge resources to strategy planning, execution, and achievement. From an academic point of view, in the last decades, the considerable interest in knowledge and its management as driving forces behind the creation of organizational value has generated several studies. Despite that, the research on this emergent subject appears still widely open to new theoretical and practical contributions. Especially, more remains to be understood about the complex dynamics through which knowledge resources and knowledge processes take part to company's value creation (Adams, 2008; Carmel and Tishler, 2004; Carlucci and Schiuma, 2007; Daum, 2002; Marr et al., 2004; Schiuma et al., 2007, 2008). The variety of ways of managing knowledge raises the questions of how knowledge can be coherently and successfully converted in value, what are the "right" or appropriate processes to manage knowledge resources, how these processes can contribute to improve companies' capability to compete in today's competitive scenario, which are proper tools supporting effective knowledge processes, what practical processes and systems can companies put in place to support sharing and creation of knowledge and, therefore, to contribute to sustainable value creation in the new economy. In further explaining the rationale for managing knowledge processes in the current competitive context, organizations have realized that knowledge, its effective use and the fast acquisition and utilization of new knowledge represent the only source of sustainable competitive advantage (Davenport and Prusak, 1998). Especially, they are increasingly aware that managing knowledge resources maximize business opportunities and minimize the risk of missing opportunities (Chong et al., 2000). In fact, an effective exploitation and management of knowledge resources are at basis of the development of those organisational capabilities that ground the company's capacity to perform business and deliver targeted value propositions. The development of organisational knowledge resources through organisational learning mechanisms and knowledge management processes, affects organisational capabilities (e.g., Andriessen, 2004; Hamel, 1994; Mills et al., 2002; Sanchez, 2001). Then, organisational capabilities are translated into performance and value consequences when they are leveraged into products and services that, in turn, generate value for company's stakeholders. In sum the effectiveness and productivity of organisational processes, such as business processes, support processes and decision-making processes (Porter, 1985), and, consequently, the company's ability to generate value, originates from cause-and-effect chains activated by the proper management of organisational knowledge resources (Carlucci et al., 2004). Hence, value creation rests on cause-and-effect chains activated by the development of organisational knowledge resources through knowledge processes and learning mechanisms.

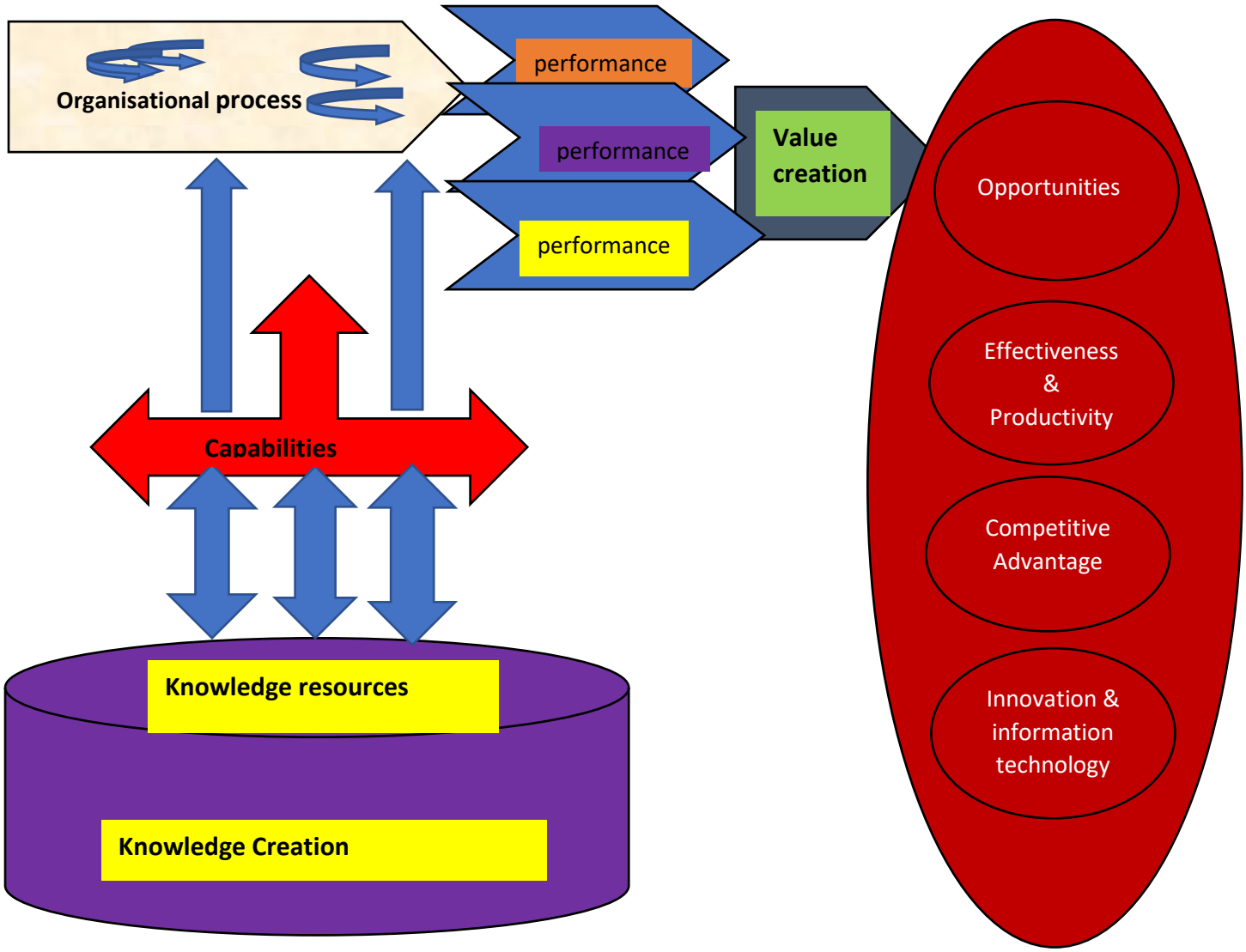

Figure 2 Links Between Knowledge Processes & Value Creation

Source: Researcher's Model 2022

From the above researcher's model, it is therefore understandable why the extraction of value from knowledge resources requires to an organization the capacity to conceive and implement in an integrated way the organization's strategy and value proposition (Schiuma et al., 2012), the organisational processes, the knowledge processes (Liebowitz, 2004) and the set of organizational and managerial activities and projects designed for the development and exploitation of knowledge (e.g. teamwork, formal an informal meetings, community of practice, adoption and use of ICT tools and so on). Value creation through knowledge resources is achieved by implementing specific principles and processes including the contextual alignment of their applications with the organization's strategy (Marr et al., 2003). In other terms, the creation of value through knowledge is conditioned by the way knowledge resources are deployed and managed through appropriate processes (Cuganesan, 2005) coherently with

organisation's strategy. During the last decade, a growing interest in the processes of management of knowledge resources has been experimented. Several theoretical models and approaches aimed to explain how organizational knowledge is created, transferred, and crystallized have been produced. Often the proposed models and approaches have used different terminology to denote similar knowledge processes. Therefore, different classifications of knowledge processes have been proposed. This has produced confusion and poses a threat to practitioners who are starting to get a grasp of the subject. This calls for a need of lexical standardization and the provision of a more holistic understanding of knowledge processes. (Schiuma et al., 2012). Regardless of their taxonomy, knowledge processes enable organisations to acquire new knowledge for it to apply, store, share and preserve vital knowledge resources, to enhance the impact of knowledge on strategic goals achievement (Sveiby, 1997). Knowledge processes run within or across organizational processes and contribute to get the most out knowledge resources utilized in the organizational processes. They allow the structure to organize knowledge resources and optimize their use and, in doing that, they intervene in the creation and development of organisational capabilities. Thus, it is understandable that organizations need to manage not only their knowledge resources, but also the processes that handle them. Additionally, several scholars have described knowledge processes as knowledge management enablers along with other organizational factors, such as for example, organizational culture, information technology, strategy, leadership, top management support (see for example Anderson and the APQC, 1996; Ernst and Young, 1998; Lee and Kim, 2001; Arthur D. Little, 1998). This study attempts to enrich theoretical and practical knowledge about the role of knowledge processes and, more generally, knowledge management enablers within the complex mechanisms of organization's value and knowledge creation.

2.11 Social-Media as Tool for Facilitating Knowledge Creation & Innovation in SMEs

With the increasing interest in businesses' collaborative and open approach to innovation, scholars have started to investigate the enablers and processes useful to acquire and manage knowledge to increase competitiveness (A. Santoro et al., n.d.). In fact, innovation models suggest that firms can and should integrate internal and external knowledge in their operations, creating knowledge through internal departments and acquiring knowledge from external ecosystems (Scuotto et al., 2016). In the current scenario, social media and their impact on co-creation innovation is a topic that has been around for years, and evidence in management field suggests that many companies, especially small and medium enterprises (SMEs), have struggled to apply a new concept of social product development (Soto-Acosta et al., 2017). In this regard, a stream of studies indicates that with the technological progress of the last decades, new ICT should be implemented in organisational activities to acquire, store and process information and knowledge that facilitate knowledge creation and innovation (E. M. Agwu & Murray, 2015). Social media are considered a new form of ICT that involves active content creation by users and members (Mangold and Faulds, 2009; Goh et al., 2013; Martini et al., 2013) and through which firms can acquire useful knowledge, conduct marketing activities,

increase sales and deliver customer service, and co-create products and services (Piller et al., n.d.). The impact of social media on the innovative, customer-based co-creation process is shown in proactive creative and social collaborations between firms (producers) and users (i.e., virtual consumers), by enabling new product or service development (Roser et al., 2009). In a context of knowledge-based competition, this assumption underpins the idea that the customer is the main external source of knowledge for innovative firms (Matusik and Hill, 1998; Del Giudice et al., 2013, 2015; Romano et al., 2014). Moreover, existing research suggests that SMEs differ from larger firms in terms of fewer financial, human, and technological resources (Brunswicker and Vanhaverbeke, 2015). Innovative projects which are based to a large extent on external sources of knowledge and capabilities demand shorter expansion times and require less investment and more flexibility compared to similar ones based entirely on internal sources of knowledge (G. Santoro et al., 2018). Hence, SMEs find opportunities in user engagement through social media tools to acquire knowledge and exploit digital ecosystems (Liang and Turban, 2011; Turban et al., 2011).

Recently, a rich literature has investigated the role and contributions of customers especially in open innovation processes by emphasising a marketing-driven approach (Sawhney et al., 2005; Edvardsson et al., 2012; Scuotto et al., 2017c). The growth of social media engagement among companies shows a shifting from an industrial, customer-based innovation perspective to a social media, customer-generated one, denoting at the same time a focus on tools, mechanisms and strategies applied by firms to engage customers and users with their innovation processes (Prahalad and Ramaswamy, 2004; Hippel, 2005). Consistently, some recent studies indicate that SMEs increasingly adopt ICT to exploit digital ecosystems with customers and business partners (Lopez-Nicolas and Soto-Acosta, 2010; Soto-Acosta et al., 2014; Scuotto et al., 2017). Despite such an interest, there is still a gap concerning the role of social media as a new ICT that fosters knowledge acquisition, knowledge creation and innovation, at least through quantitative methods. In fact, despite empirical research exploring the changes in innovation dynamics triggered by social media, the benefits for SMEs of the use of these digital platforms to acquire the knowledge needed for innovative activities are still unexplored. Recent studies have measured the benefits of social media usage on financial performance indicators such as ROI (Scuotto et al., 2017) and productivity (Scuotto et al., 2017). An increasing number of researchers have started to analyse usage of social media within a business model, by arguing the effects on knowledge management and creation, and innovation from different points of view. These researchers underline that social media engagement is increasingly significant in sustaining competitive advantage among firms. Furthermore, studies of social media patterns have become an emerging research trend in both knowledge and organisational management (Turban and Greening, 1997; Yates and Paquette, 2011; Chua and Banerjee, 2013), changing the landscape and the ways we understand the participation of the customer in a proactive innovation process. According to the principles of service-dominant logic (Vargo and Lusch, 2008) and co-creation practices (Prahalad and Ramaswamy, 2004b; Campanella et al., 2017; Sandulli et al., 2017), value is co-created with customers and innovation is influenced by social forces and relations. The literature review aims to contextualise and expand the central aspects of social media within the management field by according to them social and knowledge construction perspectives.

Firms are facing pressures and opportunities in the current dynamic social, technological, and economic environment. First, it has been asserted that knowledge is the main source of competitive advantage in today's knowledge economy (Basly, 2007; Solima et al., 2016). Moreover, knowledge is widely dispersed in the global environment, and therefore companies strive to acquire strategic knowledge (Chesbrough, 2006; Chen et al., 2016; Santoro et al., 2016). Second, the technological progress led by internet and digital tools cuts the distance between knowledge sources. Accordingly, the attention of scholars has been devoted to the strategic use of new ICT to acquire and manage knowledge and increase competitiveness (Soto-Acosta et al., 2014; Del Giudice and Della Peruta, 2016). In many studies, innovation patterns have been shown to be related to the ability of organisations to join new sources of knowledge or, alternatively, to connect to previous ones in an innovative manner (Mansfield, 1986; Ferraris et al., 2017; Santoro et al., 2017). The increasing involvement of customers in firms' innovation processes and the decreasing costs of internet technologies have led to larger investments in ICT within firms (Mangold and Faulds, 2009; Goh et al., 2013; Martini et al., 2013). Social media have been increasingly used by firms and people all over the world. They are considered new ICT that involves active content creation by users and members (Mangold and Faulds, 2009; Goh et al., 2013; Martini et al., 2013) and through which firms can acquire useful knowledge, conduct marketing activities, increase sales, and deliver customer service, and co-create products and services (Piller et al., 2012; Bresciani et al., 2016; Scuotto et al., 2017; Scuotto et al., 2017). Therefore, social media are highly interactive platforms in which individuals, collectives and businesses constantly interact and communicate in order to share, co-create, exploit, and explore new user-generated innovation opportunities (Kaplan and Haenlein, 2010; Pilleret al., 2012). Examples of social media are Facebook, Twitter, Wikipedia, LinkedIn, Xing, Google+, Youtube, Vimeo, Picasa, Flickr. Companies' online forums can be also considered social media, where customers discuss products and services. In the last several years, firms have increasingly deployed these tools to improve operations, collaborations and knowledge sharing with customers and other external actors. At the same time, technological facilities draw on the social media conversation of the firms, enabling virtual platforms via ICT and new fields of application in social media based on the usage of mobile data and the fast adoption of smartphones. In this way, firms find value in the knowledge obtained, improving processes and products or services (Remondino and Bresciani, 2011). In fact, these technological and digital tools have a twofold objective. On one hand, they foster marketing, advertising, and branding activities in order to increase sales (Culnan et al., 2010), which can be considered as a variable for user-firms to evaluate customer engagement (Love et al., 2011). On the other hand, firms are increasingly conscious that social media can be used as strategic platforms to engage users in the idea generation process (Füller and Matzler, 2007). For instance, LinkedIn, Facebook, and YouTube have facilitated relationships between SMEs and users, thanks to the growth in interactive communication one to million users over the past few years (Moital et al., 2009; Piller et al., 2012; Dijkmans et al., 2015; Leung et al., 2015). Accordingly, social media are recognised as a driver to the generation of new ideas (Chesbrough, 2011; Love et al., 2011; Mount and Martinez, 2014).

Similarly, according to (Piller et al., n.d.), social media can be used by firms to conduct marketing activities, increase sales, deliver customer service, and assist in the co-creation of new products. For example, Starbucks created a platform where customers can share feedback, discuss offerings, and generate new ideas useful for the management of the firm (Gallaugher

and Ransbotham, 2010). Another example is Barilla, an Italian firm operating in the food industry. Barilla developed a platform allowing customers to submit ideas about products and discuss ideas provided by others, again developing innovative ideas through customer engagement and user-generated content (Tussyadiah and Zach, 2013). Finally, it is well-known that Procter & Gamble increases its co-creation value through the Connect + Develop programme, according to which people all over the world can contribute to product development by responding to the firm's call to address several problems. However, these are spot examples, and large sample studies providing evidence on the link between social media, knowledge creation and innovation, are missing in the literature. (Pironti et al., 2020).

2.12 Knowledge Creation: Individual and Organisational Perspectives

Given the crucial role that knowledge creation plays in contemporary business enterprises, a fundamental question arises: what processes are facilitating knowledge creation? (li & Gao, 2003b), Nonaka and Takeuchi (1995) proposed a research framework to describe knowledge creation processes. This framework contains two dimensions: epistemological and ontological. The former stands for the characteristics of knowledge, which distinguish tacit and explicit knowledge, and the key to knowledge creation lies in the mobilization and conversion of tacit knowledge. They argued that knowledge is created through the interaction and intersection between tacit and explicit knowledge, following four different modes of conversion: socialization, externalization, combination, and internalization, i.e., the SECI processes. The second dimension of Nonaka and Takeuchi's framework is ontological, which is concerned with the levels of knowledge-creating entities or mechanisms that may initiate the SECI processes such as individuals and organizations. In order to create knowledge effectively, the interactions and cooperation between the epistemological and ontological dimensions are important. Since Nonaka and Takeuchi only provided a theoretical framework for acquiring and converting knowledge, they did not identify the enabling conditions from the ontological perspective. The aim here is to identify such factors. In other words, the proper context for facilitating knowledge creation on the individual as well as the organizational level is a problem deserving further analysis in terms of individual perspective, according to Nonaka et al.'s definition (2000), information becomes knowledge when it is interpreted by individuals and given a context and anchored in the beliefs and commitments of individuals. In addition, in Nonaka and Takeuchi's book (1995), they argued that 'autonomy' is one of the most important factors that motivates individuals to create new knowledge. Although Nonaka and Takeuchi (1995) and Nonaka et al, (2000) provided a rich conceptualization of knowledge creation from the individual perspective, they did not identify concrete guidelines for enabling knowledge creation. Thus, (Sajna, 2015) examined a selection of information science literature, and argued that two types of characteristics concerning individuals may have an impact on knowledge creation: user involvement from Barki and Hartwick (1989) and cognition of knowledge from King and Ko (2001). Regarding user involvement, according to Barki and Hartwick's theory (1989), user involvement refers to a psychological state reflecting the importance and personal relevance of a new IS (information system) to the user. Various researchers (Debrabander and Edstrom (1977); Ives and Olson (1984); Powers and Dickson (1973) also contended that user

involvement is a necessary condition for successful development of a computer-based IS. In addition, contemporary literature indicated the important role of ISs in facilitating knowledge management (e.g., Alavi and Leidner (2001); Nonaka et al. (2000). Thus, user involvement may have an impact on knowledge creation. Another individual characteristic is cognition of knowledge. Huber argued (1991) that only when individuals are cognitively willing to 'search and notice' do they begin to appreciate the value and usefulness of knowledge. King and Ko (2001) also contended that cognition is the most fundamental and important part of initiating knowledge creation. All the subsequent knowledge management processes, such as knowledge sharing and dissemination, elaboration, infusion, thorough understanding, and organizational performance, have their roots in cognition. From the environmental or organizational perspective, according to the theory proposed by Nambisan et al. (1999), appropriate organizational design and activities may influence the result of knowledge creation. Therefore, we argued that organizations might adopt appropriate managerial interventions to facilitate knowledge creation. In order to represent the appropriate managerial interventions offered by organizations, we borrowed the term 'organizational mechanisms' from Nambisan et al. as embodying the various learning and knowledge-sharing activities. In summary, this research addresses the following question: what are the respective roles of individuals as well as SMEs in facilitating knowledge creation? Since previous research did not examine the impact on knowledge creation processes (SECI) from both individual and Firms perspectives (i.e. ontological entities), this study examines the factors and also analyse the effects of ICT adoption and use that influence knowledge creation by SMEs in a broader and comprehensive way. Shie-Wei et al, (2003) argue that two characteristics of technology users – user involvement and cognition – might have an impact on knowledge creation. In addition, appropriately designed organizational mechanisms may also be critical to knowledge creation. Knowledge has been defined as 'justified true belief' (Nonaka & Takeuchi, 1995). More specifically, the definitions of knowledge range from 'complex, accumulated expertise that resides in individuals and is partly or largely inexpressible' to 'much more structured and explicit content'.

Individuals' roles: According to Nonaka et al.'s (2000) theory, the roles played by individuals are the fundamental part of knowledge creation, because knowledge is created through the interactions among individuals or between individuals and their environments. Although the roles of technology users as a source of knowledge creation and creativity have been acknowledged in the literature (Ciborra (1991); Nambisan et al. 1999, little research has examined the roles of individuals in facilitating knowledge creation. Therefore, this study examines IT (information technology) users' impact on knowledge creation. ICT adoption and use by SMEs, has tremendously surged with interest spanning different systems and platforms in different contexts (Benbasat and Barki, 2007). The motivation for such studies as they relate to SMEs is critical because SMEs drive the informal sector of any economy (Scupola, 2009). However, the adoption pattern of ICT in parts of Africa is slower relative to other continents and that of Nigeria when compared with many other economies, including (South Africa, India, Belgium and Finland) is rather very slow though steady, but follows more imitative approach (Olise, 2014). Shieh-Wei Chou & Yu-Hung Tsai, 2003), after examining a selection of MIS (management information systems) research, we identified two critical aspects concerning IT users' roles in facilitating knowledge creation -user involvement and user cognition. After examining a selection of MIS (management information systems) research, we identified two

critical aspects concerning IT users' roles in facilitating knowledge creation – user involvement and user cognition. The term user involvement has been used in a variety of fields to describe a subjective psychological state reflecting the importance and personal relevance of an issue (Sherif et al. 1965 [13]) such as an advertisement or product (Krugman 1967), and an individual's job (Lawler and Hall 1970). In a system development context, user involvement should refer to a psychological state reflecting the importance and personal relevance of a new system to the user (Barki and Hartwick 1989). Nonaka et al, have identified the critical role that information systems play in facilitating knowledge creation. In our study, user involvement represents the importance and personal relevance of a new system to users. Thus, it seems reasonable to assume that IT users' involvement may have a positive impact on knowledge creation. (Nonaka et al, 2000).

According to King and Ko's theory, cognition plays a critical role in initiating knowledge management. They propose a framework that specifies the possible stages where knowledge creation and management occur. These stages include cognition, postcognition, organization related actions by the acquirer, diffusion, infusion, thoroughness, organization related actions by others, and organization performance. (King and Ko,2001) also argued that individuals' cognition of knowledge plays a critical role in facilitating organization performance. In addition, only when individuals are cognitively willing to 'search and notice' (Cohen and Levinthal 1990; Huber 1991) do they begin to appreciate the value and usefulness of knowledge. Then, knowledge creation is possible. Therefore, individuals' cognition of knowledge is the fundamental part of knowledge creation. Organizations with more cognition of knowledge usually realize the importance of knowledge, thus are more willing to share, adopt, and analyse knowledge. As a result, such organizations achieve knowledge creation more effectively and usually acquire better organization performance. Although King and Ko's conceptual framework specifies the importance of individuals' cognition of knowledge in establishing successful knowledge creation, they do not empirically examine the relationship between cognition and knowledge creation.

Organizational Mechanisms: In (Nambisan et al.'s, 1999) research, a mechanism is defined as a structural arrangement or a variety of design actions to facilitate interactions and knowledge exchange among organizational members. Empirical studies also indicate that mechanisms concerning learning and knowledge acquisition can exhibit differential efficacy with regard to user innovation. Visionary teams (e.g., IT steering committees) have the ability to provide a strategic vision for their organization as well as to create contexts for the integration of business and technical knowledge (King and Teo 1994). Mechanisms (e.g., relationship manager) that establish partnerships providers help to maintain dialogue, between users and IS while training and learning activities (e.g., attending conferences or trade fairs) may provide awareness of working practices. Although the roles played by the mechanisms in promoting interaction and knowledge transfer is widely acknowledged, no empirical research specifically investigates how effective alternative mechanisms are in facilitating the knowledge creation process. Finally, to examine the effect on knowledge creation in a comprehensive perspective, we have considered the composite effect of the variables on knowledge creation. (Shih-Wei Chou & Yu-Hung Tsai,2004).

The study investigates the role of individuals and organizations in facilitating knowledge creation. More specifically, as stated earlier, we employed user involvement and cognition of knowledge to represent the characteristics of individuals (Barki and Hartwick 1989; Barki and Hartwick 1994; King and Ko 2001). In addition, we adopted organizational mechanisms to represent a variety of design actions provided by organizations that may influence IT users' knowledge creation (Nambisan et al. 1999). Unlike previous research, this study examines the impact of both individuals and organizations on knowledge creation in a more comprehensive way.

From the individual perspective, researchers (Alavi & Leidner, 2001); Nonaka and Takeuchi 2000) have identified the critical role that information systems or information technology play in facilitating knowledge creation, such as knowledge storage/retrieval, knowledge transfer, and knowledge application. Research also indicates user involvement is a necessary condition for IS success. In addition, according to King and Ko's (2001, knowledge value chain model, cognition of knowledge plays a critical role in initiating knowledge. Although it is reasonable to emphasize the importance of user involvement and cognition on knowledge creation, we cannot neglect the impact on knowledge creation of organizational factors, such as organizational mechanisms (Alavi and Leidner 2001; Nambisan et al. 1999).

SUMMARY:

Since previous researchers analysed the factors influencing the effectiveness of knowledge creation only from a single viewpoint, i.e., the individual (user involvement and cognition) or the organizational (organizational mechanisms) viewpoint or proposed a conceptual framework (Nonaka and Takeuchi 1995, Nonaka et al. 2000) without any empirical experiment to indicate its feasibility, their research is either not comprehensive or not practical. This study avoids such single viewpoint analysis by examining the influence of both individual and organization on the effectiveness of knowledge creation. Based on respondents from organizations in manufacturing, trade, transportation and service industries, computer industries, finance, and academic institutions, it was found that user involvement, cognition, and organizational mechanisms are all positively related to the effect of knowledge creation. The composite effect of the aspects also exerts a positive effect on facilitating knowledge creation.

Chapter 3: Conceptual Framework

3.0 Introduction

ICT adoption and use by SMEs, has tremendously surged with interest spanning different systems and platforms in different contexts (Benbasat & Barki, 2007). The motivation for such studies as they relate to SMEs is critical because SMEs drive the informal sector of any economy (Scupola, 2009). However, the adoption pattern of ICT in parts of Africa is slower relative to other continents and that of Nigeria when compared with many other economies, including (South Africa, India, Belgium and Finland) is rather very slow though steady, but follows more imitative approach (Olise et al., 2014).

Against this backdrop, this research is aim at analysing the effects of ICT adoption and use on knowledge creation by Agric-SMEs, a case study of Agric-SMEs in Nigeria. The rapid advancement in Information and communication technologies (ICTs) has brought enormous business opportunities as well as challenges. One of these challenges is the demand for ICTs skills and expertise in adopting and implementing these emerging technologies. Coping with skills shortages poses a serious challenge across all developed and developing economies. Lack of ICTs skills and knowledge is more evident in small and medium-sized enterprises (SMEs). (Yanqing et al., 2002) 'as training is regarded as the most effective way of improving skills and enhancing knowledge'.

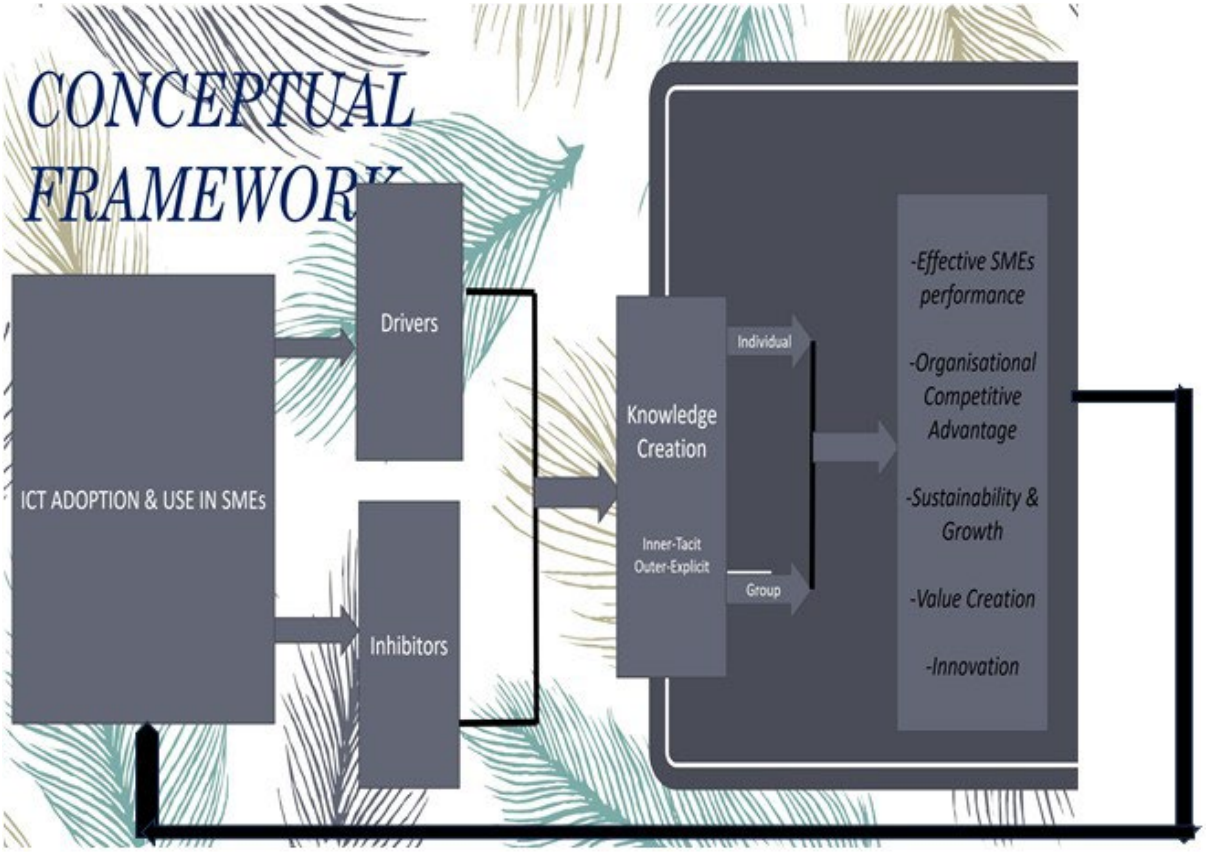

Figure 3 Prospects, Drivers, and Challenges of Agric-SMEs Adoption of ICT in Nigeria

SMEs play a pivotal role in sustaining employment and creating income and prosperity (Lange et al., 2000). Within the UK, the percentage of the workforce employed by SMEs rose from 58% in 1979 to 67% in 2000 (Lange et al, 2000). Governments around the world are placing increasing importance upon the success of small business firms and providing increased resources to support this emphasis (Burgess, 2001). However, the abilities and skills of employees will be crucial to the prosperity of SMEs (Clarke and Gibson-Sweet, 1998) as an acute skill shortage could hamper a company's ability to stay competitive and sustainable. To help Agric-SMEs to archive and cope with the increasing demand of improving their skills for adopting ICT and e-business, training and knowledge creation (KC) is often seen as the most effective way to fulfil this task. The applications of ICTs have revolutionised the way businesses are conducted. E-commerce offers organisations tremendous opportunities to improve their business performance in a way. However, despite the widespread use of numerous electronic tools, SMEs are described as the slowest sector to embrace ICT (Mehling, 1998). For many small businesses, ICT seems like a confusing nightmare that are not able to

react to rapid changes that are brought about by this emerging technology, but on the other hand they are scared to be left behind and therefore eager to embrace the technology (Hobson, 2000).

According to (Yanqing et al, 2002), for example, in Poland, most Polish managers do not recognise the need to compete in the pursuit of modern technologies. The introduction of e-business solutions is, often, enforced by external, typical foreign partners. According to the TRICTSME Report (University of Economics, 2000), this might be attributed to:

- The lack of adequate technical infrastructure.
- Insufficient awareness of the opportunities offered by the latest technology's solutions.
- Shortage of competent and experienced workforce.
- Negative attitudes towards the internet and mass media; and
- The lack of specialised ICT training.

Allison (1999) argues that a skilled and knowledgeable work force is closely linked with the successful implementation of technology, and a highly skilled workforce is key to increased competitiveness and sustainable growth. However, skill shortage has been recognised as one of the challenges facing global e-commerce (Bingi and Khamalah, 2000). The demand for highly knowledgeable and skilled managers/workforce places enormous pressure upon organisations to improve or update their current knowledge and skills. This is particularly important in SMEs as compared to their larger counterparts, SMEs are normally portrayed as having a lack of appropriate IT skills and needing training (Gaskill et al, 1993). Therefore, coping with the rapid changes brought about by ICTs, demand continuous IT education and training.

Information and communications technology have played and still playing key roles in various aspects of human endeavours. Its application to business especially small and medium scale businesses have brought about multi-faceted improvements in process leading to unprecedented enhancement in service deliveries and profit maximisations. However, the environment has become highly competitive, despite the glaring importance of innovation, its diffusion and adoption within the Nigerian SMEs seems at best a mirage (Agwu, E. 2016). The use of ICT in the African continent is a recent development compared to Asia, Europe, and the Americas. According to Benamati and Serva, 2007), ICT is a form of technology that are used to transmit, store, create, share, or exchange information. And SMEs primarily owe their business success and growth to the development of innovations, which gradually affect their transformation into large enterprises. The SME sector plays a significant and important role in its contribution to the national economy in terms of the wealth created and the number of people employed (Agwu & Murray, 2014). With the development of ICT, and the shift to a digital and knowledge-based economy, ICT is becoming an increasingly important tool for SMEs, both to reinvigorate corporate management and promote growth of the national economy (Turner, 2009).

(b) Inhibitors to Agric-SMEs Adoption & Use of ICT in Nigeria

Given the benefits that ICT can bring to SMEs, Agric-SMEs in most developing countries such as Nigeria still have been slow to adopt it. For example, World Bank report (2014) states

that more than 50 percent of Agric-SMEs in Nigeria have no access to ICT and about 34 per cent still use basic communication technologies such as mobile telephones. This is largely blamed on very poor infrastructures such as roads, electricity, and security. Meanwhile, Agwuand Kadiri, (2014) pointed out that their counterparts in developed countries are using advanced ITs. One cause of limited adoption is the lack of dynamism between ICT firms and SMEs outside of the ICT sector. ICT firms have not provided goods and services tailored to Agric-SMEs in the past because demand from Agric-SMEs has been low. However, their demand is low in part because ICT products available in the market are too complex and expensive. The result is a vicious cycle of limited supply and limited demand that ultimately excludes Agric-SMEs from the benefits of ICT.

Factors militating against the Adoption and Use of ICT by Agric-SMEs in Nigeria:

- **Poor communications infrastructure:** Nigeria, like many developing economies still have poor communications infrastructure. And most of the equipment are out-dated with expensive charges and limited coverage, especially in rural areas. This discourages Agric-SMEs from adopting even the basic ICTs or mobile phones. The increased use of ICT in Agric-SMEs can lead to a substitution of ICT equipment for any other forms of capital and labour and may generate substantial returns for enterprises that invest in ICT and restructure their organisation (*ICT Diffusion, Adoption and Strategic Importance in Nigerian SMEs Agwu*, n.d.).
- **Most advanced ICT products are designed for larger firms and not Agric-SMEs:** ICT firms used to target large farms and enterprises because they had a larger budget and were willing to pay for more complex ICT services. Their products are often too expensive and too complex for Agric-SME users. However, competition in this market is making firms – both large and small – turn their attention towards the untapped Agric-SME market. Unfortunately, no ICT firm is making any effort to capture these millions of Agric-SME customers with their products in Nigeria (E. J. Agwu et al., 2016).
- Most advanced ICT products are designed for larger firms and not Agric-SMEs: Government has not accorded ICT its rightful place even in its functional departments. The country still lacks standard ICT policy; hence the perception accorded this noble innovation is still low compared to other part of the world and this is same with other developing economies (Agwu, 2016).

- **Limited ICT literacy of Agric-SME operators:** Agwu and Murray, (2014) states that this hinders their ability to choose the appropriate technology and understand the concrete benefits it can bring to their businesses, especially with respect to modern mechanised farming. Many Agric-SME owners are unfamiliar with operating a computer, are sceptical of the concrete benefits to its core business, and have the stereotype that ICT is only for larger companies. Even if they have the will and financial resources to integrate ICT into their core business, Agric-SME owners are often at a loss when needing to choose the most appropriate and cost-efficient product.
- **Limited ICT literacy of employees in Agric-SMEs hinders ICT adoption.** Even if Agric-SME owners have a strategic understanding of why they should adopt ICT, their staffs are often untrained. Training costs time and money – resources that Agric-SMEs usually lack, (World Bank Group, 2014).
- **Adopting ICT is an adaptive challenge and not a technical challenge.** Palvia, (2009) argued that adopting ICT is a difficult task for companies of all sizes, whether they are in developed or developing countries. In fact, a lot of management literature focuses on

the organizational changes that firms must go through in order to effectively adopt ICT because they change the way firms do business. While the changes may be beneficial in the long run, they often hurt one department and strengthen another. Agwu and Carter, (2014) further stressed that SME owners are often reluctant to bring their firm through a learning curve that may be difficult and costly.

- **Lack of financing options limits Agric-SME ability to purchase ICT.** World Bank report (2013 & 2014) pointed out that lack of financing and appropriate technology is clearly a major handicap to developing economies producers and exporters, and it inhibits developing countries from deriving full benefits from their trade rights. SMEs usually have limited ability to make larger investments in their firm due to the lack of financing options. Given the financial squeeze within the Nigerian financial system, IT budgets are usually small or non-existent in many Agric-SMEs. In addition, adopting ICT is not a one-time cost because there are ongoing costs of maintenance, upgrading, and human capacity building, (E. M. Agwu & Murray, 2015).
- **Lack of financial and legal infrastructure.** Agwu and Murray, (2014) further stressed that Agric-SMEs may still be hesitant to engage in e-commerce due to undeveloped legal policy for electronic payment and security issues. Many Nigerian banks, a key link in the e-commerce chain, have not in any form or shaped played a positive role in this regard. In the end, the definite costs of identifying the right goods and/or service, finding staff to manage it, taking the company up the learning curve, and obtaining financial resources are not perceived to justify benefits.

Therefore, there is sufficient evidence from literature on, knowledge management, ICT adoption and use on knowledge deficiency by Agric-SMEs, which are and will continue to be a significant impediment to the uptake of new technology and will increasingly disadvantage the organisational competitiveness of Agric-SMEs for effective performance and growth. Thus, it is essential to address the issues of improving skills, training, human capital development and knowledge creation through the adoption and use of ICT by Agric-SMEs.

3.1 Conceptual Framework of Knowledge Management

Knowledge management (KM) as a discipline would appear to be somewhere between five and fifteen years old, (Farooq, 2018). It evolved from the thinking of academicians and pioneers such as Peter Drucker in the 1970s, Karl-Erik Sveiby in the late 1980s, and Nonaka and Takeuchi in the 1990s (Brun, 2005). There is no consensus among the researchers about KM as a distinct field and some consider KM as akin to information management and failed to observe the true significance of KM in their profession (Kebede, 2010). One of the primary reasons that researchers and practitioners have taken such an interest in KM is that knowledge is viewed as a resource with significant potential of contributing to firm's positions of competitive advantage (Kebede, 2010). Until a definition is widely accepted, outcomes such as innovation and firm performance will be difficult to determine (Ramírez et al., 2012). The term KM has been defined in a number of ways in the literature, but we have adopted the definition of Wang and Ahmed (2003), "KM orientation is defined here as an organization's distinctive capability of managing organizational memory, knowledge sharing, and creating a learning culture".

KM seems to be fragmented due to lack of underlying procedures and methods to measure knowledge. The nature of the relationship between KM and value creation has received considerable attention in the academic literature. Organizations failed to develop improved measures due to lack of consensus on the measurement of KM. Developing and maintaining KM is vital to firm's long-term survival and success (Yang et al., 2010). Knowledge is increasingly recognized as a critical resource that can be managed to enhance competitive position and financial performance of a firm (Darroch, 2005). Researchers emphasize the importance of developing unique knowledge within firms to deliver new products and services and to distinguish it from competitors for achieving advantage (Birasnav, 2013).

According to (Farooq, S. 2018), the study proposes KM as a higher-order construct with learning orientation, knowledge sharing, organizational memory, and knowledge reuse as its dimensions. Learning orientation stands for the tendency towards a strong commitment to learning, shared vision, and open-mindedness. Learning orientation is one of the important aspects of KM which focuses on how firms respond to rapidly changing environments. Learning occurs when the knowledge workers interact in different communities of practices. A learning orientation is organized in such a way that it scans for information in its environment, creates information by itself, and encourages individuals to transfer knowledge between the individuals in the team. The knowledge learned is often shared within or outside the organization to improve performance. Knowledge sharing is the ability of an organization to convert tacit knowledge into explicit knowledge. Knowledge sharing is defined as the belief towards exchanging knowledge, insights, and skills in an organization (Lin, 2015a).

The lack of support from the top management, unwillingness to spending time on sharing knowledge and avoidance of revealing leads to the competitive disadvantage. The knowledge shared must be stored in the form of documents, databases, and worksheets which are often referred to as codification strategy. Codification strategy emphasizes on how the firm acquires stores and disseminates the knowledge. Organizational memory is a kind of codification strategy where explicit knowledge is being stored and memorized at an organizational level (Hensen et al., 1999; Farooq, 2017). Organizational Memory can be defined as the way an organization stores organizational knowledge and applies it to present activities (Jennex and Croasdell, 2004). Organizational memory is defined as the set of repositories of information and knowledge that the firms have acquired and retained (Croasdell et al., 2003).

Organizational memory is not an end of KM as the knowledge is being reused in many instances. The knowledge reuse process starts with the creation of knowledge, storing of knowledge and dissemination of knowledge. According to Markus (2001), each type of knowledge reuser has different requirements for knowledge repositories. Owing to how repositories are created, reuser's requirements often remain unmet. But the knowledge stored in human memories is meaningful and effective only in some context, and for knowledge exercised in an organizational role that context is an organizational context (Nelson and Winter, 1982).

One of the objectives of this study, is to analyse and examine the influence of knowledge and value creation on the performance and productivity of SMEs in Nigeria and propose a theoretical/ conceptual model of KM which seems to be poorly defined in the academic

literature. The present study proposes KM as a multidimensional construct with learning orientation, knowledge sharing, organizational memory, and knowledge reuse as its dimensions. The study develops a link between ICT adoption, use, KM, and value creation.

KM as an organizational perspective has strong foundations, embedded in the resource-based view (Barney, 1986, 1991) and the knowledge-based view of the firm (Barney, 1991; Conner, 1991). Organizational perspective views knowledge as an important resource for gaining competitive advantage. However, knowledge-based view considers knowledge as an important resource for the firm. Knowledge-based resources including knowledge, skills and capabilities are difficult to imitate and heterogeneous resources are the major contributing factors of sustainable competitive advantage. The knowledge-based view was first proposed by Grant (1996) and was explained by others including (Conner, 1991). Most of the research in this area has focused on the necessity to exploit knowledge in organizations.

The area of KM gained a lot of prominences when Skandia hired Leif Edvinsson of Sweden as the world's first chief knowledge officer, later, KM idea was taken up by researchers like Nonaka and Ikujiro Takeuchi. They refined the field of KM with the introduction of SECI model, i.e., socialization, externalization, combination, and internationalization. Which emphasizes knowledge creation by converting the tacit knowledge into explicit knowledge? These conversion modes capture the idea that tacit and explicit knowledge are complementary and can expand over time through a process of mutual interaction. The intention to include KM as a strategy is to prioritize the creation and dissemination of knowledge in an organization. This approach starts with the identification of the knowledge assets of the firm that are required to accomplish the organizational objectives and then leverage these assets to create competitive advantage.

KM is defined as an organizational optimization of knowledge to achieve enhanced performance, increased value, competitive advantage and return on investment, through the use of various tools, processes, methods, and techniques (Kamara et al., 2002). Tseng (2008) concludes that managers are usually confronted with the difficulty of decisions of what and how to implement KM for attaining the required performance in a turbulent world. The goal of KM is to deliver the right knowledge to the right members at the right time, which can help members, take the right actions, and further improve the performance of circulation processes in an organization (Ho, 2009).

There are various conceptualizations and measurements of KM, with little consensus towards the dimensions of KM. KM is a measure of knowledge sharing, organizational memory and learning culture (Wang and Ahmed, 2003). Darroch and McNaughton (2003) measure KM orientation with knowledge acquisition, knowledge dissemination and responsiveness to knowledge. Lin (2015) proposes KM orientation as a multi-dimensional construct with organizational memory, knowledge sharing, knowledge absorption and knowledge receptivity. The lack of consensus on the measures of KM and the need to develop effective measures including learning orientation, knowledge sharing, organizational memory and knowledge reuse is highly anticipated. The previous studies widely examined the relationship between KM and performance (Wang et al., 2008, 2009). However, there is lack of consensus on the consequences of KM (Darroch, 2005; Wang et al., 2008; Edvardsson and Oskarsson, 2011; Lin, 2015). KM is an important predictor of value creation (Edvardsson and Oskarsson, 2011). The measures of KM including

knowledge acquisition, knowledge dissemination and responsiveness proposed in the previous studies (Darroch and McNaughton, 2003; Darroch, 2005) overlap with the behavioural perspective (intelligence generation, dissemination, and responsiveness) of market orientation proposed by Kohli and Jaworski (1990).

Dimensions of knowledge management: There is no consensus among researchers toward the dimensions of KM because KM is multifaceted and multidimensional in nature. Different frameworks of KM exist; one proposed by Nonaka and Takeuchi (1996) is the seminal work in the field of KM, which emphasizes on converting tacit into explicit knowledge. KM researchers suggest different models of KM with varied conceptualizations and measurements. Several frameworks exist in the KM literature including KM orientation model (Wang and Ahmed, 2003), KM process capability model (Gold et al., 2001) and KM orientation model (Darroch and McNaughton, 2002). Wang and Ahmed (2003) suggest KM orientation as a multi-dimensional construct with knowledge sharing, organizational memory and learning the culture as its dimensions. Wang et al. (2008) operationalize KM orientation as a higher-order construct with organizational memory, knowledge sharing, knowledge receptivity and knowledge absorption as its dimensions. Darroch and McNaughton (2002) identify three dimensions of KM orientation including knowledge acquisition, knowledge dissemination and responsiveness to knowledge. Similarly,(Gold et al., 2001) validate KM process capability model with knowledge acquisition, conversion, application, and protection. In the light of above discussion, KM is proposed as a multidimensional construct with learning orientation, knowledge sharing, organizational memory and knowledge reuse as its dimensions.

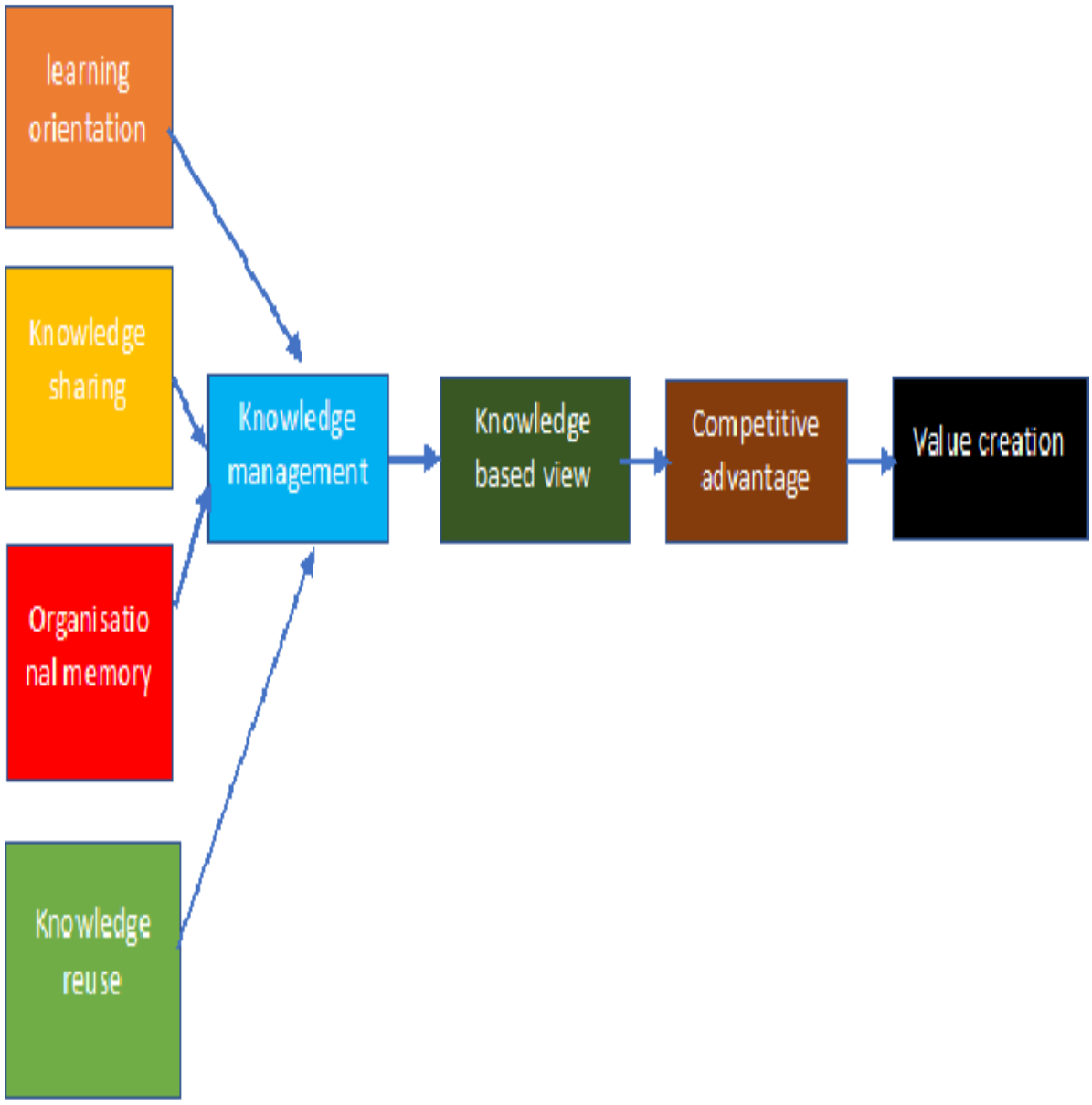

Figure 4 A Model of Knowledge Management & Value creation.

Source: Researcher 2022

3.2 A Brief Overview of Nigeria. The Study context:

This study examines multifarious factors that have directly or indirectly mediated development efforts in Nigeria since independence and from this standpoint provides thorough understanding on how despite enormous human and material resources, development has thus far eluded Nigeria. This quest was primarily driven by the desire to identify factors that have

dogged Nigeria's development over time and from this perspective unravel new strategies for unleashing the enormous potentials of the country and putting it on a steady path to sustainable development. The basic assumption here is that Nigeria as a developing country and state project, that has neither lived up to expectations nor achieved developmental growth commensurate with its human, economic and material resources.

A **developed country** is a term that is used to distinguish between the more industrialised nations, including most Organisation for Economic Co-operation and Development (OECD) member countries, **and developing or less developed countries**. The Organisation for Economic Co-operation and Development (OECD) is a group of 37 member countries that discuss and develop economic and social policy. OECD members are typically democratic countries that support free-market economies. The developed countries are sometimes collectively designated as Group B countries or the North, because most of them are in the Northern Hemisphere (ASYCUDA.org, 2010). The Automated System for Customs Data (ASYCUDA) is a computerized customs management system that covers most foreign trade procedures. It handles manifests and customs declarations, along with accounting, transit, and suspense procedures. It also generates trade data that can be used for statistical economic analysis. The ASYCUDA software is developed by UNCTAD. ASYCUDA uses international codes and standards developed by the ISO (International Organization for Standardization), WCO (World Customs Organization) and United Nations. It can be configured to suit the national characteristics of individual customs regimes, national tariffs, and legislation. ASYCUDA provides Electronic Data Interchange (EDI) between traders and customs using prevailing standards, such as XM. Developed countries are also referred to as industrial countries, industrially advanced countries, and high-income countries, in which most people have a high standard of living. Sometimes developed countries are also regarded as countries with a large stock of physical capital whereby most people undertake highly specialised activities. Depending on the definition, developed countries may also include middle-income countries with transition economies, as these countries are highly industrialised.(World Bank Group, 2014)

A developing country on the other hand, is regarded as an economy with low-to-middle per capita income. Such countries constitute approximately 80% of the global population, representing about 20% of the world's economies (Adelabu & Akinwumi, 2008b). Developing countries refer to a broad range of countries that generally lack a high degree of industrialisation, infrastructure and other capital investment, sophisticated technology, widespread literacy, and advanced living standards among their populations (ASYCUDA.org, 2010). Developing countries are sometimes collectively designated as the Third World and sometimes as the South, because many of them are in the Southern Hemisphere (ASYCUDA.org, 2010). Many terms and definitions have been used to refer to and categorise countries. The World Bank classifies developing countries as countries with low or middle levels of Gross National Product (GNP) per capita. However, (Bannock, n.d.) describes developing countries as countries that have not yet reached the stage of growth of industrialisation, where people live on far less money, and often lack basic public services when compared to highly developed countries. According to Aleke et al. (2009) developing economies are still struggling to catch up with ICT applications as opposed to its heavy deployment in the developed economies. Several countries with transition economies are sometimes grouped with developing countries based on their low or middle levels of per capita income and sometimes with developed countries based on their high industrialisation (Apulu, 2012b).

As has been succinctly argued, "after independence in 1960, Nigeria has been widely considered one of sub-Saharan Africa's most prominent postcolonial states" (Heerten & Moses, 2014). In other words, while much hope was placed on the Nigerian nation to lead the way in development on the continent of Africa, events so far indicate that almost the contrary has been the uncomfortable reality. Perhaps, the African social scientist, Kankwenda (1994) was referring to Nigeria when he contended some years ago that despite decades of trafficking in development paradigm and ideologies, development remains far-fetched in most parts of the African continent. Therefore, in most major indicators of development, Nigeria remains too much like a promise on hold and often reflects a typical African puzzle of self-fulfilling destiny of near misses and perennial development doldrums. In alignment with what appears to be like the situation in many other African countries, the development failures in Nigeria may be traced to structural inadequacies and the incapacity of public institutions (Prof. Anugwom, 2020).

Therefore, Nigeria has thus far failed to live up to its promises and undoubted potential, given abundant human and material resources. The above reality is what Osaghae (1998) alluded to when he likened Nigeria to a sleeping giant. In fact, that allusion is really a popular phrasing of the evident development disappointment in the country. Incidentally, over two decades later, the nation still seems largely asleep rather than awake. (Anugwom, 2020), despite an undoubted and often overflowing spirit of nationalism, Nigeria has literally frittered away numerous chances to initiate a sustainable development trajectory since independence. There is therefore the sense of near misses and the unending recalibration of the process of development as the public administration of the country is largely characterized by policy reversals and inconsistencies, all of which ironically devour the momentum of any development initiative in the country.

3.3 Geographic Context of Nigeria

Nigeria, officially the Federal Republic of Nigeria, is a country in West Africa with an estimated population of over 200 million (Trading Economics, 2011) and the most populous country not only in SSA but in the entire African Continent. Nigeria accounts for 47% of West Africa's population and ranks 8th amongst the top ten countries with the highest population in the world (Internet World Stats, 2010). Nigeria consists of 36 States plus a Federal Capital Territory (Abuja) and is known to have over 274 ethnic groups in the Federation which is divided into three major regions and grouped under six geopolitical zones with a total of 774 Local Government Areas, (LGAs, (Gbenga-Ilori & Ibiyemi, 2010). Nigeria has an area of 923,768 square km and shares land borders with the Republic of Benin in the West, Chad, and Cameroon in the East, Niger in the North and boarders of Gulf of Guinea in the South (Internet World Stats, 2009). Nigeria is bounded in the South by the Atlantic Ocean and since 1991 the country's capital has been centrally located in the city of Abuja. Previously, the Nigerian government was headquartered in Lagos.

Nigeria is Africa's largest producer of oil and is regularly the fifth largest oil exporter to the United States (Blanchard, 2011). By some estimates, Nigeria could rank among the world's top five exporters of oil within a few years, although social unrest and corruption in some areas of the country have posed significant challenges to oil production (Blanchard, 2011). Obadan (2002), comments that Nigeria is a country with an abundant supply of enormous human, agricultural, petroleum, gas and large untapped solid mineral resources. Yet, since her independence from British rule in 1960, the country has gone through decades of military governments, political instability and this has brought with it a climate of social tension and an unpredictable market for businesses (Obadan, n.d.).

Despite recent real growth rate in its economy of 5.63% in 2006, 7.64% in 2007 and an IMF projection of 9% in 2008, the income earned by workers is generally low; the minimum monthly wage is US$40 (₦18,000) (Rate at US$1=₦450) and 70% of its population live below the poverty line (Lamido, 2010). A breakdown of the statistics available on Nigeria shows that in 1996 the poverty rate in Nigeria was 46% (C. Ezigbo, 2012), while in 2002, the poverty rate was about 67.8% (Jegede, 2002). But instead of reducing, it rocketed to 76% in 2009 with most people residing in rural areas (C. Ezigbo, 2012). The Nigerian National Bureau of Statistics said in 2020 that **40%** or 83 million Nigerians live in poverty. Although Nigeria's poverty profile for 2021 has not yet been released, it is estimated that the number of poor people will increase to 90 million, or 45% of the population, in 2022. Jun 2021. (The Nigerian National Bureau of Statistics, 2021).

Nigerians have been justifiably confused by conflicting poverty data presented by the Muhammadu Buhari administration and the World Bank. According to Buhari, his administration has lifted 10.5 million Nigerians out of poverty within the past two years. But no sooner had he made the statement than the World Bank asserted that inflation has plunged seven million Nigerians into poverty. These statements might seem to be contradictory to non-economists. But closer analysis suggests that Buhari and the World Bank are right – depending on how poverty is measured. The first is income or monetary measure of poverty, what economists refer to as the 'headcount index'. It measures the proportion of the population that is poor based on a minimum personal income - for example $1.90 per day. This minimum amount is deemed adequate to maintain an acceptable living standard, given the cost of living in a given country. Based on this measure, Buhari is right to claim that – by transferring cash to 12 million households during the past five years – a majority of these Nigerians have exceeded the income threshold, therefore, they have escaped poverty. (Onyeiwu, 2021).

The other measure is known as the multidimensional poverty measure. It measures poverty by income, and by the access people have to health, education and living standard indicators. These include sanitation, drinking water, electricity, and housing. It is therefore possible for someone to be regarded as non-poor under Buhari's calculations, but poor when this measure is used. This is the measure the World Bank appears to be applying. By this_measure_ 47.3% Nigerians, or 98 million people, live in multidimensional poverty. Most of them are located in northern Nigeria. This poverty rate does not include Borno State, where insurgency has prevented data collection. Aware of this, the Buhari administration has set the very ambitious goal of lifting 100 million Nigerians out of poverty by 2030. This is a tall order, considering that another five million more Nigerians are expected to become poor as a result of COVID-19 in 2020. The administration's cash transfer programme is commendable. But Buhari should turn his focus more on promoting structural transformation. This would move millions of poor Nigerians from low-productivity agricultural and informal-sector activities to high-productivity sectors such as manufacturing, agro-processing, as well as information and communication technologies. (Onyeiwu, 2021).

What is poverty?

Poverty is an amorphous and subjective concept, which is influenced by what people consider to be more valuable in life. Those who value more money in their pocket would prefer a monetary measure of poverty. But Nigerians who care more about the healthcare, food,

education, electricity, transportation, and security their money can buy would regard the World Bank's figures as a more useful indicator.

Some economists have proposed the notion of a- Happy Planet Index' as a better measure of poverty. It measures poverty based on three indicators. These are average subjective life satisfaction, life-expectancy at birth, and ecological footprint. An illiterate 80-year-old woman who lives on less than $1.90 per day but reports she has been happy all her life; lives in a small hut with no access to electricity; has never visited a hospital or seen a doctor, and consumes mainly organic products grown on her farm, would not be regarded as poor under the Happy Planet Index definition. But she would be poor under the headcount index and multidimension poverty measure. This means poverty is in the eye of the beholder. Some analysts perceive the stylised conceptualisations of poverty as Eurocentric. They claim that such reflect Western values and marginalise non-Western conceptions of a 'good life'. (Onyeiwu, 2021).

High food prices

One reason for the World Bank's assertion that seven million Nigerians have been driven into poverty is the 22% increase in the price of food. Food prices contributed about 60% to Nigeria's inflation rate of 18%. Rising food prices exacerbate poverty because it reduces the real purchasing power of households and shifts expenditures away from essential items such as health, education and housing. An average Nigerian household spends about 56% of income on food, the highest in the world. Countries like US, UK, Canada, and Australia spend 6.4%, 8.2%, 9.1%, and 9.8%. Nigeria's high expenditure on food implies that a slight increase in food prices would push more people into multidimensional poverty. Food prices have been rising in Nigeria and pushing more people into poverty for a few reasons. First, the depreciation in the value of the Naira has resulted in steep increases in the prices of imported food items, such as rice, sugar, milk, beverages, and frozen food. The Naira has depreciated by about 13% during the past year. (Onyeiwu, 2021).

Second, because of Nigeria's rapid population growth, food supply in the country may be lagging demand. Nigeria's population has been growing by about 2.6% per annum, while agriculture value added has been growing at 2%. This means that agricultural output is barely keeping pace with consumption. Supply shortfalls have been exacerbated by instability, banditry, terrorist attacks, poor infrastructure and climate change. Also, the exodus of farmers to urban centres in search of illusive opportunities. Regardless of who is right, Nigeria's poverty profile is grim and embarrassing for a country endowed with humongous human and natural resources. The Nigerian National Bureau of Statistics said in 2020 that 40% or 83 million Nigerians live in poverty. Although Nigeria's poverty profile for 2021 has not yet been released, it is estimated that the number of poor people will increase to 90 million, or 45% of the population, in 2022. If the World Bank's income poverty threshold of $3.20 per day is used, Nigeria's poverty rate is 71%. Compared to lower rates for some oil-producing developing countries like Brazil (9.1%), Mexico (6.5%), Ecuador (9.7%) and Iran (3.1%), this is grim. The Nigerian National Bureau of Statistics data suggest that the number of poor Nigerians exceeds the total population of South Africa, Namibia, Botswana, Lesotho, Mauritius and Eswatini combined. (Onyeiwu, 2021).

Figure 3.1 displays the Nigerian map which constitutes the geographic context of this study. (Adapted from CIA, 2011)

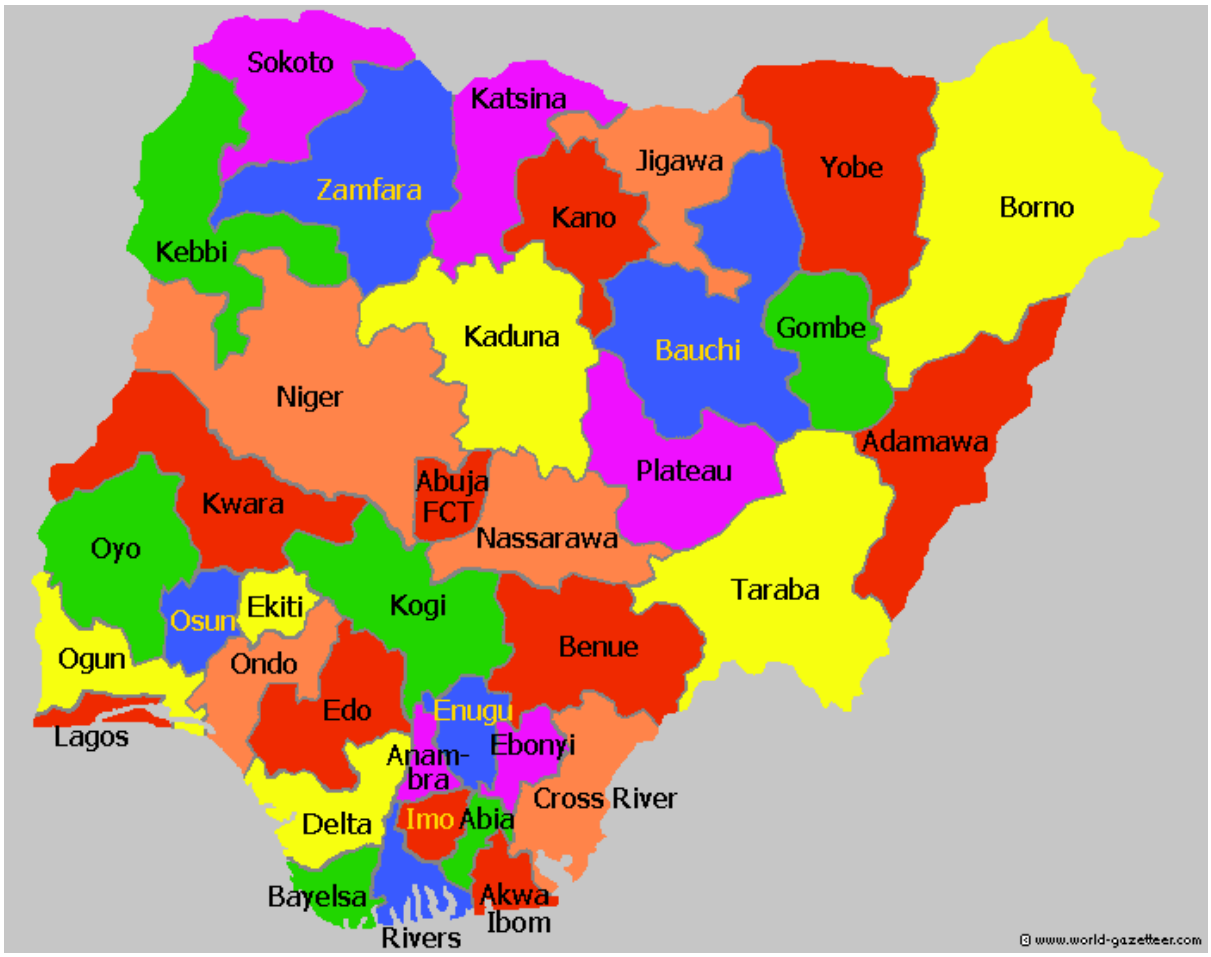

Figure 5 Displays the Nigerian Map which Constitutes the Geographic Context of this Study

3.4 Development in Nigeria: Elusive Despite Nationalistic Rhetoric.

As is obvious from the foregoing, the conceptualization of development here also involves a comprehensive approach anchored in two major concerns, which should be embodying development aspirations of the country (Nigeria) over time. These concerns, (Prof. Anugwom, 2020) are the ability of the Nigerian state to achieve significant improvements benchmarked against tackling poverty and the ability of the country to generate and sustain long-term growth in both economic and social development (including deepening democracy, rule of law and public accountability). In fact, these concerns around alleviating or tackling poverty and sustaining long-term growth may be critical factors of development in Africa as a whole.

In an insightful take on why it has been difficult for Nigeria to achieve significant economic growth and political performance since its independence, (Scacco, 2021) contends that "the country's ethnic diversity, colonial legacy and problematic civil-military relations are all overshadowed by the politically divisive impact of oil". In other words, (Scacco, 2021) aligns with the once popular resource curse logic in explaining Nigeria's development conundrum.

“Despite the veracity of this assertion in the sense that the oil wealth has neither been well utilized nor allowed for focus on meaningful economic diversification, the problem of development in Nigeria goes far beyond the oil problem.” It implicates socio-historical and political forces and problems which predate the emergence of oil and in fact could be the origin of the failure to consummate the economic opportunities offered by oil, unlike the situation in a couple of states in the Middle East. There is no gainsaying the fact that development as a process in the developing world has been hampered by the allure of fashionable slogans and short-term programmes that have flourished over time. Most of these programmatic slogans have been driven by multilateral and international development agencies. These slogans and programmes are usually short-sighted and have almost always fallen prey to the unconscious one-approach-is-the-key paradigm. In other words, they adopt a one-size-fits all orientation that has failed to address the problem. In fact, in the case of Africa in general it has been contended that some of the approaches or efforts were mere palliatives and do not represent genuine development aspiration for the continent (Jessica Adobi, n.d.).

According to, (Prof. Anugwom, 2020), Over time one has heard slogans or programmatic idioms ranging from the “big push” (big injections of capital as the panacea to the development challenge of the developing nations), the human capital approach (building good human capital especially in science and technology as the key), the green revolution (often called the agrarian revolution), appropriate or intermediate technologies approach to informal sector promotion (which unfortunately embodies a pejorative view of the economy of these nations), structural adjustment (a very popular and almost totally disastrous approach which hinged essentially on radicalization of the macroeconomies of these nations), sustainable development and inclusive growth. While these programmes or approaches are undoubtedly well informed, they are often short-sighted and short-termed. In the most obvious weakness, they gloss over or fail to appreciate the complexity of the development challenges in these nations. For instance, the development challenge cannot be realistically overcome through an approach that focuses on a single perspective or even portions of the problem. A good overview of these issues would convince one of the complexities of the challenges and how the present situation in Nigeria has been produced by a concert of factors.

3.4.2 (a) Development: A contested concept?

Development can refer to both a state and a condition of a given society as well as a process, system or course of positive change in a society. In both cases, development is conceived as a dynamic and long-term process of structural transformation. But development is really in more senses than one an often-contested concept and process. Therefore, what constitutes development and how development should be measured is often a source of dissension among both scholars and practitioners. Apart from a general notion of improvement or the broad reference to growth, there is hardly popular consensus on the subject. (Prof. Anugwom, 2020).

All the same, it would seem ironic that despite differing opinions on what constitutes development, there is hardly any strong disagreement over what underdevelopment or lack of development entails. The controversy over development assumes an even more problematic angle when it is used in reference to a developing country like Nigeria. In this case, the evocation of the term, apart from the usual economic and social embodiments, may also

generate political and nationalistic fervour. Therefore, over time, development, particularly in terms of the general situation of life in developing societies and the relationship between these societies and the rest of the world, has equally been politicized and often employed in pejorative senses (Anugwom, E. 2020).

Development discourse also often embodies and veils ideological and even doctrinal leanings or aspirations. Thus, the invocation of development and its use in reference to a nation might embody meanings that are neither objective nor intellectually reasoned but are the perspective of the user of the concept or the outcome of the person's ideological leanings. Perhaps, some of the contests about development result from the emergence of the notion as a generic term that makes general and broad statements about human wellbeing and social development. Thus, even though the concept is seen as old as civilization, its use as a generic construct in Western societies from Greco-Roman times elevated it almost to a doctrine (Soares & Quintella, n.d.) – a doctrine that focuses generally on the social wellbeing of human beings in society.

The above situation persists even though economists, sociologists and development scholars have invested a lot of energy in specifying or explicating indicators of development. These indicators incidentally often generate their own contestations as some of these indicators are directly tailored after the conception of reality by the West and even designed to undermine African autochthony and agency. The work of classical scholars and writers like Condorcet, Kant, Leibniz, Hegel, Marx, and the social evolutionists gave the general impression that development is associated with progress, modernization and liberation in human society. Although, some of these initial conceptions were evolutionary in nature, they also cohered with significant improvements in society. Without doubt, a new era in the usage or application of the concept occurred in the twentieth century. Pushing this new era were the Americans, beginning with President Harry Truman who saw it as a duty to avail the other nations of the world of America's technical knowledge as well as foster capital investment in areas (of the world) needing development(Soares & Quintella, n.d.) . Thus, the revolution in the practice of development and even the relations between the global North and South on this score was radicalized with the paternal proposal in the inaugural speech of Harry S. Truman as the thirty-third President of the United States. (Prof. Anugwom, 2020).

According to Truman: We must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas. More than half the people of the world are living in conditions approaching misery. Their food is inadequate. They are victims of disease. Their economic life is primitive and stagnant. Their poverty is a handicap and a threat both to them and to more prosperous areas.(Truman & Riddiford, 1999) .

This statement, (Anugwom, 2020), apart from obvious positing development (West) as the direct opposite of underdevelopment (rest of the world), also saw the beginning of intellectual and institutional efforts led by the West in the ostentatious bid to address the "backwardness" of the other parts of the globe. The call to development reverberated in the developing and then mainly colonized parts of the world. For these nations in Africa, Latin America, and Asia, the 1960s became eventually the decade of decolonization and the urgent need to foster development in these nations, then seen as third world countries, was initiated. Incidentally, the global concerns about the state of the emerging decolonized societies generated two significant outcomes. One was the establishment of the United Nations Conference on Trade and Development (UNCTAD), expected to help in narrowing the development gap between the developing and developed countries of the world; the other was the emergence and proliferation of modernization theories or perspectives, which saw development simply as making these nations like the West.

While not belabouring the history of development, suffice it to state here that another turning point in the conception and pursuit of development occurred because of a report entitled "Our Common Future" published in 1987 by the World Commission for Environment and Development. The report, more commonly known and referred to as the Brundtland Report, was the culmination of a growing global concern with the use of natural resources and the influence of this on the environment and human survival in the years ahead. The key element of the Brundtland Report was without doubt the popularization of the idea of "sustainable development". In other words, the focus now should not just be on development per se, but on sustainable development, that is, that which takes care of the needs of today without jeopardizing the future. In fact, the report, with focus on sustainable development which is all about the pursuit of development without compromising or endangering the environment and the ability of future generations to meet their own needs, can be seen as the legitimate forerunner of present concerns around climate change. In other words, it is development in which pursuit of present needs does not compromise the ability of future generations equally to meet their own needs in an equally sustainable manner. (Anugwom, 2020). Bruntland and his colleagues, however, did not invent the idea of sustainable development but the report elevated the notion into global significance and made it almost a mantra of development discourse and programming for many years. Even today, sustainable development is often a preferred way of referencing development that is conscious of the environment and pursued within the bounds of the greater good for the greater number.

Despite a plethora of definitions, one finds the conception of development along the lines of a process of progress, positive change, and growth, which may be in terms of both economic and social improvements and the conscious efforts to establish ecological balance while in the pursuit and substance of the foregoing. In other words, development cannot be de-escalated as simple economic growth, or something measured solely or mainly on economic indicators. Development always implies a favourable change, a step from the simple to the complex, from the inferior to the superior, from worse to better. Development indicates that one is doing well because one is advancing in the sense of a necessary, ineluctable, universal law and toward a desirable goal. Development is thus comprehensive and embodies both the economy and other spheres of society and must be conceptualized as a process that is conscious of the need to preserve the integrity of the environment or achieve ecological balance. Development, especially from a sustainable perspective, must involve clear social and economic inclusion, economic wellbeing, and the conscious effort towards preserving natural resources or the environment. Development is thus comprehensive and multidisciplinary in nature. It is anchored on the realization of the interdependence and complementarity between economic, social, and environmental spheres. Development is in this sense measured reliably by indicators which at the minimum embody these three elements. A critical element of development, especially from the angle of developing nations like Nigeria is that of social inclusion, that is, how economic development or growth embodies social inclusion. In such a context, impressive economic indicators in the midst of deepening poverty, deprivation and social and physical infrastructural decay means essentially the inversion of development. In addition, there is no arguing the fact that social development cannot happen without a good economic base; equally, it would be very difficult to achieve economic development during social blight or social pathologies. Social development, as implicated here, goes beyond social inclusion to include social justice, distributional justice, good and responsive governance, education, health etc. that define both democracy and citizenship in contemporary terms. Both social and economic development can only be made consistent and permanent when guided by the need to always maintain ecological balance, that is, environmentally sensitive development as well as inclusive growth. In agreement with the comprehensive and multi-sphere conception of development,

the development economist, (Harris & Todaro, 1970) weighs in by arguing that development is not only or purely an economic phenomenon; it is rather a multidimensional process which involves the reorganization and reorientation of both the economic and social systems (Todaro, 1985). Todaro consistently held that development is both a physical reality and a state of mind. In this case, society utilizing some combinations of social, economic, and political processes attempts to secure a better life for its members. (Anugwom, 2020).

He goes on to identify what can be called his core objectives of development. These include: raising peoples' levels of living or what can be called quality of life – this would include an increase in incomes and consumption, food, available medical services, education and other critical needs through the appropriate growth processes; the society should also create conditions conducive to the growth of self-esteem – this is achieved through establishment of political, social and economic systems and accompanying institutions which foster and promote human dignity and respect; the society should also aspire towards increasing the freedom of people to choose through enlarging or increasing the range of their choice, for instance improving varieties of goods and services available to them. Without doubt, Todaro's conception and outlook on development can be criticized on several grounds, however my interest in it is the fact that it opens the vista of development as a comprehensive phenomenon embodying a wide range of processes and institutions over time. In view of the foregoing, the book conceptualizes development mainly in terms of general qualitative improvement and responsive adaptation to the social environment. The above ideas resonate with the notion of sustainable development and the 1980 Brandt Commission (see Wionczek, 1981) conceptualization of development as a process, which while taking care of the needs of the present generation, does not in any way compromise or endanger the ability of future generations to meet their own needs. The conceptualization of development along the above lines implicates an integrated approach, which includes economic, social (geopolitical) and environmental dimensions (see Lapeyre, 2004). In this manner, development is both widespread and comprehensive, especially when used in reference to a modern heterogeneous and multicultural society like Nigeria. Despite the seemingly wide-ranging issues covered in this research, they are interrelated as elements of development in Nigeria. Thus, the existence of poor leadership, for instance, would affect general development planning and execution of development programmes. In the same manner, pervasive political corruption would take the steam out of even the best-conceived development programme. The existence of wide-ranging poverty impedes both the democratic process and implicates either a poor economy or a grossly lop-sided economy characterized by acute inequality and general deprivation. Pervasive and recurrent social conflicts without doubt would impinge on other spheres of development and limit the ability of the leadership or political system to deliver on the goals of development. It is axiomatic that genuine and sustainable development (defined along the lines of that which secures the growth and improvement of today's generation without impeding the ability of future generations to enjoy even better improved growth or improvement) can hardly take root in an atmosphere of rancour (Anugwom, E. E. 2020).

Nigeria, officially the Federal Republic of Nigeria, is a country in West Africa with an estimated population of over 200 million (Trading Economics, 2011) and the most populous country not only in Sub-Saharan Africa (SSA) but in the entire African Continent. Nigeria accounts for 47% of West Africa's population and ranks 8th amongst the top ten countries with the highest population in the world (Internet World Stats, 2010). Nigeria consists of 36 States plus a Federal Capital Territory and is known to have over 274 ethnic groups in the Federation which is divided into three major regions and grouped under six geopolitical zones with a total of 774 Local Government Areas (LGAs) (Gbenga-Ilori & Ibiyemi, 2010). Nigeria has an area of 923,768 sq. km and shares land borders with the Republic of Benin in the West Chad, and

Cameroon in the East, Niger in the North and boarders of Gulf of Guinea in the South (Internet World Stats, 2009). Nigeria is bounded in the South by the Atlantic Ocean and since 1991 the country's capital has been centrally located in the city of Abuja. Previously, the Nigerian government was headquartered in Lagos. Nigeria is Africa's largest producer of oil and is regularly the fifth largest oil exporter to the United States (Ploch, 2011). By some estimates, Nigeria could rank among the world's top five exporters of oil within a few years, although social unrest and corruption in some areas of the country have posed significant challenges to oil production (Ploch, 2011). (Obadan, n.d.), comments that Nigeria is a country with an abundant supply of enormous human, agricultural, petroleum, gas and large untapped solid mineral resources. Yet, since her independence from British rule in 1960, the country has gone through decades of political instability, and this has brought with it a climate of social tension and an unpredictable market for businesses (Onuorah, 2009)**.** Poverty in Nigeria remains significant despite high economic growth, it first started sometime during the British Empire. Nigeria has one of the world highest economic growth rates (averaging 7.4% over the last decade), a well-developed economy, and plenty of natural resources such as oil. However, it retains a high level of poverty, with 63% of its population living on below $1 daily, implying a decline in equity (Wikipedia, 2012). Despite real growth rate in its economy of 5.63% in 2006, 7.64% in 2007 and an IMF projection of 9% in 2008, the income earned by workers is generally low; the minimum monthly wage is US$116 (₦18,000) (Rate at US$1=₦155) and 70% of its population live below the poverty line (Lamido, 2010). A breakdown of the statistics available on Nigeria shows that in 1996 the poverty rate in Nigeria was 46% (Ezigbo, 2009), while in 2002, the poverty rate was about 67.8% (Jegede, 2002). But instead of reducing, it rocketed to 76% in 2009 with most people residing in rural areas (P. Ezigbo, 2009)**.**

According to (Abiodun, T. F, et al, 2019) the Vision 2010 Committee Report in Nigeria as espoused by (Alimeka, 2001) indicates that: 50% of Nigerians currently live below the poverty line. Only about 40% have access to safe drinking water. About 85% of the urban population live in single rooms with more than seven (7) occupants of the average. Only about 62% of Nigerians have access to Primary Healthcare Services. Most Nigerians take less than one third of the minimum required balanced diets. Statistical analysis shows the high rate of poverty that defines Nigeria 's paradox of being a wealthy nation with high number of poor masses. These realities are much more obvious in rural areas and slums. In these places, people die because they cannot afford four hundred Naira (N400) Nigerian money to purchase needed medications or basic public healthcare items (Bala & And Murtala, n.d.). Accordingly, the NBS estimated that this trend may rise further if the potential positive impact of several economic and employment generation intervention programmes of government falls through. The report reveals that 112.47 million Nigerian live below US $1.00 per day and as a result could barely afford the minimal standards of food, clothing, healthcare, and shelter (Olanrewaju Senior Lecturer, 2012). Therefore, resolving the development challenges would require a clear understanding and nuanced appreciation of these factors that have been implicated in the journey of Nigeria to development and nationhood thus far. These factors encompass the economic, social and political spheres of the nation's public life. They are as comprehensive as they are ostensibly often disparate. However, there is no denying the immanent or systemic nature and nexus between these factors. The subject of development even in the case of Nigeria is easily given to controversy. In this case, the divergence of opinions, theoretical preferences, ideological leanings and even prescriptions underline how contested and scientifically uncertain the study of development can get.

What Nigeria Needs Now:

Nigeria needs more industrial production, foreign and domestic investment, not just handouts. There has been too much emphasis on cash transfers, and less on building the capacities of Nigerians to transition into the sectors and jobs of the future. Cash transfers alone are inadequate and not pervasive enough for extricating a significant number of Nigerians from extreme poverty. Those who received cash payments under the national social investment programme risk falling back into poverty at the end of the programme. But structural transformation is more enduring, as it enables Nigerians to acquire and utilise productive capacities for permanently escaping poverty. "Nigeria Economic Report: Improved Economic Outlook in 2019, and Prospects for Continued Growth Look Good". *World Bank*. Retrieved 2020-05-27.

3.5 The Telecommunication Industry in Nigeria

Telecommunication facilities in Nigeria were first established in 1886 by the colonial administration. At independence in 1960, with a population of roughly 40 million people, the country only had about 18,724 phone lines for use. This translated to a tele density of about 0.5 telephone lines per 1,000 people. The telephone network consisted of 121 exchanges of which 116 were of the manual (magneto) type and only 5 were automatic.(Nigerian Communications Commission (NCC), 2009)

Between 1960 and 1985, the telecommunication sector consisted of the Department of Posts and Telecommunications (P&T) in charge of the internal network and a limited liability company, the Nigerian External Telecommunication (NET) Limited, responsible for the external telecommunications services. NET provided the gateway to the outside world. At this time, the telephone system was unreliable, congested, expensive and customer unfriendly. Government-held parastatal the Nigeria Telecommunication Ltd. (NITEL) was established in 1985 and held a monopoly in the market for more than a decade. The company's ascendancy was marked by a long wait time for connections well as poorly maintained and scanty infrastructure. The main objective of establishing NITEL was to harmonize the planning and co-ordination of the internal and external telecommunications services, rationalize investments in telecommunications development and provide accessible, efficient, and affordable services. The government, in November 1992, established an independent regulator the Nigeria Communications Commission (NCC) that oversees the telecoms sector, but it was the inauguration of the board of the NCC under Ernest Ndukwe in 2000 that saw the NCC begins to fulfil its promise as a dynamic actor in the sector. In 2003, the Nigerian Communication Act gave powers previously residing with the Ministry of Information and Communication to the NCC, reducing the role of Ministry to policymaking and giving the NCC a free hand in regulating the industry. The NCC introduced a new licensing framework in the sector in 2006, with the introduction of technology-neutral Unified Access Service Licenses (UASL), which allow providers to offer fixed, mobile and data services using the technology of their choice.(Nigerian Communications Commission (NCC), 2009)

The market was transformed by the government decision to issue GSM licenses. Awarded in an open auction, the licenses were given to NITEL, operating as M-Tel, South African telecoms company MTN and consortium led by Zimbabwe's Econet wireless. Consumers immediately

flocked to the new technology which provided away to leapfrog the limited fixed-line infrastructure, and within a year, there were over 1.5 million mobile subscribers in the country, as compared to just 702,000 fixed-line subscriber. By August 2008, Nigeria had 64,296,117 mobile subscribers as compared to 1,152,517 fixed line subscribers. Currently the major players in the Nigeria mobile market are MTN, Globacom, Zain Nigeria (celtel, then Econet wireless Nigeria and later Vmobile), Etisalat and MTEL. (Aminu & Adeleke, 2012).

Nitel's dominance of the fixed-line market came under siege in 2002, when the government awarded a second National Operator license to Globacom, which also received a GSM license. To protect the national fixed-line operator the government embarked on privatizing the parastatal. The first effort in this direction involved the firm Penta scope, partly funded by the consortium of Nigeria banks, which acquired 51% of Nitel in 2003. But the company was unable to stop Nitel shedding customers to the mobile operators, and even as other mobile networks boomed, Nitel's mobile arm lost market share. So, the government turned to Transnational Corporation of Nigeria (Transcorp), which acquired 51% of Nitel in 2006. But Transcrop's tenure at the helm of the national operator has been no more successful, the company has continued to lose customers, its infrastructure had decayed further, and its workers have gone unpaid. The government has decided to have another try at the privatization process- Transcorp is to cede 29% of its holding, with the government given up 22% of its current 49% share to make a majority stockholding of 51% to be offered to a new investor in February 2009. Among those said to be interested in taking on the national operator are Russian telecoms operator Altimo, UK Company Vodafone, South African operator Vodacom and Indian Conglomerate Bharti Airtel.

The telecommunications sector is undergoing very rapid change and explosive growth. Waiting lists for telephone lines have disappeared, while telephone tariffs for local, national, and international calls are gradually ranking amongst the lowest in Africa. The liberalization of the sector and the resulting competition by private operators is bringing about very substantial benefits to subscribers in terms of much lower prices and enhanced choice. Recently, the introduction of mobile telephony to Nigeria in 2001 radically altered the country's communications landscape from a base of 0.73% tele density in 2001, the country as of August 2008 had reached 39.45% tele density, calculated based on active subscribers. This phenomenal growth was driven by mobile telephony in August 2008; Nigeria had 64,296,117 active mobile subscriptions, as compared to just 1,152,517 active fixed line subscriptions. In 2007, the country passed out South Africa as the continent's largest mobile phone market. Nigeria mobile subscriber base is projected to rise to 79.8 million by 2010. (NCC 2004-2008). Despite this enormous increase, the demand for more lines persists in Nigeria, though there is a quest not just for lines but also for good quality services from the operators. This strong growth is due mainly to competition to sign up new users by the GSM operators and their fixed counterparts. (Aminu & Adeleke, 2012).

Despite the extraordinary growth in the sub-sector notwithstanding, quality of services provided, and telecommunication operation has remained unimpressive, owing to poor interconnectivity between the different networks. The problem of constant call droppings, message and call failures and overloaded billings have not been effectively addressed despite numerous complaints from the consuming public, the industry is still plagued with some problems. Which includes Poor public power supply; poor security such that infrastructure is often vandalized; high operational cost. The telecommunication sector is usually referred to as an infrastructure of infrastructure because an investment in the sector is capable of generating activities and having a multiplier effects on the other sector of the economy, The sector currently accounts for about 6% of the country's total Gross domestic Product (GDP), with

room for growth, according to a survey by Pyramid Research, a United Kingdom based telecommunication research firm, and it well within the range that we see in places like Europe, Africa and elsewhere within the developing markets. The impact of the telecommunication sector on the Nigeria GDP can be seen from various points. The most transparent item is the investment, secondly the revenue it generated on annual basis.

FDI has had a notable impact on the expansion of mobile telephone in Nigeria since the launch of Global System for Mobile (GSM) licensing in January 2001. Two of the three licenses issued went to foreign companies –MTN of South Africa and Econet Wireless (at the time a Zimbabwean-South Africa firm and now Celtel Nigeria, further to the entry in 2006 of the Zain Group Kuwait) – for $285 million each. Within two years, Econet and MTN had signed up 2.2 million subscribers. MTN alone claims to have invested more than $3 billion to date in Nigeria and the Zain Group has pledged another $2 billion investment. The impact of FDI under competitive conditions in mobile telephone has been remarkable. In the sector, subscriber numbers have grown from 35,000 to over 19 million by September 2005, while prices are being driven below those in comparator countries. Competition in the fixed-line sector is provided by nationally owned Globacom, was issued the second national operator license in 2002. After various failed attempts to privatize the State-owned operator, 51% of Nigeria Telecommunications Limited (NITEL) was eventually acquired by Transnational Corporation (Transcorp) of Nigeria, a local company, in November 2006. However, the Government reversed the privatization in February 2008, on grounds that Transcorp failed to achieve the objectives of the privatization guidelines and is now looking for a new core investor**.** (Izuchukwu, n.d.)**.**

In 1992, the Federal Government of Nigeria established the Nigeria Communications Commission (NCC) by decree 75 to regulate the activities of telecommunications services in the country. The need for the establishment of this commission was partly due to the poor performance of NITEL, the nation's telephone service provider and partly to open the telecommunications sector and attract private investors. This poor performance had resulted in the low tele density of 0.04 in Nigeria up till 1999, a situation that was considered one of the lowest in sub-Saharan Africa. With the coming into existence of the commission, there was the liberalization of the telecommunication sector which allows private sector participation leading to the licensing of Global System of Mobile Communications (GSM) operations in 2001. Through this policy, the nation moved from a monopolistic telecommunication market towards a fully liberalized one which allows competition. The GSM revolution started in Nigeria on August 2001, with the licensing of three mobile operators, MTEL, Econet (now Airtel) and MTN by NCC, and since then the face of information and communications technology in Nigeria has been transformed. Globacom and Etisalat were later licensed to operate thereby making the GSM operators to be five (5). Since the GSM launch, mobile telephony has rapidly become the most popular method of voice communication in Nigeria, relegating CDMA (Code Division Multiple Access), a much earlier introduced telecommunication platform, to the background. (Aminu & Adeleke, 2012).

Nigeria has maintained its lead as African's largest telecom market with active subscribers of 92,006,608 by the end of February 2012 (Nigerian Communications Commission, 2012), relegating South Africa to second place with about 60 million subscribers. This represents a tele-density of 68.68% up from a tele-density of 0.73% in 2001. The explosive growth rate in the market has thrown up intense rivalry among the GSM operators and necessitated the need to engage in marketing activities that would enable them to retain a large chunk of their customers and make them loyal. This is more so as the market has become saturated and with little opportunity to attract new customers. The resultant competition has led to the reduction

in tariff, introduction of new and innovative products, advertising blitz, rising sales promotion, and innovative customer service (care). All of these are aimed at both attracting new customers and retaining the existing customers. The high growth of subscribers resulting in impressive financial performance of the GSM providers has necessitated the need to examine the factors that influence customer loyalty in the market. The astronomical growth in the subscriber base of the GSM has led to intense and cut-throating competition in the GSM market of Nigeria. The competition is exacerbated by the lower switching costs among the subscribers of the various networks, which manifest in the frequency with which they (subscribers) freely enter and leave the networks. In term of financial outlay, it costs subscribers as low as N100 to acquire SIM (Subscriber Identification Module) and this makes it cheaper for subscribers to traverse from one network to another. The negative effect of this is the inability of the operators to retain and make existing customers loyal. With the competition becoming tough, service providers realized that retaining one's existing customer base is important as much as the acquiring of a new customer (Coyles & Gokey, 2002). There is also a problem of the declining growth in the GSM subscriber base in Nigeria making it more difficult to attract new subscribers and necessitating again the need to retain the acquired customers. The situation, according to (Dongkyuk Kim et al., 2004) makes mobile telecommunication companies not only to promote their service quality, but also change their marketing core strategy to holding their existing customers by enhancing and optimizing the customer loyalty. In the light of this intense competition, the major challenge confronting all the mobile operators in Nigeria, therefore is the determination and execution of various marketing initiatives that would not only lead to attraction of new subscribers, but also retention of the existing ones who would then become loyal customers. There are overwhelming arguments supporting that it is more expensive to win new customers than to keep existing ones (Pfeifer et al., 2005).

3.6 Nigeria It Policy & Regulatory Framework

The developing use of Information and Communication Technologies in various areas has motivated the need for an IT or ICT policy in different countries. IT policies are built on reliable human resources and infrastructures that constitute the fundamental tool and means of assessing, planning, managing developmental change and for achieving sustainable growth (Adedoyin et al., 2008). In view of this, every progressive country has a national IT/ICT policy and an implementation strategy. A national IT policy can be described as a standard document that states the IT norms, guidance, and principles for issues of national interest. The guidance must be adhered to while applying IT/ICT in the various national issues in order to properly respond to the emerging global reality and thus avert becoming a victim of the digital divide (Adedoyin et al., 2008). It is a public document and hence accessible to all stakeholders in all issues of national interest.

In 2001, Nigeria developed its national IT policy with the vision of making IT an engine for sustainable development whereby the country could become a key player in global information society. The policy was implemented by the government, as part of the public sector reform agenda, after the Nigeria Telecommunications Act was passed by the National Assembly to give autonomy to the Nigeria Communications Commission (NCC) as the telecommunications regulator responsible for the implementation of the policy (- & Osei Tutu Agyeman, 2007). The National Information Technology Development Agency (NITDA) was the regulatory body charged with the responsibility for the implementation of this IT policy (Ajayi, 2003). The general objective of the IT policy was to standardise the Nigerian Information Technology Society with the view to producing a very high performing national workforce that competes globally in the IT driven economy (Adedoyin et al., 2008). The vision statement of the IT

policy is to make Nigeria an IT capable country in Africa and a key player in the information society, using IT as the engine for sustainable development and global competitiveness (NITDA, 2005). The IT policy document focused on several areas of national interest such as assisting to provide incentives to telecom investors and operators in order to facilitate their entry into the Nigerian telecommunication market; also, waiving tax and import duties, promoting and providing access to telecommunications facilities and services at reduced cost, thereby increasing ICT penetration (NITDA, 2005). The policy also focused on deregulating, liberalising, and privatising the telecommunications industry and recognised the private sector as the driving force of the IT sector. The government has also introduced convergent licensing for Internet Service Providers (ISPs) to reach out to disadvantaged communities and rural populations (Agyeman, 2007). Although the policy aims at using IT for wealth creation, poverty eradication, global competitiveness, and education, Agyeman (2007) states that the vision is yet to be fulfilled. In 2008, the policy was reported to be overdue for review due to changes and advances in IT globally and in Nigeria particularly. The government therefore decided to set up the Nigerian National ICT for Development (ICT4D) Strategic Action Plan Committee to help develop a new ICT policy that will serve as the new ICT action plan/roadmap for the nation (Adedoyin et al, 2008). In Nigeria, there are several regulatory bodies that handle telecommunication matters, e.g., NCC, Federal Ministry of communication & Digital economy.

3.7 ICT & Internet Revolution-Penetration in Nigeria.

The internet has become an extremely important modern-day technology for businesses (Sellitto, n.d.). It is known as the communications protocol that enables heterogeneous computers and protocols to communicate, thus linking local area networks into a single communication network (Montealegre, n.d.). The internet was developed during the 1960s by the United States Department of Defence Research Projects Agency and afterwards it has been integrated globally into everyday activities such as leisure, health, and work and by business enterprises (Teo and Tan, 1998). According to Willis et al. (2002), the internet has revolutionised the way businesses are conducted all over the world. Tidd (2001) considers the internet to be one of the "defining symbols" of 21st century innovation that has transformed the conceptual notions of how people value knowledge to create a new economy. Levy and Powell (2003) and Tidd (2001) advocate that what brings about innovation in new economies is immediate access to the worldwide market of information, better speed to market, transformation of business processes and a shift in the balance of power between suppliers and consumers as information becomes more widely available. Between the years 2000 and 2005, developing countries' internet users' population grew by more than 30% to roughly 400 million, increasing their global share of all internet users from 25% to 40% (Molla & Heeks, 2007) UNCTAD, 2005).

(Fairlie, 2005) state that the use of the internet, especially in developing countries, has expanded rapidly in recent years; nevertheless, penetration rates differ clearly between developed and developing countries, and across developing countries. On the one hand, Chin and (Fairlie, 2005) argue that human capital, youth dependency ratio, telephone density, legal quality, and banking sector development, are associated with the rate of internet penetration and that factors associated with computer and internet penetration do not differ substantially between developed and developing countries. On the other hand, (Mutula & Brakel, 2007) argues that the penetration of the internet in Africa differs from one country to another depending on each country's government policy, legal and regulatory frameworks, competition amongst Internet Service Providers (ISPs) and prices of telecommunication services. Nevertheless, Chin

and Fairlie (2005), comment that the surge in computer and internet trends in developing countries within the past few years has changed because the use of technology has considerably increased as compared to a few years ago for almost every country in the world. Internet connectivity in each of the world's continents far exceeds that of Africa (Mutula, 2007). The International Telecommunication Unit (Oksman et al., 2010) stated that Africa had about 850 million people and about 13% of the world population and as of 2005 had about two PCs per 100 inhabitants with an internet penetration of less than 4%. The global average internet penetration rate was more than 15% but the situation in SSA was worse (Dae-IL oh, 2010). Whereas the (ITU REPORT, 2010) indicate that the number of internet users has doubled between 2005 and 2010. While 71% of the population in developed countries are online, only 21% of the population in developing countries are online. The report further indicated that at the end of 2010, internet user penetration in Africa was 9.6%, far behind both the world average of 30% and the developing country average of 21% (ITU, 2010). In developing countries 72.4% of households had a TV as at the year 2010, only 22.5% had a computer and only 15.8% had internet access (compared to 98%, 71% and 65.6% respectively in developed countries). However, at the end of 2010 the number of people having access to the internet at home had increased from 1.4 billion in 2009 to almost 1.6 billion (ITU, 2010). (Omona & Ikoja-Odongo, 2006) state that despite the encouraging developments that have emerged in the last few years as a result of the increasing trends towards liberalisation, differences in ICT penetration between SSA and the rest of the world remain wide.

In December 2009, it was declared in Nigeria that 11 million of the country's population were users of the internet, assisting Nigeria to be considered as one of the countries in Africa with a high population of internet users. As of June 2010, there were 43,982,200 internet users comprising 28.9% of the country's population. It is obvious that there has been a remarkable increase in terms of internet usage in Nigeria between the years 2000 and 2010. The current development shows that in the last few years, computer access and internet penetration has increasingly grown, and this indicates a brighter future for internet users in Nigeria. However, the status of internet development and connectivity in Nigeria is still low when compared to developed countries and internet connectivity in the entire continent of Africa is still very poor, unreliable, scarce, and very expensive where available. According to (Buskens & Webb, n.d.), users must contend with frequent service outages and very slow speeds. As of January 2021, with an estimated population of about 200million, Nigeria registered approximately 104 million active internet users, which corresponds to about half of the total population. Data from 2021 cannot be directly compared to those from previous years as the sources used by the publisher have changed.

Data show that the percentage of the population using the internet in the West African country decreased in the last years.

Table 3 Nigeria Internet Usage in 2017-2021

YEAR	Users (Millions)	% Penetration
2017	97.2	48.6
2018	91.6	45.8
2019	98.39	49.2
2020	85.49	42.75
2021	104.4	52.2

Source: Statista Research Department, August 23, 2021

3.8 SMEs Economic Growth and Development

The economic growth of any country depends to a certain degree, on the ability of the country's business community to maximise their growth potential. One of the biggest contributors from the business community of any nation to the nation's economic development, is the small and medium sized enterprise (SME) sector. Ojukwu (Ojukwu, 2006) state, the Small Scale and Medium Sized Enterprises (SMEs) have been credited with enormous contribution to the growth of the developed economies of the world. In the same vein, the Information & Communication technologies (ICT), and particularly the Internet have played their own part in those economies. The SMEs provide the cornerstones on which any country's economic growth and stability rests. The American economy, the largest economy in the world, depends largely on the success of SMEs for "innovation, productivity, job growth and stability" (SBA Report-2000- (Ojukwu, 2006)). Small businesses represent more than 99% of all employers, employ 51% of private-sector workers, employ 38% of workers in high-tech occupations, provide about 75% of new jobs of the private sector output and represent 96% of all goods exporters" (Twist, 2000). According to the SBA Report (2000), 75 percent of these new jobs were created by the SMEs with the services sector topping the list with about 1 million, followed by manufacturing, finance, and insurance. The same story emerges in every other economy. The differences lie in the magnitude of impact and the indices for measuring them. In the United Kingdom, for instance, there were 3.7 million active businesses in 2000, according to the UK Small Business Service (SBS Report, 2000). Small and medium-sized businesses, including those without employees, account for over 99% of these UK businesses, and account for 50% of total UK turnover (£1 trillion), compared with 49% of turnover from the 7000 largest businesses. This situation improved dramatically in 2002 when SMEs in the UK accounted for 99.8% of all businesses, 55.6% of employment and 52.0% of turnover (ODPM, 2005). In Canada also, the SMEs deliver 60% of the country's economic output, generate 80% of national employment and 85% of new jobs (Net Impact Study Canada, 2002). The rapid transformation of the "Asian Tiger" countries of India, Malaysia, Indonesia, Taiwan, and Hong Kong, has also been hailed as proof that SMEs are major catalysts to economic development. Their importance to any economy hinges on their ability to stimulate indigenous entrepreneurship, to provide employment to a greater number of people; to mobilize and utilize domestic savings and raw materials, to provide intermediate raw materials or semi-processed products to large-scale enterprises, and to curtail rural-urban migration, (Ojukwu, 2006). Of equal strategic importance is also the role of the SMEs in other developing countries like Nigeria. With a Gross National Product (GNP) of some $41.2 billion and a World Bank estimated population of 126.9 million, Nigeria is one of the largest economies in Africa (World Bank Report, 2000). This being the case, the economic success or failure of Nigeria can affect not only the country but the whole of sub-Sahara Africa. Therefore, any effort geared towards understanding how the SMEs make use of emerging technologies in improving their products and services which ultimately reflect on their growth potential is worthwhile (Ariyo, 2000). A study conducted in Nigeria by the Federal Office of Statistics shows that over 97% of all businesses in Nigeria employ less than 100 employees. This therefore means that about 97% of all businesses in Nigeria are SMEs. The Federal Government of Nigeria initiated and actualized some policy measures, like the setting up of Small and Medium Industries Equity Investment Scheme (SMIEIS), in the expectation that improved funding would facilitate the achievement of higher economic growth. (Ariyo, 2000).

The United Nations (UN) under its Millennium Development Goal (MDG) set a target of halving the number of people living in extreme poverty by the year 2015. In his Foreword in the UNCTAD (2002) report, the then UN Secretary General, Kofi Anan warned that for the world to achieve the Millennium Development Goal in 2015, Information and Communication

Technologies (ICTs) must figure prominently in the effort. The Asian and the Pacific regions seemed to have heeded Kofi Anan's warning and embraced ICT in their business practices. It is no surprise therefore, that they fare a lot better in their ICT acquisition and utilization. This has also given rise to a very sharp rise in the number and volume of 'offshore' businesses that endlessly service the IT needs of the developed countries of Europe and North America. They are also leading players in the deployment of crucial broadband technologies (Ojukwu, 2006).

In India for example, apart from the famous "hole-in-the-wall" project hailed by experts as ground-breaking, there is also the SARI (Sustainable Access in Rural India) project that has led to improvements in empowerment, learning, knowledge creation and economic developments amongst the poorest and most disadvantaged communities in India. SMEs, entrepreneurs, and individuals in those villages now use the technology in providing e-services like email, voice mail, telemedicine clinics and some forms of e-government like tax returns and enquiries. There are also similar projects e.g., the Grameen Village Pay Phones and the Gyandoot Rural Intranet**,** (Bhatnagar & Singh, 2010)**.**

There is also Research has shown that the better the quality of goods and services being offered by considerable evidence to suggest that the introduction of new technology into organizations of all kinds and sizes has a major impact on the structure and functioning of those organizations (Twist, 2000). The adoption of what (Varian, 2004) called the "Internet Business Solution" in the United Kingdom, France, and Germany for instance, has resulted in a current, cumulative cost savings of €9 billion (9 billion Euro) to the organizations deploying them" (Varian, 2004).

According to (Ojukwu, 2006), "also in Nigeria, the introduction of mobile telephony has encouraged a new generation of 'netpreneurs' who use their mobile phones to make money. It is now a common sight in most cities in the country to find roadside 'call centres' operating under umbrellas, under trees and road-side shacks. Most of the customers to these 'business centres' own their own mobile phones. However, they patronize the centres simply because it is cheaper to make calls from the centres than doing so with their own phones. The 'call centre' operators on the other hand make their money by cutting down the cost of making calls by using 'booster' call cards and through the discounts they get from the network operators through bulk purchasing. The more phone cards one buys in Nigeria within a time period, the less one pays per unit card. There are numerous examples of projects that seem to validate the claims made by researchers that e-commerce, like other information and communication technologies (ICTs) generally, contribute to both poverty reduction and economic growth. There is, for example, the Greater Horn of Africa Electronic Communications Network project funded by the United States Agency for International Development (USAID) which is aimed at linking member states of the region in to exchange crisis-related information. Another example is the Village Internet Programme by the Grameen Bank in Bangladesh that has succeeded in an inefficient, regulated environment to bring cellular telephony to rural areas. It was aimed at promoting poverty alleviation by reducing migration from villages to cities, creating information technology-related job opportunities for the rural poor, by creating familiarity with computers among the rural population of the country (Grameen Communications, 1998)". (Khalil et al., 2003) established that there is a direct link between information access and poverty reduction. According to (Madon, 2000), electronic communication can assist in the management of crises and poverty alleviation amongst organizations. Earl (1988) advances four reasons why every organization that wants to survive and create wealth must commit itself to a great deal of investment in technologies: a) To gain competitive edge; b) To improve productivity and performance; c) To facilitate new ways of managing and organizing through knowledge creation; and d) To develop new business ideas.

Small and Medium Scale Enterprises (SMEs) are potent economic drivers as well as important sources of flexibility, innovations, and employment creation (Ramdani et al., 2009). They account for between 96 and 99 percent of enterprises in most OCED nations (Scupola, 2009) and provide about 80 percent of economic growth. About 99 pe cent of all businesses in North America and Europe are SMEs (Federici, 2009; Ramdani et al., 2009; Shiau, Hsu, & Wang, 2009) with their counterparts in Australia providing 1/3 of GDP and 70 percent employment (Scupola, 2009). Definitions of SMEs are often based on economy, employment figures and sometimes sales volumes and fixed assets. In many European countries, SMEs employ less than 500 persons (OECD, 2000); in Australia less than 200 (Scupola, 2009); in South Africa and Australia, between 100 and 200 persons (Scupola, 2009); and in Egypt, the classification is based on number of workers, fixed assets, and annual turnover (Rizk, 2004). Though governments and large corporations play dominant role in formal economy, SMEs drive the informal sector; hence, many developed and emerging nations aggressively pursue public policies designed to encourage SMEs. South Africa, for example, through its Enterprise Development Fund and in collaboration with United States Agency for International Development (USAID), provided funds to spur informal sector developments in the present knowledge economy.

In the knowledge economy, the strength of SMEs is essentially determined by their ability to wisely take advantage of human intellectual capital and technology even more than traditional resources. The core competence for SMEs' survival and growth involves creating and sharing knowledge and information, and innovating, learning, and adapting to changes through strategic deployment of knowledge capital. ICT, expeditious data processing models, configurable platforms, networking, and the internet provide SMEs with access to knowledge and foster inter/intra-organizational integration (Metaxiotis, 2009); Ramdani et al., 2009) with the promises of cost-effective operations and interactions. EC plays potent roles to SMEs in terms of building competitive advantage even at the global market; higher efficiency and effectiveness; improved product development and service quality, sales forecasting, customer analysis; and cost reduction. Studies suggest that adoption of EC by SMEs is really growing in developed economies (Metaxiotis, 2009); in US and Europe, online business rose by triple digit percentage points between 1999 and 2003 (Rudraswamy & Vance, n.d.) and the 2010-2015 Indian Brand Equity Foundation (IBEF, 2010) Newsletter opines that internet activities grew about 12 percent in 2009 to reach $71.7 billion in aggregate revenue. In Asia, more businesses now favour e-commerce solutions whereas some African nations continue to lag. South Africa, France, Italy, Belgium, and Finland are the second-tier internet intensive nations each with more than 75,000 hosts (Laudon & Laudon, 1999). Its development in Nigeria is rather very slow though steady (Ayo-Vuaghan, 2016), and like other nations, it is dominated by large firms. For instance, Banks through online banking and money transfer services seem to have made giant strides. Lack of experience and other infrastructural resources (Zhou, n.d.), size, organization form and methods (Federici, 2009), little awareness of the benefits of IT infrastructures (Esteves, 2009), and relatively low investment in website development explain the weak diffusion of EC amongst SMEs in Nigeria. Foreign firms such as Amazon have capitalized on these drawbacks to satisfy the growing consumer demand for Western shopping patterns. Since SMEs' increased access to global markets is crucial for economic development, there is a need to delineate and understand the factors affecting their adoption of EC solutions in Nigeria. Apparently, the existing theories are insightful in understanding the IT adoption nature of SMEs, but some s seem a bit parochial in their constructs and so, can rarely be extrapolated to deal with SMEs in developing countries. Therefore, this research seeks to reduce these theoretical gaps by enlarging the constructs of TAM and TOE frameworks as they affect EC adoption by SMEs.

3.9 An Overview of Agri-Business Concept in Nigeria

"Today's Nigeria has transitioned from being a self-sufficient country in food production and supply to being a net importer, spending $11 Billion (USD) on the importation of rice, fish, sugar, etc. It just makes no sense at all." (These were the words of Nigeria's erstwhile Minister of Agriculture and rural development in the first quarter of 2015. (Ikenwa et al., 2017), It hides no rhetoric but affirms the potential of the Nigerian State to become not only a self-sufficient producer of both food and cash crops, but also a leading producer of food and fiber products for global export. Sadly, with the discovery of oil, Nigeria has largely become dependent on the importation of food to feed its growing population. The fact that the Nigerian agricultural sector is moribund cannot be overemphasized. This is not, however, to say that it contributes little or nothing to the nation's Gross Domestic Product (GDP). But it must be said that the sector suffers from gross underutilization of capacity and low productivity output. However, amidst these facts are challenges which, if addressed from a strategic management and market-driven point of view, would translate to opportunities that could reposition Nigeria as a leader in the food and fiber global chain. (Ikenwa, O. K, et al, 2017).

Considering these possibilities, the study proposes a central thesis that the Nigerian agricultural system has the potential to replace the oil and gas sector owing to the fact that, it is a major employer of skilled and unskilled labour and as a major contributor to Nigeria's per capita income and economic growth by reducing poverty and adjusting balance of payments deficits if and only if the agricultural sector can be transformed into an agribusiness system. The aim of this research, therefore, is to build a business case for Nigerian Agric-SMEs, through ICT adoption and use on knowledge creation, and how the transformation of the Nigerian SMEs-agricultural sector to an agribusiness system can be attained. Beyond this purpose, the research intends to identify probable and reality-cantered programs and strategies which will culminate in the way interventions and interactions of government, businesses, and society can result in a blueprint of strategic policies, which would aid the Agric-sector transformation as proposed in this research. This transformation is imperative owing to the past and present macroeconomic advocacy by successive government administrations regarding the need to diversify the revenue base of the economy from a mono-product (oil and gas) export economy to a multi-product export economy. (Ikenwa, O. K; Abdul, A. S; Owolabi, L. K. 2017). Among other objectives, this research will attempt to establish the multiplier effects through the Adoption and use of ICT, that a transformed agricultural sector would have on the Nigerian economic and business landscape and will also give recommendations for the adoption or adaptation of modern SMES-agribusiness models as a plan for returning the country to the path of sustainable national competitive and comparative advantage. The research analytical framework is guided by an attempt to respond to the following questions: How can the prospects and benefits of transforming from an agricultural sector based on extraction, subsistence consumption, and produce export to an SMEs-Agribusiness system based on extraction, processing, and commercial export be harnessed in contemporary Nigeria? The second question is connected to the first one: What interventions of government policies, businesses, and society must be articulated and appropriated for an effective and efficient transformation from the present agricultural sector management to an effective SMEs-Agribusiness?

The concept of "agricultural business" is credited to have been first introduced by John H. Davis and Ray A. Goldberg in 1957. They defined the term agribusiness as "The sum total of all operations involved in the manufacture and distribution of farm supplies, production operations on the farm; and the storage, processing and distribution of farm commodities and items made from them" (Davis & Goldberg, 1957). Commenting on the definition and the

publication of the authors which heralded the agribusiness concept, (R. P. King et al., 2010) affirmed that "The key insight articulated by Davis and Goldberg was that the food system needs to be viewed as an integrated system" (King et al., 2010: 554). They stressed further that "Management strategies and public policy initiatives designed to address problems in the food system would be doomed to failure if they focused on only one portion of that integrated system" (Ibid.). Still on Davis and Goldberg's work, King et al. (2010) opined further that "Their [Davis and Goldberg's] work stimulated new interest in the linkages between segments of the food system, in coordination across segments, in system-wide performance, and in strategy formulation in a context of interdependence" (Ibid.). The linkages highlighted here by King et al. (2010) form as it were the nucleus of this research, as it concerns the Nigerian agricultural sector.

(Lal Bairwa et al., 2014) refer to agribusiness as the business of agricultural production. According to them, "It includes crop production, seed supply, agrochemicals, farm machinery, distribution, processing, marketing and retailing of agricultural produce to ultimate consumers" (Bairwa et al., 2014: 1). To justify their clarification of the concept, Bairwa et al. (2014) further maintained that "Agribusiness has evolved from agriculture and has become a vast and complex system that reaches far beyond the farm to include all those who are involved in bringing food and fiber to consumers" (Ibid.). Elsewhere, (Ng & Siebert, 2009) observe that since the seminal definition of agribusiness given by Davis and Goldberg (1957) agribusiness has subsequently been defined in various ways such as agro industrialization (Olson & Boehlje, 2011), value, net chains, or agriculturalist (Goldberg, 1999). Ng and Siebert (2009) stress that "These different definitions share a common emphasis for the 'interdependence' of various sectors of the agri-food supply chain that work towards the production, manufacturing, distribution, and retailing of food products and services" (Id.: 124). (Ikenwa, O. K; Abdul, A. S; Owolabi, L. K. 2017). Agribusiness brings an expanded view to the practice of agriculture and to the concept of the food distribution chain. As such, Bell, Goldberg, Ning, and Weisser (2008) contend that the study of agribusiness, especially at Harvard Business School, gave birth to the notion of the "value-added food chain". They emphasized further that during the decades over which the study and practice of agribusiness has evolved significantly, agribusiness has come to be seen not just as economically important but as a critical part of society. (Sonka & Hudson, 1989) observe that the nature of agribusiness creates a sector-/system-related multiplier effect. By this, they mean that agribusiness is characterized by and can be described with three interdependent sectors in a global food chain which represents a three-part system made up of: (i) the agricultural input sector, (ii) the production sector, and (iii) the processing manufacturing sector (Bairwa et al., 2014). (Cook, 1992) broadens this discourse by referring directly to Sonka and Hudson (1989) as suggesting that the food and agribusiness sector might be thought of as a sequence of interrelated subsectors made up of: (1) genetics and seed-stock fi rms, (2) input suppliers, (3) agricultural producers, (4) merchandizers or first handlers, (5) processors, (6) retailers, and (7) consumers. Cook (1992) stresses further that "Agribusiness is a complex system of the input sector, production sector, process-manufacturing sector, transport and marketing sector". The conceptual clarification of agribusiness brings to the fore the strategic issues which are pertinent to what the transformation of the agricultural sector of a developing country or emerging market economy to an agribusiness sector/ system portends. Bairwa et al. (2014), for example, categorically state that "Agribusiness is very important for developing countries….to capitalize on the benefits of globalization and face new challenges to enhance their economic growth" (Id.: 2). To further support this thesis, Goldberg (1991) is reputed to have estimated that "…the food and agribusiness system is the largest economic system in the world representing 50 percent of the global labour force, 50 percent of global assets, and 50 percent of global consumer expenditures" (as cited in Cook, 1992: 11).

Agriculture, as presently practised in Nigeria, is largely dominated by subsistence and low-scale farming both of which are both pervaded with traditional forms and methods of farming. Suffice to mention that the extent to which the agribusiness model in a country is dominated by market-oriented family farms/firms or market oriented corporate farms/firms or both is a function of the level of economic development in that country and the enabling operational environment for agribusiness to thrive. Nigeria being a developing country, its gradual integration has witnessed the adaptation by few market-oriented corporate farms/firms, as family-owned farms rarely exist in Nigeria, thus leaving a larger part of the sector to be dominated by subsistence and traditional farming in the rural areas. The resultant effect of this has been a sector characterized by low productivity, which in turn has made it impossible for Nigeria to appropriate a sector in which it has more comparative advantage in terms of factors and costs of production than other countries in Africa and beyond. This problem with its many attendant consequences creates not only an income gap for the country but also continues to have a negative effect on other macroeconomic variables. It has also promoted a high rate of capital flight and it has in turn made Nigeria a dumping ground of processed agricultural products among other consequences. (Ikenwa, O. K; Abdul, A. S; Owolabi, L. K. 2017).

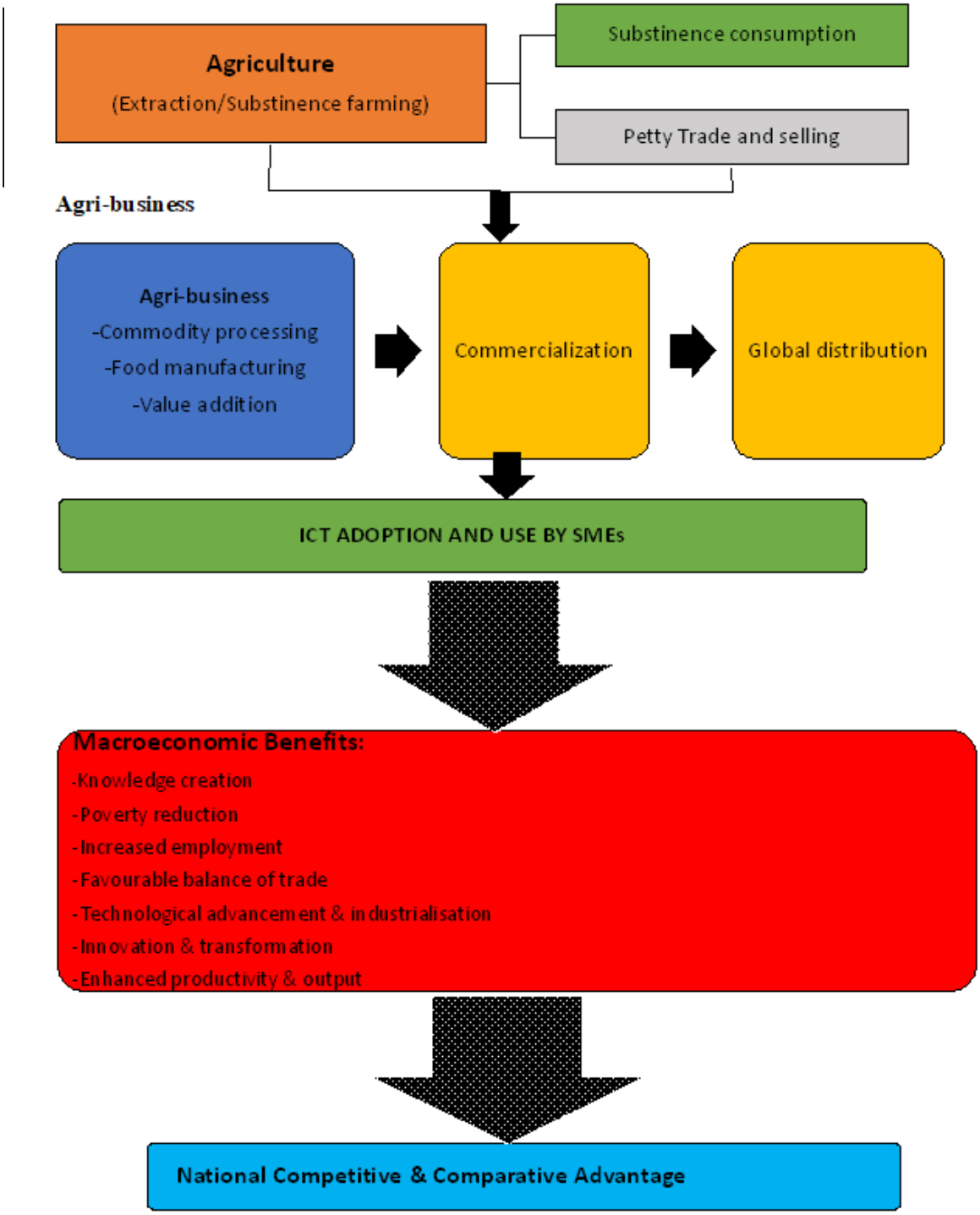

Figure 6 Agri- Business Model
Source: Authors Model

Some strategic macroeconomic variables and benefits of critical importance highlighted above is knowledge creation, enhanced national productivity, poverty reduction, employment, technological advancement, and innovations etc. At present, irrespective of the fact that the Nigerian Agric sector is mostly dominated by subsistence farming and traditional farming techniques and approaches to produce preservation and distribution, the sector still accounts

for nearly seventy percent of the total employment and productive occupations in Nigeria, even though for the most part those most engaged in Agric-related endeavours live in the rural areas, and observations indicate that most Agric-related trade is dominated within the cycles of the informal economy. (Akpan & Atan, 2015). These statistics is suggestive of the fact that the sector is still besieged by high levels of unemployment and underemployment of both labour and other factors of production. This problem can be ameliorated by the transformation of the traditional agricultural sector, through the adoption and use of ICT, into an Agri-business model, as such transformation is very much likely to improve value and supply chain activities, which will in turn necessitate the employment of more individuals, involvement of more firms, and consequently increased employment of other factors of production. Overall, this will have a multiplier effect on the economy by reducing the unemployment and underemployment rates of both labour and other factors of production.

Despite the above stated problems and challenges, some strategic contradictions are very much apparent. This is so, given the fact that the agricultural sector – as it would be later discovered and elucidated upon in subsequent sections of this research – has contributed positively and significantly to the Gross Domestic Product (GDP) of Nigeria in the last couple of decades. Such a contradiction seems to be at variance with the problems and challenges highlighted hitherto. But it should be categorically stated that instead of perceiving this quantitative observation as a contradiction, it should be seen as a pointer to the untapped potential of the sector. Hence, the argument in the research is anchored on the need to transform the Agric-SMEs sector, adopting and using ICT as a system benchmarked upon which the agribusiness model for the purpose of better positioning, it's seen as a critical economic sector whose positive impact will adjust the fiscal shortages and collateral damages that have resulted from over-dependence on the oil and gas sector as Nigeria's major source of income, economic growth, and development. Therefore, it is proposed that Agribusiness is a systematic model which would serve as a correcting factor to mitigate the forces that have made it impossible for Nigeria to pursue, gain, and sustain comparative and competitive advantage in the global Agric-trade. (Ikenwa, O. K; Abdul, A. S; Owolabi, L. K. 2017).

3.10 AGRIC- Development in Nigeria: Prospects and Challenges

Nigeria is a West African country situated in the Gulf of Guinea. In 1960, political independence was gained from Britain. As the most populous country in Africa, with an estimated population of above 170 million as at 2014, it currently has the biggest economy in Africa with a rebased GDP size in the excess of USD 500 Billion (National Bureau of Statistics-2014 (Awojobi, 2014)). Nigeria has a land mass territory of 923,768 km^2, 78% of which is land available for agricultural use, 37% of which is arable (THE CENTRAL INTELLIGENCE AGENCY, 2014). The country's agricultural base comprises a blend of food crops for local/subsistence consumption and cash crops such as cocoa, peanuts, cotton, palm oil, corn, rice, sorghum, millet, cassava, yams, rubber, as well as livestock such as sheep, goats, pigs, fish, etc. As at 2014, it had a low Human Development Index (HDI) of 0.504, which is an increase from 0.471 in 2013. Its Multidimensional Poverty Index (MPI) for 2014 was 0.239, with a total of 43% of Nigerians estimated to be living in multidimensional poverty and 68% living below $1.25 a day. As such, Nigeria is ranked 152 out of a total number of 185 countries on Human Development Indicators (UNDP, (Malik, 2014).

Nigeria's agricultural sector has a rich history of development from mere subsistence farming to large-scale farming, for the extraction and production of cash and food crops for mass export and foreign exchange earnings in the late 1950s, up through the period of political

independence from Britain, and until the discovery of crude oil in large exportable quantities. This discovery of oil turned out to be the curse that cast a dark spell on a once critical foreign exchange earning sector, the Agric sector. Owing to what has come to be described as the "Dutch Disease", the agricultural sector has remained stagnant, and investment into modern mechanized farming techniques was almost abandoned at the opportunity cost of crude oil exploration. The sector remains full of potential, and this is attested to in the NBS (2014) report on the sector, which documents the considerable regional and crop diversity that characterizes the sector. However, the report was also quick to pinpoint that the analysis of the sector is fraught with serious data problems. The NBS (2014) report states that the available statistics only provides a broad overview of development in agriculture, upon which some generalizations about the role of the sector in Nigeria's economic development and structural change can be made. (Ikenwa, O.K, et al, 2017).

Regardless of the admission of data adequacy problems, clearly documented in the NBS (2014) report, is the fact that the agricultural sector in the 1960s was an important contributor to the country's GDP, foreign exchange earnings, general employment level, favourable terms of trade, balance of payments, and overall economic stability. With these in place, the sector facilitated in great leaps and bounds the required economic growth and the increase in per capita income needed for economic development. Abandoning the sector led to a substantial variation and long-term decline in the share of the sector's contribution to the national GDP from 60% in the 1960s to 48% in the 1970s and 22% in the 1980s (NBS, 2014). (Ekerete & Ekanem, 2015) records that as at 1974 the sector's share in the GDP had declined to 34%, while(Ekerete & Ekanem, 2015) stated that as at 1996 the sector accounted for less than 5% of Nigeria's GDP. Currently, the sector accounts for approximately 20% of the Nigerian GDP (CIA, World Factbook, 2014).

However, the declining oil revenues, in addition to mismanagement and misappropriation of revenues accruing from the oil sector over the last three decades, have led to a clarion call for the diversification of the Nigerian economy and a return to agriculture as the mainstay of the economy. (Ekerete & Ekanem, 2015) supports this call by reiterating that agriculture is the "engine house of world economies". (Chigbu, 2015) stresses that "As a protagonist of agricultural development…. Nigeria's economic development can only be realistic through the total resuscitation of our agricultural sector". Chigbu (2015) is of the strong view that such resuscitation will propel the sector to produce food and fiber to feed the teeming millions of Nigerians. He maintains further that with such production the ensuing benefits will grow faster than the birth rate and will consequently reduce the death rate. (Ikenwa, O.K, et al, 2017).

The present state of the Nigerian agricultural sector appears to have maintained the same level of currency over the last three decades. But some significant and meaningful observable dimensions of growth are obvious, especially as the sector has been able to attract meaningful Foreign Direct Investments (FDI) in the last one and a half decades. (Omole & Wole Soyinka, 1985) sounded the alarm about thirty years ago, emphasizing that the Nigerian economy as at the time of his publication had neither a firm agricultural nor a firm industrial base. He stressed further that "The power pump of the economy in the oil sector is threatened by excess supply in the world market and orchestrated by decline in prices" (Omole, 1985: 15). While Omole may have been considered back then as a lone voice crying from a self-imposed economic wilderness, his warnings have crystallized today in the global economy. Presently, the Nigerian government and people are coming to terms with the economic realities that accompany an unsustainable dependence on oil revenues. (Ikenwa, O. K, et al, 2017).

The present state of the Nigerian agricultural sector shows that agricultural engagement is still predominantly domiciled in the rural areas, highly populated with small-scale farms; low

penetration of mechanized farming practices; poor adaptation of modern technology to enhance produce and livestock output; inadequate Agric capital and loans to encourage vertical integration; and, the most devastating of all, the sector has been plagued by high level of government policy summersaults and regulatory inconsistencies. Suffice it to say that the renewed emphasis to diversify the Nigerian economy and return to agriculture as its bedrock of growth and sustainable development necessitates that government, businesses, and the Nigerian society come together to confront the nearly insurmountable challenges and consumption patterns that have left the Agric sector moribund. The leading challenge is the preference of Nigerians for foreign agricultural finished products. This is responsible in no small way for high import invoices, which in turn encourage capital flight, unfavourable terms of trade and consequently inhibit the export potential of the Nigerian Agric sector. For example, according to data obtained from the Nigerian Bureau of Statistics in 2015, by the end of the first quarter in 2015, a total of ₦738 billion (approximately $3.69 billion USD) worth of agricultural products were imported into Nigeria, compared to a total value of agricultural exports within the same period from Nigeria worth 99.5 billion (approximately $495 million USD). All of this amounted to Agric trade deficits in the excess of ₦600 billion ($3.2 billion USD). It is also important to reconcile the extent to which the Agric sector has been impacted by Foreign Direct Investments (FDI).

In an empirical study, aimed at analysing FDI in Nigeria, (Ogbanje et al., 2010) discovered upon analysing the available secondary data that in the period of 1970–2007 the net flow of FDI to Nigeria discriminated against the Agric sector notwithstanding the strategic position of the sector in the economy. On the other hand, the manufacturing and processing sector for the period under review was the most highly favoured by net flow of FDI. This finding aligns with similar results reported by (Fabayo et al., 2011). The findings reported by Ogbanje et al. (2010) contradict their stated *a priori* expectations, which assert that "The agricultural sector, owing to its strategic relevance to the Nigerian economy and its potential to attract foreign direct investment ought to have the highest mean net investment". To investigate this assumption, Ogbanje et al. (2010) hypothesized that the application of foreign investment available to the agricultural sector should have a significant relationship with the growth of the sector. This hypothesis is supported by (A J & Maduekwe, 2013), who reported in their study on agricultural financing and economic growth in Nigeria, that there is a bidirectional causality between economic growth and agricultural financing. The discussion on FDI inflows to Nigeria as well as to other emerging market economies in Africa begs a question that is very important for Sub-Saharan African scholars to address, especially within the discourse on externally driven economic growth and development. For Nigeria in particular, the question must be asked: *How much FDI directed to Nigeria is genuine FDI?* It is obvious that a lot of distortions are apparent in the global FDI statistics. From the receiving end, it is important to appropriately classify genuine foreign investments and differentiate them from investments with clandestine interests. A position that stands to be corrected is that most foreign investment inflows to Nigeria fall under the classifications of Foreign Portfolio Investments (FPI), whose destinations are meant for Special Purpose Entities (SPEs). The OECD (2014) report on FDI corroborates this position. (A J & Maduekwe, 2013).

According to (Kothe & Mullan, 2014), the authors of the report "[SPEs] are typically holding companies who used to channel capital through countries without generating any real significant economic activity or employment". Likewise, statistics from the World Bank does not suggest any position contrary to the one being advanced here. For instance, the World Bank record shows that FDI inflows as a percentage of Nigeria's GDP between 2010 and 2013 were 1.6, 2.1, 1.5, and 1.1 percent respectively. And net FDI outflows from Nigeria were 0.2, 0.2, and 0.3 percent respectively. The 2013 figure is not available. Thus, the variance between

Nigeria's FDI inflow and outflow has only been arithmetic and not geometric in progression. Overall, even though statistical records from provisional data show that the contribution of the agricultural sector to Nigeria's GDP increased between 1996 and 2016 from 5% to approximately 20%, the sector is besieged at present with many problems and challenges. (Ikenwa, O. K; Abdul, A. S; Owolabi, L. K. 2017). Many stakeholders still agree that these collective problems are responsible for the below optimal productivity of the sector, especially as it relates to Agric-SMEs in Nigeria. The position in this research is to analyse and ascertain whether these problems or ICT Adoption challenges, hinder the productivity output of the sector, the introduction of an SME-agribusiness model would contribute a great deal to confronting these bottlenecks and consequently help to improving productivity output in the Agric sector.

3.11 Globalisation & The Adoption of ICTs In Nigeria Agri-SMEs

In the current competitive environment characterised by a turbulent, changing, intense global competition and high uncertainty (Zahra & George, 2002) to have competitive advantages for improving and maintain the competitive position over time is critical for any organization. The recent wave of globalisation spurred largely by rapid advances and diffusion of information and telecommunication technologies (ICTs) has led to irreversible changes in the world economy. Globalisation now encompasses not only the financial markets, but also the whole gamut of the world's social, political, economic, and cultural milieu. This era of globalisation commenced in the 1980s, although it had already begun to rise significantly in the preceding decade. The process of globalisation is rapid, complex, and full of uncertainties and expectations. It is obvious that only those countries that invest in science and technology (S&T) are able to integrate themselves better in the global system and to effectively respond to the challenges posed by globalisation (Lal, 2007).

Consequent upon this new era, the African continent and Nigeria in particular are faced with new challenges in the process of socio-economic development. One dimension of this is how Nigeria can further integrate with the global economy through enhanced trade, and still cope with the prospect of unfettered economic growth and greater openness. This challenge is enormous, especially given the current low level of penetration of processed and manufactured goods as well as services from Nigeria into the world trading system. Between 1999 and 2004 the value of exports from Nigeria increased from NGN 1,543,707 million (US$ 16,816 million) to NGN 3,257,536.5 million (US$ 24,401.02 million), although manufactured goods accounted for only1 per cent and 2.1 per cent of the exports in 1999 and 2003 respectively (Central Bank of Nigeria & TA Ngerebo, 2004; FEDERAL OFFICE OF STATISTICS OF NIGERIA & Akpobasah, 2004). Exports, especially industrial goods from Nigeria and other developing nations, are confronted with some competitive forces, such as rivalry of competitors within its industry, threats of new entrants, threats of substitutes, the bargaining power of consumers, and the bargaining power of suppliers. The awesome capabilities of the various ICTs to confront some of these forces have been proved in a number of countries, such as the United States, Brazil, Guatemala, and Tunisia (R Peters & D Vanzetti, 2004). The available data show that international trade in ICT goods and services has grown in recent years at a faster rate than total international trade, and that it remains robust (UNCTAD 2004). The impact of ICTs on performance and

competitiveness is achieved through increased information flows, which result in knowledge transfer as well as improved organisation. The application of ICTs in business ranges from computer-aided design (CAD), computer-aided engineering (CAE) and computer-aided manufacturing (CAM), to intranet, the Internet and electronic commerce (e-commerce), among others. Writing in the 2004 UNCTAD E-Commerce and Development Report, Kofi Annan noted: 'E-Commerce is one of the most visible examples of the way in which ICTs can contribute to economic growth. It helps countries into the global economy. It allows business and entrepreneurs to become more competitive. And it provided jobs, thereby creating wealth' (UNCTAD 2004).

International competitiveness in trade continues unabated despite the growing number of supranational organisations such as the European Union, North American Free Trade Zone, Southern Common Market (in Spanish, Mercado Común del Sur or MERCOSUR), Economic Community of West African States (ECOWAS), and the Southern African Development Community (SADC). Whereas African countries are widely regarded as being non-competitive, there are a few success stories. Some garment producing firms in Mauritius have gained prominence as exporters even to the EU and US markets since the early 1980s. UNCTAD (2004) notes that since the USA's Africa Growth and Opportunity Act (AGOA) came into effect in 2000, many export-oriented garments factories have been set up in Namibia, Mozambique, Swaziland, Lesotho, as well as Mauritius. The report goes on further to say that Lesotho became the largest African apparel exporter to the USA in 2003, with about 10,000 newly created jobs. Earlier (Oyelaran-Oyeyinka, 1997) has commented on the emerging Nnewi industrial cluster in Nigeria as another success story, even though the manufactures, especially automotive spare parts, are exported to other West African countries.

Improving business competitiveness requires a variety of systemic transformation, including the availability of efficient infrastructure and services, technological changes, new organisational processes, adoption of good practices, training, mobilisation of underutilised resources, creation and segmentation of markets, product and process certification, and efficiency in inputs utilisation (Lal, 2007). A study of small and medium enterprises (SMEs) in OECD (1997) on the challenges of globalisation reveals that internal dynamics of firms and environmental support are key factors that could either facilitate or inhibit export. SMEs that are active players in the global economy make special efforts to search for diversified growth by pursuing innovation-based production and an open-minded management capable of engaging the appropriate specialised resources, for example, ICTs (Adeoti, 2002). An enabling environment includes effective consulting, funding, and logistical resources to support exports. Some of the key internal factors inhibiting the globalisation of SMEs are lack of experience on the part of the management, inadequate resources, and an excessive risk perception. Regarding the environment, poor national information networks with weak or inadequate international connection, and poor regional resources and support programmes are some of the prominent examples (Julien, 1993). Much as it is acknowledged that globalisation and competitiveness of SMEs and large-scale enterprises (LSEs) are driven by similar forces, the pre-eminence of ICTs in this regard is unassailable. A critical question for developing countries is whether the adoption of ICTs can be an authentic vehicle for solving the problems of economic development and low-level participation in international trade.

3.12 Contribution of Agric-Sector to The Nigerian Economy

In both developed and undeveloped economies, the participation of Agro-allied small and medium scale enterprises (SMEs) in promoting value chain is seen as critical to the development of any economy. Agro-Allied SMEs are strategic to the realization of value chain activities such as primary and secondary activities. The need to involve the Agro allied small and medium scale enterprises in promoting the value chain cannot be over-emphasized. The value chain activities on Agro-SMEs produce, provide ample opportunity for revenue generation, employment generation and effective post-harvest management. The value chain concept and application are not properly applied in Agro-Allied SMEs in Nigeria. The concept of value chain is too broad, and some managers are confused on the right value chain activities to choose, either as primary or secondary value chain. (Lumi & Opasunju, 2016).

Agriculture has been an important sector in the Nigerian economy in the past decades and is still a major sector despite the oil boom; basically, it provides employment opportunities for the teeming population, eradicates poverty, and contributes to the growth of the economy. Economic history provides us with ample evidence that agricultural revolution is a fundamental pre-condition for economic growth, especially in developing countries (Ukeji, 2003) submits that in the 1960‟s, agriculture contributed up to 64% to the total GDP but gradually declined in the 70‟s to 48% and it continues in 1980 to 20% and 19% in 1985, this was as a result of oil glut of the 1980‟s. Historically, the root of the crises in the Nigerian economy lies in the neglect of the agricultural sector by the Federal Government towards developing dependence on a mono-cultural economy based on oil. The objective of this paper is to investigate the contribution of domestic savings, government expenditure on agriculture and foreign direct investment on agriculture and the general impacts of agricultural sector on the Nigerian economy bearing in mind that the sector is fundamental to the sustenance of life and the bed rock of economic growth.

Agriculture has been the backbone of the economy in Nigeria providing employment and source of livelihood for the increasing population it accounts for over half of the GDP of the Nigerian economy as at independence in 1960. However, the role it plays in the regional and economic development of the country has diminished over the years due to the dominant role of the crude oil sector in the economy. With the increasing food demand in Nigeria, the country has available natural resources and potential for increasing the volume of crop production towards meeting the food and nutritional requirement of the rapidly increasing population and guarantee food security in the country. Therefore, the source of national wealth is essentially agriculture. Development economists have focused on how agriculture can best contribute to overall economic growth and modernization. (Izuchukwu, 2011) looked at Lewis theory of development and reported that the underdeveloped economy consisted of two sectors. These sectors are the traditional agricultural sector characterized by zero marginal labour productivity and the modern industrial sector. (Rostow, n.d.) in his historical approach to the process of economic growth distinguishes five stages of economic growth, these are: Traditional society, Pre-conditions for take-off, Drive to maturity and Age of high mass-consumption. According to Rostow (1960), the take-off stage is the „Great watershed‟ in the life of a society when growth becomes its normal condition. Forces of modernization contend against the habits and institutions. The value and interest of the traditional society make a decisive breakthrough and a compound interest gets built into the society structure. From this historical approach it is said that agriculture plays an important role in the first three stages. (Traditional society, pre-conditions for take-off and take-off stages). The agricultural sector has the potential to be the industrial and economic springboard from which a country’s development can take off. Indeed, more often than not, agricultural activities are usually concentrated in the less- developed rural

areas where there is a critical need for rural transformation, redistribution, poverty alleviation and socio-economic development. (Stewart, 2000 welcome Address "proceeding of the 7th World sugar Farmers Conference Durban).

Agriculture has a strong hold in an economy, for without it a country will always depend on foreign countries to feed its population, the potential contribution of agriculture to economic growth has been an on-going subject of much controversy among development economist, several authors argue that growth in the overall economy depends on the development of agricultural sector (Gollin et al., n.d.). The growth in the agricultural sector could be a catalyst for national output growth via its effect on rural incomes and provision of resources for transformation into an industrialized economy (Thirtle et al., 2003). (Johnston & Mellor, 1961) postulates that agriculture contributes to the economic growth and development through five inter-sectoral linkages. The sectors are linked via, (i) supply of surplus labour to firm in the industrial sector, (ii) supply of food for domestic consumption, (iii) provision of market for industrial output, (iv) supply of domestic savings and industrial investment and (v) supply of foreign exchange from agriculture export earnings to finance import of intermediate and capital goods. In addition to these five direct market-based linkages, Timmer (1995) observed that agriculture indirectly contributes to economic growth via its provision of better caloric nutrient intake by the poor, food availability, food price stability and poverty reduction. Therefore, agricultural growth has played a historically important role in the process of economic development, evidence from industrialized countries as well as countries that are rapidly developing today indicate that the sector has been the engine that contributes to the growth of the overall economy.

Agricultural policy- making in Nigeria has been through review overtime. During each phase of review, the characteristics of policy have reflected the roles expected of the sector and the relative available resources, especially since petroleum became a major source of revenue for funding programme. It then means that agriculture no longer command the same amount as in the past. These notwithstanding, agricultural policy has been dynamic. The Federal Government established some policies and programme such as the Structural Adjustment Programme (SAP) which was launched in July 1986, to remove several administrative bottlenecks and adopting a free market-oriented economy that would encourage private enterprises and more efficient use of resources. The objectives of SAP were (i) To increase the production of exportable cash crop thereby diversifying the export base of the economy, (ii) To raise rural employment and income (iii) to increase domestic food production and raise nutritional status and standard. The following policy instruments of SAP were design to influence the sector indirectly or directly such as the (i) Fiscal policies, (ii) Monetary and (iii) Trade and foreign exchange rate policies. (Danladi & Naankiel, 2016)

Before the introduction of SAP in 1986, The Federal Government of Nigeria has implemented several agricultural policies and programme. While some of the programmes were abandoned or restructured, some are still in place. These policies are (i) Farm Settlement Scheme, (ii) National Accelerated Food Production Programme (NAFPP), (iii) Agricultural Development Projects (ADPs), (iv) River Basin Development Authorities (RBDAs) (v) Nigerian Agricultural, cooperation and Rural Development Bank (NACRDB), (vi) Operation Feed the Nation (OFN), (vii) Green Revolution Programme (viii) Directorate of Foods, Roads, and Rural Infrastructures (DFFRI) (ix) Agricultural Credit Guarantee Scheme Fund (ACGSF). Despite all these policies framework and programme, it has been noted that the sector performance has not been impressive enough, in terms of its contribution to the country's national and economic developments. In 2004 the Federal Government of Nigeria launched another economic reform by name National Empowerment and Development Strategies (NEEDS). The programme was

aimed at promoting growth as well as reduces poverty through a participatory process involving civil society and development partners. In agricultural sector, NEEDS was aimed at promoting and improving production, distribution, and processing of agricultural products. Notwithstanding Nigeria's rich endowment in black oil and other mineral resources the wellbeing of her economy still largely depends on agricultural sector. The Nigerian economy is essentially agriculture in terms of national output and employment generation. It is the largest contributor to Gross Domestic Production (GDP) (average 38% in the last 8years) with crops accounting for 80%, forestry 3% and fishery 4%. It provides employment for about 65% of the adult labour force and the food and fibre needs of a large and increasing population. The Agro-industrial enterprises, with Agric-SMEs inclusive, depend on the sector for raw materials whilst 88% of the non-oil exports earning come from the sector. The sector contributes a great deal to the development of the economy in various ways: (Danladi & Naankiel, 2016),Agriculture contributes significantly to national food self –sufficiency by accounting for over 90% of total food consumption requirements, it helps to maintain a healthy and peaceful population and a source of food and nutrition for households. Furthermore, the ultimate objective of interest of economists in productivity should be to find ways of increasing output per unit of input and attaining desirable inter-firm, intra-firm and inter sector transfers of population resources thereby providing the means of raising the standard of living.

In Nigeria, agriculture export has played an important role in economic development by providing the needed foreign exchange earnings for other capital development project. (Ekpo & Ekwaikhide, 1994) observed that Nigeria agricultural export has enlarged to include cocoa beans and palm kernel. Statistics indicate that in 1960 agricultural export commodities contributed well over 75% of total annual merchandise exports. In 1940"s and 50"s Nigeria was ranked very high in the production and exportation of major crops in the world. For instance, Nigeria was the largest exporter of palm oil and palm kernel, second to Ghana in cocoa and third position in the exportation of groundnut. (Olayide & Essang, 1976) report that Nigeria export earnings from major agricultural crops contributed significantly to the Gross Domestic Product (GDP).

In terms of employment, the sector is still leading in economic activities, while accounting for one-third of the Gross Domestic Product (GDP). It remains the leading employment sector of most of the Nigerian population as it employs two- third of the labour force (Olayide & Essang, 1976) observed that in Nigeria today, farming still remains the sources of employment of majority of the adult population, its productivity is the most important single factor influencing the standard of living of both the rural and urban centres. Agriculture indeed has remained the major sources of income to the economy. About 90% of the rural population is involved in activities related to the crop sub-sector which provides the bulk of agricultural income. Similarly, the crop sub-sector supports the processing industry by providing raw materials.

CHAPTER 4: RESEARCH METHODOLOGY

4.0 Introduction

This chapter discusses the procedure by which the research was conducted with a justification for the chosen approach. It addresses the research methods adopted for capturing the data required to achieve the research aim. The qualitative research method was used in this study to Analyse the effects of ICT Adoption and Use on knowledge creation by SMEs and identify strategies that would assist in increasing the adoption and effective utilisation of Information and Communication Technology (ICT) in Nigeria's Small and Medium Sized Enterprises, with specific focus on Agric-(SMEs). Based on the reviews from the related literatures, the interpretivist philosophical paradigm within a qualitative methodology was selected as the most appropriate for this study. (Klein & Myers, 1999) noted that interpretive research can help Information Systems (IS) researchers to understand human thoughts and actions in social and organisational contexts. Furthermore, the research is exploratory and descriptive in nature and will assist in understanding emerging issues that are related to the subject.

To address the objectives and research gaps identified, this present study is going to be an exploratory one for which the qualitative approach is deemed suitable (Alan Bryman & Robert G. Burgess, 1995). This approach is consistent with the research's aim to ascertain a complex phenomenon by considering the context of its settings (Yin, 2009). Reasons for the choice of qualitative research method for this research were based on the research problem, the researcher's epistemological stance and the level of uncertainty surrounding this phenomenon under consideration. Often, "what, how and why" questions are more appropriately examined using a qualitative research approach (Easterby-Smith & Prieto, 2008). The case study research strategy will also be used where semi-structured interviews will be conducted in some selected Agric-SMEs across different geo-political regions in Nigeria. This approach will be used, because of the need to get a better and deeper understanding of the various sources and levels of influence of ICT use and how this aids knowledge creation in their natural settings. The use of the case study, as described by (Baxter & Jack, 2008), enables the researcher to explore differences within and between cases and it provides rich contextual data (Levy and Powell, 2000). Besides, the case study has been identified by researchers (e.g. (Galliers, 1992) as a typical research strategy widely used for qualitative data collection in IS/IT research. This is because it has multiple perspectives which are rooted in a specific context and provide multiple data collection methods (Wu, 2007). Data will equally be gathered from secondary sources as well as observations by the researcher. This approach is particularly suited to 'unpacking' phenomena of interest because it encompasses a diverse set of 'interpretive techniques' that can provide a deeper and richer understanding of the issue under investigation (Maanen, 1979) equally mention this approach is appropriate when the phenomenon under investigation is context-dependent and when it seems necessary to enrich and reconfigure the elements derived from the literature review to define a model.

(Denscombe, 2007) argues that the use of the case study can either be discovery led or theory led. This present study intends to be based on the latter following the views, applications, contents, and fit of the SECI model to the focus of this present study. So, on the one hand, the case study is discovery led when it describes what is happening in a case study setting (e.g., events, process and relationships), explores the key issues affecting those in a case study setting

(e.g., problems and opportunities) or compares setting to learn from the similarities and differences between them. On the other hand, it is theory led when it explains the causes of events, processes, or relationships within a setting, uses a case study as an illustration of how a particular theory applies in a real life setting and finally, when it uses a case study as a testbed for experimenting with changes to specific factors (or variables).

4.1 Styles of Research

(Sanders & Manrodt, 2003) describe research as "something that people undertake in order to find out things in a systematic way thereby increasing their knowledge". They further identified the characteristics of a good research which include ensuring data are collected systematically, data are interpreted systematically and there is a clear purpose to find things out. There are different styles of research such as constructive, theoretical, empirical, nomothetic, idiographic, critical, information systems research and so on. Information systems research for example, is concerned with the development and use of information systems by individuals, organisations and society and is usually based on ICT (Swedberg, 2003). It best describes the research style for this study as this research is concerned with the Analysing the Effects of ICT adoption and effective utilisation of ICT in organisations, SMEs in particular. Cornford and Smithson (1996) note that the overall research endeavour in information systems, just like any other discipline, involves many different styles and types of work.

4.2 Justification for the Chosen Research Method

It is vital to describe a research method as specifically as possible (Crotty, 1998). The choice of a qualitative research mode for this study is consistent with the research's aim to ascertain a complex phenomenon by considering the context of its settings (Yin, 2009). Reasons for the choice of qualitative research method for this research were based on the research problem as identified in Chapter one, the researcher's epistemological stance and the level of uncertainty surrounding the phenomenon under consideration. Often, "what, how and why" questions are more appropriately examined using a qualitative research approach as highlighted above. On the one hand, a qualitative research approach is able to accept complexity and subjectivity and enables the researcher to use his/her observations and interpretations of the phenomenon to gain insights and discover meaning about a particular experience, situation, cultural element or historical event (Myers, 2009). On the other hand, the quantitative research mode is not suitable for exploring or explaining such complexities, rather it is more appropriate for confirming what is already known about a phenomenon (Morse and Mitcham, 2002; Rolfe, 2006). Moreover, quantitative research only allows the researcher to familiarise him/herself with the problem or concept to be studied, and perhaps generate hypotheses to be tested (Golafshani, 2003). Another reason for the choice of a qualitative research approach is based on the researcher's epistemology. According to Darlaston-Jones (2007), the ability to identify the relationship between the epistemological foundation of a research and the methods employed in conducting the study is critical for research to be truly meaningful. Therefore, the researcher adopted an interpretivist epistemological stance that aimed to identify factors that motivate/inhibit the adoption and effective utilisation of ICT in Nigerian SMEs and the influence of ICT on the SMEs' organisational performance, which is also consistent with a qualitative research mode. Furthermore, an interpretivist paradigm is suitable for this research as it recognises the characteristics of SMEs and their functions in the Nigerian economy (Saunders et al., 2009).

Although the interpretivist approach raises questions on the generalisability of findings, Saunders et al. (2009) point out that generalisability is not of crucial importance as the aim of the research is to capture the rich complexities of the situation. Also, this research adopts an inductive rather than a deductive approach since it aims to understand deep meanings of the phenomena (Miles et al., n.d.-a), and theory building takes place after data collection and these are subsequently related to the literature (Saunders et al., 2009).

4.3 Research Design for the Study

The function of a research design is to ensure that the evidence obtained enables the researcher to answer the initial question as unambiguously as possible (D De Vaus, 2001). This implies that the quality of a research project will be enhanced by a good understanding of the research design. The research design helps to reduce the ambiguity of much research evidence. A research design describes a flexible set of guidelines that connects theoretical paradigms to strategies of inquiry and methods for collecting empirical data. Case study research strategy or design is ideal when a holistic in-depth investigation is needed (Tellis, 1997), and is intended to reveal facts from participants by using multiple sources of data such as face-to-face interviews, observation and written documents (Yin, 2009). The qualitative case study methodology provides tools for researchers to study complex phenomena within their contexts (Baxter and Jack, 2008). It allows the researcher to explore individuals or organisations through complex interventions, relationships, communities, or programs (Yin, 2002) and supports the deconstruction and subsequent reconstruction of various phenomena. Case studies can be used in all types of research and primary data can be collected from cross-border and cross-cultural settings. According to Ghauri and Grønhaug (2005), "case study research is particularly useful when the phenomenon under investigation is difficult to study outside its natural setting and also when the concepts and variables under study are difficult to quantify'.

4.4 Rationale for Adopting the Case Study

(Yin, 2009) defines a case study as "an empirical inquiry that investigates a contemporary phenomenon in depth, and within its real-life context especially when the boundaries between phenomenon and context are not clearly evident". For this reason, phenomenon and context are not always distinguishable in real-life situations. Other technical characteristics including data collection and data analysis strategies are described as the second part of the technical definition of case studies (Yin, 2009). However, Myers (2009) argues that Yin's definition does not fit all case studies, especially within business disciples. In one respect, Myers (2009) argues that the definition is too broad, in another it is too narrow. Myers states that Yin's definition is too narrow in the sense that he advocates just one type of case study research which is perhaps best described as a positivist approach.

Thus, Myers (2009) defines case study regarding business, as "research that uses empirical evidence from one or more organisations where an attempt is made to study the subject matter in context. Multiple sources of evidence are used, although most of the evidence comes from interviews and documents." Myers (2009) further states that the purpose of a case study is to use empirical evidence from real people in real organisations, to make an original contribution to knowledge.

Likewise, (Anne F. Marrelli, 2007) describes the case study as a data collection method in which in depth descriptive information about specific entities or cases is collected, organised, interpreted, and presented in a narrative format. Clardy (1997) defines a case study to be a

richly detailed story about a specific situation or event in the workplace, describing who, what, where, when, and how. Again, Herling et al. (2000) describe the case study as a process of scholarly inquiry and exploration whose purpose is to create new knowledge. It can also be thought of as a research strategy. As a strategy, Dooley (2002) claims that case study research attempts to examine a contemporary phenomenon and its associated contexts which are not clearly evident. According to Cornford and Smithson (1996), the great strength of the case study is in the richness of data that can be obtained by multiple means when researchers do not restrict themselves to a single situation. Case study research has the ability to embrace multiple cases, to embrace quantitative and qualitative data and to embrace multiple research paradigms (Dooley, 2002). Hakim (1987) and Gillham (2000) also consider case study methodology as the most flexible form of research design, allowing different techniques of data collection to offer the possibility of a more elaborate study with a more global perspective. Similarly, Dubé and Paré (2003) advocate that case research typically combines several qualitative data collection methods such as interviews, documentation, and observations, but can also include quantitative data such as questionnaires and time series. A variety of data collection methods is employed in case study research. Collecting different types of data from different sources produces a wider scope of coverage and may result in a fuller picture of the phenomena under study (Bonoma, 1985).

Furthermore, (Benbasat & Barki, 2007) highlight several reasons why the case study strategy is a preferred choice for many IS researchers. First, the researcher can quickly study IS in a natural setting and generate theories from practice. Second, the case method allows the researcher to answer "how" and "why" questions, i.e., to understand the nature and complexity of the processes taking place. Third, a case approach is an appropriate way to research an area in which few previous studies have been carried out. This research adopts a qualitative research technique using a case study design to explore the phenomenon of ICT adoption and utilisation within Nigerian SMEs by identifying some motivating and inhibiting factors behind ICT adoption, as well as the effective utilisation of most especially, sophisticated ICT applications/systems in their natural settings. The natural setting in this case is the places (Lagos, Abuja, and Aba) where the researcher discovers or uncovers what is to be known about the phenomenon of interest. The use of the case study, as described by Baxter and Jack (2008), enables the researcher to explore differences within and between cases and it provides rich contextual data (Levy and Powell, 2000). Besides, the case study has been identified by researchers (e.g., Benbasat et al., 1987; Galliers 1992; Alavi et al., 1992; Myers, 1997) as a typical research strategy widely used for qualitative data collection in IS/IT research. This is because it has multiple perspectives which are rooted in a specific context and provide multiple data collection methods (Anne F. Marrelli, 2007).

According to (Denscombe, 2007) 'The decision to use case study approach is a strategic decision that relates to the scale and scope of an investigation, and it does not at least in principle, dictate which method or methods must be used. Indeed, a strength of the case approach is that it allows for the use of a variety of methods depending on the circumstances and specific needs of the situation". Denscombe (2007) argues that the use of the case study can either be discovery led or theory led. On the one hand, it is discovery led when it describes what is happening in a case study setting (e.g., events, process, and relationships), explores the key issues affecting those in a case study setting (e.g., problems and opportunities) or compares setting to learn from the similarities and differences between them. On the other hand, it is theory led when it explains the causes of events, processes, or relationships within a setting, uses a case study as an illustration of how a particular theory applies in a real life setting and finally, when it uses a case study as a testbed for experimenting with changes to specific factors (or variables).

(Dooley, 2002) acknowledges that the case study is one method which excels at bringing people to an understanding of a complex issue which can add strength to what is already known through previous research. Case study research generally does not lend itself well to generalisation or prediction, thus the researcher who embarks on case study research is usually interested in a specific phenomenon and wishes to understand it completely, not by controlling variables but rather by observing all of the variables and their interacting relationships. Thus, Dooley (2002) concludes that case study research can contribute to all phases of theory development in a holistic way. The exploratory case study approach was selected for this research. Exploratory case study is used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes (Yin, 2002 and 2003). An exploratory study can be used where there is little in the literature about a topic, so a real-life instance is investigated to identify the topics to be covered in subsequent research project (Oates, 2006). The exploratory case study is appropriate for answering research questions that seek to establish how an outcome can be derived. Furthermore, (Amaratunga et al., 2002), state that exploratory case studies could be utilised in order to study areas where knowledge is deficient.

The research employed the exploratory case study as it can be used where there is little in the literature about a topic in a specific context, thereby allowing a researcher to gain more information about the topic which people may know little about (Oates, 2006) and can also provide a platform upon which a further research project can be built. Exploratory research is conducted when a problem has not been clearly defined or solved, or its real scope is not yet clear (Lake, 2009). It also helps to determine the best research design, data collection and selection method (Lake, 2009).

CHAPTER 5 DATA COLLECTION & ANALYSIS

5.0 Introduction

To answer and address the research questions and objectives, it is essential to obtain enough and relevant data through appropriate research methods. (Bell, 2005) suggests a need for the research approach to be effective in order to resolve the problem.

In this research, data collection was carried out through a wide variety of techniques, including documentations, observations, semi-structured interviews via emails, telephone interviews and skype, to identify and allow detailed understanding of the research topic. Since this is case study research of some Agric-SMEs in Nigeria, (Dooley, 2002) advocates that the power of case study research includes the ability to use all methodologies within the data-collection process and its ability to compare within a case and across cases, for the purpose of research validity.

5.1 Interviews

The interviews conducted for this study was tape recorded and transcribed, the data obtained was analysed using the principles of thematic analysis often referred to as template analysis, (Miles et al., n.d.-a). Thematic analysis provides a framework that captures the richness of data and also helps organise the data collected into a structure. It is a method used in identifying, analysing and reporting patterns (themes) within data. It is a way of seeing, a way of making sense out of seemingly unrelated material, a way of analysing qualitative information, a way of systematically observing a person, an interaction, a group, a situation, an organisation or a culture and a way of converting qualitative information to quantitative data (V. Braun & Clarke, 2006a).

(Colen & Petelin, 2004) argue that interviews are an extremely important form of communication in society. They are means by which information is exchanged between individuals and successful communication is achieved. Dwyer (1993) distinguishes interviews from casual conversations on the basis that interviews are planned, prearranged, structured, controlled by the interviewer, have a predetermined purpose and take place between two or more people of different status. (Marshall & Rossman, 2014) suggest that when research has a descriptive and exploratory focus, as it has in this research, the appropriate research strategies should be field studies comprising in-depth interviews.

For this research, all the respondents were sent the information sheets/letters in advance to introduce the study and what is under investigation. This was done three major cities of Lagos, Warri and Port Harcourt for a preview of the interview questions and interview format. The respondents were all asked and given one month to answer or decline and respond to the questions in the interview sheets, which were later returned to me via emails and was followed up by telephone calls and skype interviews with the researcher and this were recorded for more detailed information and feedbacks. This decision and strategies were necessitated by the inability of the researcher to travel out of the UK for the fieldwork as a result of the worldwide covid-19 pandemic restrictions and locked down which resulted in travel bans and movements all over the world.

A total of 30 Agric-SMEs owners/managers and employees were contacted, and interview questions sent to them in Nigeria, 20 of them cooperated, participated and responded to the questions from which 15 were finally selected and used as case study for the research, and an interview protocol was used as a guide. An advantage of the interview guide is that it helps both the researcher and respondents to articulate and compare ideas, notes and information relating to the research topic.

The interview questions and guide began with the researcher introducing himself and also giving a brief description of the objectives of the study. Questions relating to the background detail of the each of the participating firms as well as the participants were among the first set of questions asked. Also, some questions were focused on the types of software applications if any, that were in use in the different Agric-SMEs.

A section of the interview protocol also concentrated on questions regarding ICT adoption and utilisation such as benefits of the use of ICT, factors affecting the adoption and effective utilisation of ICT amongst others, the linkage between ICT and knowledge creation leading to improve performance and productivity, etc, so as to obtain respondents' views on the extent to which a number of factors inhibit the adoption and effective utilisation of ICT applications, and also determine the extent to which these Agric-SMEs utilise sophisticated ICT solutions. Again, a section of the protocol determined whether or not the Agro-SMEs were willing to adopt more sophisticated ICT applications in future. Likewise, questions regarding business competition were asked as this assisted in determining the extent to which the respondents understood their business environments, opportunities, and the nature of competition. These attributes have been used previously by researchers to measure the impact of the environment and technologies on IS utilisation (Miller, 1988b).

Furthermore, the interview questions were open-ended, hence respondents were given the opportunity to offer their views in their own terms. According to Wu (2007), semi-structured interviews with open-ended questions assist in collecting field data regarding organisational issues in ICT. Participants were always encouraged to elaborate on their answers and responds to questions rather than just answering YES or NO. Yin (2009) states that in a case study, it is important to have open questions to enable interviewees to explain their views on issues and situations. The use of semi-structured interviews not only assisted in presenting the participants perceptions of the issues under investigation but also, provided an opportunity for the interviewer to ask for further clarifications and elaborate answers. (Bell, 2005) affirms that the use of semi-structured interviews enables the collection of rich data as they are regarded as a useful method of encouraging the discussion of issues that may have otherwise not have been identified in the questions.

All the interview questions were asked in English language since Nigeria is an English-speaking country. All the participants were given enough time to respond to the questions and the researcher did not attempt to put them under unnecessary pressure because of the covid-19 pandemic challenges. The participants were allowed to ask questions that requires clarifications and may add any comments they might wish to include. Yin (2009) recommends that interviews should be guided conversations, statements, or questions rather than structured queries. In other words, even though the researcher is pursuing a consistent line of enquiry, the actual stream of questions in a case study interview should be fluid rather than rigid (Yin, 2009).

The participants that responded and participated in the interviews, included business owners, managers or managing directors of the selected Agric-SMEs, IT managers and officers, administrative managers/officers, and some other employees wherever possible, since multiple interview responses in each company can help to achieve a broader perspective and further assist in data triangulation (Brun et al., 2006). This also helps to provide a holistic view of the research topic.(Keshava Prasad et al., 2009) suggests that it is important to include employees and managers from different hierarchies in the organisation and at a site where the groups must have had fundamental ICT investments. Prasad (2009) comments that a researcher should study organisations that are known to be at the forefront of ICT usage, as the themes that emerge from these organisations are most likely to be used to characterise a wide range of organisations.

Some of the phone interviews were tape-recorded and transcribed afterwards. The interviews were transcribed immediately after each interview and written up while the interview was still fresh in the mind of the researcher. This enabled the researcher to clarify the information acquired and to decide what information was required in the writing up. Thus, transcription was carried out on the same day as the interview after which summaries of the transcripts were produced and sent to each participant via email, asking them to check for accuracy and correct interpretation. This serves as a means of controlling bias and producing reliable data, as recommended by Saunders et al (2009). Recording some of the interviews did not present any challenges from the participants as they were asked to indicate their willingness to participate in the exercise by signing and returning a declaration form. According to Miles and Huberman (1994), tape-recording of interviews is often suggested as a means of providing a complete description of interviews, responses, and comments.

5.2 Other Methods of Data Collection

Two other forms of data collection methods were used for this research, other than the interviews. They include the use of documents and observation, to support and confirm the interview data. According to (Denscombe, 2007), a strength of the case study approach is that it not only allows the researcher to use a variety of sources, a variety of types of data and a variety of research methods as part of the investigation, but also observation of events within the case study setting can be combined with the people involved.

5.2.1 Documents:

The researcher requested for and made use of documents of some of the SMEs that were interviewed. Documentation was used to form the basis of understanding the background of the case study SMEs, the roles of their personnel's and the workflows within the firms. Furthermore, information on some of the documents was used to confirm and as an add-on to the evidence gathered from other sources. The review of some of the firm's/company's documents enabled the researcher to probe further in order to confirm some details, thereby avoiding contradictions. Inferences were also gathered from other documents which later stage served as suggestions for further investigation.

Some of the documents read, reviewed, and analysed included, memoranda, agendas, progress and annual reports, administrative documents etc. This assisted in providing further evidence to other data collected via interviews. Although Yin (1994) states that researchers must not regard documents and records as pure account of facts that have happened. However, Myer (2001) states that the use of documents is important because they can be used as inputs to the interview guide and used to identify statements made by key people in an organisation. The use of documents can also be helpful in counteracting biases of interviews. Analysis of the documents assisted in understanding the reactions and feelings captured in the interviews, ensuring results were placed in the right context (Grainger & Tolhurst, 2005). Moreover, Bryman (1998) notes that the analysis of documents and records help to examine the validity of information obtained by other methods and can also provide further information on issues that the researcher is interested in gathering. The documents were analysed bearing in mind the aim of the research. The researcher also focused on key information's that were relevant to the present research and then incorporated that information in the report since the major reason for reviewing the documents was to back up facts already obtained from the interviews.

5.2.2 Observation:

Observation is a methodology consisting of watching what people do, listening to what they say and sometimes asking them to clarify certain issues. (L. M. Baker, 2006) identify the benefits of engaging in observation which include looking at what people do, rather than what they say they are doing, or why and how they should be doing it. Some data were captured by carefully observing the behaviour and reactions of the participants during the interviews and keeping field notes bearing in mind the aim of the research.

This method of data collection gave the researcher some added advantage in terms of observing the way the participants, owners/managers relate and deal with issues. (Adler & Adler, 1994) argue that the major strength of observation is the fact that it is unobtrusive and does not require direct interaction with participants. Observation produces rigour when it is combined with other methods (Myers, 2001) and can illuminate the discrepancies between what people say in the interviews, casual conversations and what they do (Pettigrew, 1990). It also helps to observe things that may routinely escape conscious awareness among participants (Kunda, 1992). According to Waddington (1994), the value of observational data is of substantial importance since it can assist the researcher to learn some aspects of organisational cultures in the various firms. Although interviews provide data about the perceptions of the participants, they do not provide data about what takes place in the SMEs (Patton, 2001). Chapelle (2003) highlights that "one approach to understanding technology use is to carefully observe learners at work". In the discussion chapter, the researcher used a narrative description as suggested by Nunan and Richards (1990) to explain what was observed within the SMEs alongside findings from the interviews. Yin (2009) stresses that the case study approach combines data collection methods such as archives, interviews, questionnaires, and observations, and further recommends the use of case study protocol as part of a carefully designed research project.

5.2.3 Case Study Protocol

A case study protocol was developed and used as a guide for the research as recommended by (Ravenswood, 2011), and Yin (2003) which served as a detailed master plan. Lubbe (2003) describes the case study protocol as a document in which full details of the case study research design including details of the questions to be asked, field procedures for the researcher, details of all types of evidence required, as well as the structure of the final research, must be specified. A case study protocol is essential in a multiple-case study and desirable in a single-case study and has to be created prior to the data collection phase. Yin (2009) describes the protocol as a major component in asserting the reliability of the case study research. The case study protocol for this research included the background research which identified previous research on the topic and defined the key research questions; the research design that acknowledged the use of multiple cases; data collection based on a plan; background research on analysis which identified the strategy for data analysis; and interpretation of the findings and the role of the researcher which described the approach that was adopted for the study. The protocol also ensured triangulation and validation of data by utilising various methods of data collection and requesting participants to comment on interview transcripts. Also, there was enfolding of the literature by comparing the research findings with existing literature (Ravenswood, 2011). Furthermore, the research employed the concept of theoretical saturation where the researcher stopped searching for more data in each case, especially when the extra information obtained only provided a minimal improvement to the existing data already gathered (Ravenswood, 2011).

5.3 Data Analysis for The Study

Data analysis is the process of bringing order, structure and meaning to the mass of collected data (Tikunov et al., 2005). In this research, the data obtained were analysed using **the principles of thematic analysis,** often referred to as **template analysis** by (D. R. King et al., 2004), Waring and Wainwright (2008), and (Miles et al., n.d.-a). Thematic analysis provides a framework that captures the richness of data and helps organise the data collected into a structure (Crabtree and Miller, 1999). Thematic analysis is a process that can be used in qualitative research to translate qualitative information into quantitative data if this is desired by the researcher (Braun and Clarke, 2006). It is a method used in identifying, analysing and reporting patterns (themes) within data (Braun and Clarke, 2006). According to Boyatzis (1998), thematic analysis can be used as a way of seeing, a way of making sense out of seemingly unrelated material, a way of analysing qualitative information, a way of systematically observing a person, an interaction, a group, a situation, an organisation or a culture and a way of converting qualitative information to quantitative data. Thematic analysis shares many principles and procedures of content analysis (Harper & Thompson, 2011). Boyatzis (1998) describes thematic analysis as the process of encoding information that requires explicit codes which may be a list of themes. A theme is a pattern found in the information that at minimum describes and organises the possible observations and at maximum interprets aspects of the phenomenon (Boyatzis, 1998). According to (V. Braun & Clarke, 2006a), a theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set. Thematic analysis involves

searching across a data set (e.g., several interviews or focus groups, or a range of texts) to find repeated patterns of meaning (Braun and Clarke, 2006).

(Boyatzis, 1998) characterises thematic analysis not as a specific method but as a tool to use across different methods. Miles and Huberman (1994) note that to make results from qualitative research accessible to others, a researcher must employ different ways of organising and presenting data. Thematic analysis can be a beneficial bridge between researchers of varying orientation and fields (Denzin et al., 1994). It allows a researcher using qualitative method, to communicate more easily his or her observations, findings, and interpretation of meaning to others who are using different methods. (Wolcott, 1994) states that descriptive use of thematic analysis is desirable if the methodology chosen for the study requires it. Furthermore, Wolcott (1994) notes that descriptive or interpretive methodologies do not preclude scoring or scaling of themes and then using numeric representation to check consistency of judgements, neither do they preclude using the information to portray the themes and describe the unit of analysis. Often both aspects of thematic analysis enhance the clarity of results or findings and ease of communication (Wolcott, 1994).

Although, content analysis is another method that can be used to identify patterns across qualitative data and is sometimes treated as similar to thematic approaches (V. Braun & Clarke, 2006b), it tends to focus at a more micro level, often provides (frequency) counts, and allows for quantitative analyses of initially qualitative data,(Ryan & Russell Bernard, n.d.) 2000). Thematic analysis differs from content analysis in that themes tend not to be quantified (although sometimes they may be) and Boyatzis (1998) suggests thematic analysis can be used to transform qualitative data into a quantitative form, and subject them to statistical analyses. Nevertheless, (Ryan & Russell Bernard, n.d.) (2006) state that the unit of analysis tends to be more than a word or phrase, which it typically is in content analysis.

5.3.1 Advantages

(V. Braun & Clarke, 2006b) also identified some advantages of thematic analysis which include: flexibility, a relatively easy and quick method to learn, it's accessible to researchers with little or no experience of qualitative research, results are generally accessible to educate the general public, it's a useful method for working within participatory research paradigm, it can be used to summarise key features of a large body of data and offers a "thick description" of the data set, can highlight similarities and differences across the data set, can generate unanticipated insights, allows for social interpretations of data and can be useful for producing qualitative analyses suited to informing policy development. Thematic analysis also helps researchers to produce codes (templates) which represent themes identified in their textual data (King, 2004 in Cassell and Symon, 2004).

5.3.2 Application

For this research, data were grouped into themes to analyse the data obtained from the interviews more effectively. According to (Ryan & Russell Bernard, n.d.), identifying themes is an important step before analysis. Bulmer (1979) claims that the themes for analysis can be found in literature reviews and researchers' values. According to Holliday (2002), the themes can come from what the researcher sees during data collection and the researcher's mind through the process of the research. In this research themes were identified by looking across the entire data set and identifying a repeated pattern of responses, as suggested by (V. Braun & Clarke, 2006b).

***Some of the themes include**:*

1. **Current state of ICT Adoption and use within Agric SMEs** - The aim was to establish the status of ICT usage within the Agric-SMEs and to establish whether basic or sophisticated technologies were in use.

2. **Decision making process** - The aim was to gain an understanding of decision-making processes within the Agric SMEs. Who makes the decisions and who also maintains or manage the ICT infrastructures?

3. **ICT drivers/motivators/ barriers** - The aim was to establish the major reasons for the drivers and inhibitors that prevent Agric SMEs from further adopting or implementing ICT applications or systems in their various organisations.

4. **Knowledge creation and its impact on ICT Adoption and Use** – The aim was to gain an understanding of the meaning and benefits of knowledge creation on ICT Adoption and use by Agric-SMEs.

5. **Knowledge creation, organisation learning and effective performance**- The aim was to ascertain and determine how knowledge creation enhance efficiency and performance in Agric SMEs.

6. **Learning Orientation-** The new organisation that emerges will need to possess greater knowledge, flexibility, speed, power, and learning ability so as to better confront the shifting needs of a challenging environment.

7. **Knowledge Sharing & Organisational Memory-** Knowledge has become one of the most important intangible assets for a company in a current competitive environment. Learning also, is at the heart of corporate governance and it has become the essence of productive activity when it is shared.

8. **Competitive Advantage-** In the current competitive context, organisations have realised that knowledge, its effective use and the fast acquisition and utilisation of new knowledge represent the only source of sustainable competitive advantage. Especially, as they are increasingly aware that managing knowledge resources maximises business opportunities and minimise the risk of missing opportunities.

9. **Value Creation-** Through knowledge resources is achieved by implementing specific principles and processes including the contextual alignment of their applications with the organisational strategy. The creation of value through knowledge is conditioned by the manner in which knowledge resources are deployed and managed through appropriate processes.

For the analyses of the interviews data, three main steps of data analysis, as suggested by (Miles et al., n.d.-b)were employed. These are: data reduction, data display and conclusion drawing, verification.

5.3.3 Data Reduction

This step in the data analysis procedure is comprised of data abstraction and transcription of the raw data from the interview feedbacks, responses, and tapes. Data reduction involves the process of selecting, focusing, simplifying, and coding in order to sharpen, sort, focus, discard and organise the primary data in such a way that the concluding outcome will be easily arrived at and also verified (Miles et al., n.d.-b). It can be called data condensation. As part of the data reduction, the contents of the transcripts were read, key issues were identified and subsequently coded, after which themes were extracted from the data. The extracted themes were further interpreted in order to provide a better understanding of the main issues which served as a basis for addressing and answering the research questions. (V. Braun & Clarke, 2006b). The data reduction process also included field notes which contained the researcher's interpretation of events.

5.3.4 Data Display

This is the second step in the data analysis process whereby the already coded data were packaged and displayed to enable the researcher to begin to draw conclusions. The display of the data assisted in understanding what was happening and deciding whether to further analyse the data. Data display is an organised, compressed assembly of information that permits conclusion drawing and action (Miles et al., n.d.-b). Displays are major avenues to a valid qualitative analysis. They include many types of matrices, graphs, charts, and networks, all of which are designed to assemble organised information into an immediately accessible, compact form so that the analyst can see what is happening and either draw justified conclusions or move on to the next step of analysis. For this research, the codes were displayed in tables. Conclusions were drawn from the themes and categories that were generated.

5.3.5 Conclusion Drawing and Verification

This is the third stream of data analysis. Conclusion drawing and verification is the final analytical activity for the qualitative researcher (Miles and Huberman, 1994). This stage was done by examining the patterns and regularities discovered and further explaining these in the light of the flows and propositions already established. This stage of data analysis was undertaken, bearing in mind that the themes identified and discussed during the analysis performed the duty of answering the research questions thereby realising the objectives set out for this research.

For this research, the use of data analysis software was considered at the initial stage however the idea was later discarded based on the fact that computer programs cannot analyse the temporal sequence in the data and cannot understand the implied meanings which depend on events in the background (Denscombe, 2007). According to Ghani (2009), one way of handling rich qualitative data is by coding or sorting data according to concepts and themes. However, coding can be done manually or by utilising specialised qualitative software such as NVivo. Although the researcher could be challenged that template analysis is little different from the use of software packages such as NVivo for the analysis of data and in fact the software might allow a more comprehensive approach; however, Waring and Wainwright (2008) argue that immersion in the data is an essential part of the interpretive process and that the use of technology can often act as a substantial barrier.

According to (Denscombe, 2007), the computer programs in this respect are only extending and exaggerating a potential hazard facing any procedure which seeks to analyse the data through a systematic 'chunking' and coding. This because software packages do this more quickly and more extensively and hence, are potentially more dangerous (Denscombe, 2007). (Biber et al., 2006) note that the challenge for qualitative researchers is how to merge abundant data.

NVivo helps researchers manage, store and analyse large quantities of data (Bazeley, 2002), as data can be coded into nodes, and it is a useful tool to link the data to 112 emerging concepts and themes and to develop the overall conclusion of the study. However, according to Morse et al. (2002), it does not replace the researcher's role in analysing and interpreting qualitative data. Besides, a word processor has common functions such as "find", "copy" and "paste" that are practical for searching for certain words, phrases, and occurrences in the transcript. This is not only to assist coding but also allows for frequency count analysis. The researcher retains control of the analytical process through manual or hand coding and this assists conceptualisation of the themes. (Morse & Richards, 2002) affirm that "It is the researcher who makes all the analytic decisions not the data, not the method not the computer. It is the researcher who makes necessary data to produce a rich study and ensures meticulous documentation. It is the researcher who incisively interrogates the data and accurately recognises clues and interprets the findings."

5.4 An Evaluation of the Credibility of the Research

It is important to evaluate the quality of data interpretation by examining the reliability and validity of the research findings. Whatever research methodology is adopted for a research, reliability and validity issues must be considered as they are tests of the trustworthiness of the measurement instruments used in research (Golafshani, 2003). Validity and reliability are also regarded as concepts central to the credibility of a research (Miles and Huberman, 1994), while, according to Saunders et al. (2009), they reduce the possibility of obtaining a wrong answer. A research study is reliable if consistent results are obtained by different researchers undertaking the study under the same conditions.

5.4.1 Validity

Validity is concerned with whether the measure used is actually measuring the concepts it is supposed to be measuring (Hardy and Bryman, 2004). Validation involves taking the research findings back to the participants and determining whether or not those findings conform to the experiences of the participants (Silverman, 2001). The researcher ensured that after every interview, data were transcribed and given back to each participant to review in order to ensure validity. Stake (1995) emphasises that a good, qualitative study must always have the data collected, validated and it is one of the ethical obligations of the researcher to minimise any misrepresentation and misunderstanding. According to Voss et al. (2002), the issue of validity is whether findings can be generalised beyond the immediate case study. Wainer and Braun (1988) describe validity in quantitative research as "construct validity". The construct is the initial concept, notion, question, or hypothesis that determines which data are to be gathered and how they are to be gathered. Wainer and Braun (1988) also assert that quantitative researchers actively cause or affect the interplay between construct and data in order to validate their investigation, usually by the application of a test or other process. In this sense, the involvement of the researchers in the research process would greatly reduce the validity of a test. However, Maxwell (2005) identifies two issues in qualitative studies that can impact on validity. The first is 'researcher biases and the other is 'reactivity'. Researcher bias occurs when a researcher selects data that fits the researcher's existing theory, while reactivity is concerned with the influence of the researcher on the setting or people studied and it is a problem often raised about qualitative studies. However, Lubbe (2003) stresses that it is naive to assert that any form of research, or perhaps human activity generally, is without bias. Even in the physical and life sciences, bias is reflected in the subject researched, the experiments chosen, as well as the way the experiment is conducted. Thus, bias cannot be eliminated but should be recognised and its implications acknowledged and accepted (i.e., lived with). According to Lubbe (2003), bias is everywhere but can be minimised. It is the primary function of the researcher to minimise the level of bias in which he or she is working. Approaches used to counteract biases in this research include:

- Considering SMEs from different sectors rather than concentrating on one particular sector.

- Probing for further explanation when faced with inconsistencies in the interview.

- Using multiple case studies to develop stronger evidence rather than a single case

- Using literature to back up the research findings.

The use of multiple sources of evidence also substantially assisted in improving the reliability of the research.

5.4.2 Reliability

Although the term 'reliability' is a concept used for testing or evaluating quantitative research, the idea is most often used in all kinds of research. Reliability refers to consistency where the characteristics include that of the instrument and the conditions under which it is administered (Cooper and Schindler, 2001). Reliability focuses on whether the process of the study is consistent and reasonably stable over time and across researchers and methods (Miles and Huberman, 1994). Thus, reliability is the extent to which an interview produces similar results within a constant environment on all occasions (Bell, 1993). It is essential that the information give trustworthy and stable results in order to be reliable. Yin (2009) further states that reliability means to allow the study to be repeated in the same way and yielding the same results. Nevertheless, (Merriam, 1998) advocates that reliability is problematic in social sciences simply because human behaviour is never static. The problem of reliability in qualitative research is that differences between replicated studies using different researchers are to be expected. Similarly, Myer (2001) states that it may not be surprising that many researchers generate different findings and reach different conclusions. Nevertheless, controlling for reliability may still be relevant.

To ensure reliability in qualitative research, examination of trustworthiness is crucial (Seale, 1999). In contrast, (Stenbacka, n.d.) argues that since the reliability issue concerns measurements then it has no relevance in qualitative research. Stenbacka (2001) adds that the issue of reliability is an irrelevant matter in the judgement of quality in qualitative research. However, Lincoln and Guba (1985) state that: "Since there can be no validity without reliability, a demonstration of the former (validity) is sufficient to establish the latter (reliability)". Patton (2001) agrees that reliability is a consequence of the validity in a study.

Reliability was strengthened in this research in several ways. First, the interview guide was pre-tested (pilot study) (Silverman, 2001). Pre-testing involved carrying out a pilot study with two Agric-SMEs in Lagos prior to the main data collection period. Furthermore, in order to minimise inferences, all interviews were recorded and transcribed. According to (Golafshani, 2003), the 'quality' of the recordings and the interview transcripts are important when the aim is to establish the reliability of research findings stemming from social interaction. Also, the use of a case study protocol was another strategy. Lubbe (2003) indicates that using a protocol is a primary tactic in increasing the reliability of the case study.

5.4.3 Generalisation

Generalisation can also be used to establish the quality of empirical social research. This is the degree to which findings are generalisable to different people, settings, or times. Positivist research seeks high generalisability. It is concerned with searching for general laws or patterns rather than findings that are unique to one particular case (McDonald & Oates, 2006) and can also be referred to as "external validity". Generalisation can only be performed if the case study design has been appropriately informed by theory and can therefore be seen to add to the established theory. The method of generalisation for case studies is not statistical generalisation but analytical generalisation. In other words, a complete presentation of the results or a previously developed theory is used as a template to compare the empirical results of the case study (Yin, 2009). Yin (2009) further states that if two or more cases are shown to support the same theory, replication can be claimed whereas, in analytical generalisation, each case is viewed as an experiment, and not a case within an experiment.

Yin (2003) states that the greater the number of case studies that show replication, the greater the rigour with which a theory has been established. Yin (2003) further notes that case studies are generalisable to theoretical propositions, not to populations as in survey research. A case study has lower generalisation ability, whereas a survey study can provide higher generalisation. The results of this research are valid for SMEs in Nigeria, in terms of generalisation. This is because Nigerian SMEs are homogeneous, i.e., they share common characteristics; therefore, what is applicable to SMEs in Lagos could be applied elsewhere. However, Yin (2003) argues that generalisations involving other SMEs in other countries can be made but suggests that they should be made with caution.

In addition, internal validity is also used in case study research. It is a matter of establishing causal relationships. This implies that research should be able to explain how certain conditions lead to other conditions, such as how does A influence B (Yin, 2003). In this research, pattern matching, and explanation building was used to ensure internal validity. Pattern matching is possible when multiple cases are included in the analysis.

(Tellis, 1997) describes "pattern-matching" as a useful technique for linking data to the propositions. Tellis (1997) also asserts that pattern-matching is a situation where several pieces of information from the same case may be related to some theoretical proposition. It allows the comparison of different perspectives of respondents regarding the same research phenomenon. In this research, after the pattern matching phase, findings from the different cases were combined to form an overall explanation regarding the research topic. Also, the role of the researcher was examined with respect to evaluating the credibility of the research.

5.4.4 Role of Researcher

The role of the researcher is vital in achieving credible research outcomes. (Janesick, 1994) affirms that it is important for the researcher to describe his/her role thoroughly as it enables the reader to understand the relationship between the researcher and the research. According to (Ghauri & Gronhaug, 2002), to ensure validity, the researcher is required to understand received information during interviews, be a good listener and understand what is meant by what is said.

For this research, a semi-structured interview schedule was prepared in advance of the interviews which helped the researcher to control the situation, ask the right questions, adapt to new or unexpected situations, and develop trust (Ghauri & Gronhaug, 2002). Easterby-Smith et al. (1991) stress that using appropriate language helps to develop trust. The researcher ensured that the English Language was used, which is a language familiar to all the participants. Furthermore, Easterby-Smith et al. (1991) state that interview bias is a concern as the interviewer can impose their own reference frame on the interviewees, both when questions are asked and as the answers are interpreted. However, the use of open-ended questions in this study assisted in avoiding bias during the interviews. Also, the researcher ensured that supporting probes to clarify points were used whenever necessary. Likewise, ethical issues were considered since the research was dealing with humans.

5.4.5 Ethical Consideration

In terms of ethical consideration, Oliver (2003) advises that all situations dealing with humans should be treated with respect, they should not be harmed in any way and should be fully informed about what is being done with the information. Before the interviews, all the interviewees were requested to sign a declaration form indicating their interest in participating in the research. Saunders et al. (2006) describe ethics in the context of research as the appropriateness of behaviour in relation to the rights of those who become subject to your work. Besides, the John Moores University has an ethical validation process which ensures that researchers conform to a reasonably accepted standard. The ethical code of the University ensures that there is no interference with participants' physical and psychological well-being, the research procedure is not likely to be stressful or distressing, the research materials are not sensitive, discriminatory or inappropriate, the research design is sufficiently well-grounded so that the potential participants' time is not wasted during the data collection; the research instruments used for this study were subjected to the requirements of the University's ethical research committee. Having addressed and satisfied all the criteria, the ethics committee granted permission for the field work to commence. A letter of consent was obtained from the researcher's department and was presented to each participant, outlining the aim of the research and emphasising that information provided would remain strictly confidential and be used only for the purpose of the research. Hence, the participants were reassured that the data gathered will be treated in a manner that will protect the confidentiality and anonymity of the companies involved in the study. All the interviews commenced only after each participant agreed to participate.

5.5 Data Analysis of The Firms -Interview Participants.

This section presents findings of the qualitative study amongst the individual firms and the participants that participated in the interviews, which were identified as Agro-Small and medium scale enterprises for the purpose of this research. The experiences of the selected Agro-SMEs with respect to their adoption and utilisation of ICT on knowledge creation in their organisations are presented. Information and communication technologies include products and services such as desktops computers, laptops, internet services, intranet, business productivity software's, servers, etc. The main tool used for the data collections are the semi-structured interview questions which were conducted with the owner-managers, heads of departments, IT professionals and followed by emails, skype and telephone interviews. The semi-structured interviews were used in conjunction with telephone calls-interview to aid better interpretation of results. The telephone and skype interviews created an avenue for the interviewer to ask for further clarification of certain issues and assisted in gathering additional information that were not captured by the structured interview questions. For example, where participants were asked to list the types of ICT equipment's and applications in their various SMEs, they only identified just few. However, during the telephone interviews, more of these ICT applications and equipment's were identified by the respondents. The telephone interviews and participants assisted in providing an in-depth understanding of the fundamental issues pertaining to the research.

5.6 Overview of The Agric-SMEs & Interview Participants

Of the 30 Agric-SMEs that were contacted and sent interview questions in Nigeria, 20 of them fully cooperated, responded and returned their responses via emails, based on their experiences and challenges during this difficult time, this represents 66.6% response rate. The criteria for selection and inclusion in the research were based on the need for each participating Agric SMEs to conform to the definition of MSMEs in Nigeria and the willingness on the part of the Agric SME participants to cooperate and disclose details of their businesses.

Five (5) of the potential Agric SMEs were rejected, because they were not ready and willing to share and disclose details of their businesses. However, fifteen (15) of the Agric SMEs were finally selected based on their nature of businesses, size, ICT experience, turnover and other criteria's.

The details of the Agric-SMEs that were finally selected as cases for the purpose of this research are described and listed in the table below:

Table 4 Case Study of Agricultural-SMEs in Nigeria

Agri-SMEs	Size/Category	No of Employees	Yr. of Establishment	Annual Turnover (₦)/$
A	Medium Enterprises	65	2012	120million/$47.4m
B	Small Enterprises	10	1993	15milliom/$5.9m
C	Medium Enterprises	115	2012	65million/$25.7m
D	Medium Enterprises	146	2014	220million/$86.9m
E	Micro Enterprises	6	2017	5million/$1.98m
F	Small Enterprises	42	2005	23million/$9.01m
G	Small Enterprises	10	2014	42million/$16.59m
H	Small Enterprises	16	2018	47million/$18.57m
I	Medium Enterprise	145	1996	200million/$79m
J	Small Enterprises	15	2014	52million/$20.54m
K	Medium Enterprise	80	2011	135million/$53.33m
L	Small Enterprises	45	2008	30million/$11.85
M	Small Enterprises	29	2011	26million/$10.27
N	Medium Enterprises	90	2010	148million/$58.46m
O	Small Enterprises	42	2015	25million/$9.88m

Exchange rate; $1 -N395 (Official CBN rate). Yr.2001

For the purpose of anonymity, the names and details of the selected cases have been disguised as (Agric-business): - AbA, AbB, AbC, AbD, AbE, AbF, AbG, AbH, AbI, AbJ, Abk, AbL, AbM, AbN, and AbO.

The themes are:

5.7 Current State of ICT Adoption & Use Within the Agric-SMEs

This section aims to determine the level of ICT adoption and utilisation amongst the fifteen Agric SMEs that have been selected for the purpose of this research. A measure of the level of ICT utilisation simply means to identify the different types of ICT applications and facilities that are in use in the different Agic-SMEs. Interviews which were conducted in the various Agric-SMEs enabled the researcher to elicit respondents' views and experiences regarding the utilisation of ICT in their firms. Every participant was given an opportunity to comment on the use of ICT in their various Enterprises. A wide range of ICT solutions and systems ranging from basic to sophisticated were identified as applications mainly used or utilised in the different Agric SMEs, and these are highlighted and analysed below.

AbA uses the latest anti-virus technology to fully protect their devices with password protection and identity protection. The company also have software packages that are ideal solutions to managing multiple applications which can integrate with their existing IT systems and adapts well to changes in their business, while continuing to develop their ICT infrastructures.

Although **AbB** uses internet and computers in its operations, there is no sophisticated software installed in their systems, except for Microsoft office and other software for printing, email services, digital marketing services, internet banking and other online services.

AbC uses various forms of ICTs like- SAP for accounting purposes, Telynet (Sales automation application), WhatsApp, Zoom for video conferencing, Tele conferencing etc. The company also makes use of Hot Software for auditing and compiling the company's information.

AbD uses the Peachtree accounting software to manage and updating its accounts. Also uses the Microsoft office for sending emails and used for general communications.

AbE do not involve or engage in any form of IT currently in their farm for now. But according to the owner of the farm, they are thinking seriously towards that direction of initiating the idea of adopting and using ICT in their business operations.

According to **AbG,** all, if not all their farms and extension operations are managed via the internet and bookings and payments for farm products are made online using the internet services. The international Association for Animal husbandry **(IAAH**) uses this as a prerequisite for accreditation for farms to operate as an Agent or firm involve in the business of breeding, sales and export of animal products all over the world.

AbH, utilises mainly the internet and Microsoft office, the former being used for communication activities. But currently in the process of creating an online learning experience for their clients not engaged in any form of or usage IT in their internal organisational activities.

AbI, adopts and utilises some ICT applications, which includes CRM for Online payments, intranet, CUG for their printers, zoom for online and virtual meetings etc. This will enable the company to connect with their stakeholders and customers effectively. The company also needed ICT tools and applications to help them work smart and smoothly in delivering quality products and services to their customers, manage their information, and also in internal control mechanisms.

AbJ, sparingly use or engage in ICT in the company, but have initiated and considered the use of Microsoft office, internet and online services, customer management/ordering solutions and social media platforms for their operations and business.

Abk, currently utilises some ICT applications such as ERP software for planning. This software also provides the management with a comprehensive overview of the company's business executions which helps in decision making, thereby assisting in streamlining different organisational processes and workflow. Also, the company uses its intranet for sharing vital information among branches and departments and network servers for internet connection.

Although **AbL** has an IT department, the company still hires consultants to assist in managing its ICT infrastructures. The company's mission is to have a good reputation as an Agric business SME that will assist in further developing the smaller Agric business sectors by

providing consultancy services with the use of modern technological facilities. The company uses some software which include an accounting package called Business software as well as the Microsoft package. **AbL** has a website and uses the internet to communicate with customers and between its branches.

AbM mission is to use modern technologies to communicate and satisfy consumers and clients. Although the company does not really have a target market, it works hard to stand out from among its competitors. Although the internet and computers are used in the company, there is no sophisticated software installed in the company's system, except for Microsoft office. The company uses the internet to send emails and uses Microsoft office to carry out other task such as writing letters and send mails. The company has a website but does not have an IT department. Whenever there is any IT or technical problems with the company's systems, they employ the services of a consultant.

Initially **AbN** had an ICT consulting firm that was responsible for managing its ICT facilities, however, the company presently has an IT department and IT manager whose duties is to carryout general maintenance, making sure all the systems are running-up to date including the internet and maintaining contacts between the company and the ICT consultants. The company also has a functioning website that uses some software such as Xero for managing the company's transactions.

AbO has a website and intends to carry out an upgrade on all its systems so as to continue to remain ICT compliant as much as possible. The company currently uses the Peachtree accounting software for compiling information and updating accounts and a software called Hot Soft for providing effective and efficient services to customers. Hot soft enables the management to have total control over the entire operations of in the farm's estates. AbO also utilises ICT applications for auditing as well as the internet for sending emails. There is also a CCTV in the farm warehouse.

5.8 Decision Making Process within the Agricultural Firms

Here participants were requested to comment on who initiated the idea and the decision to adopt ICT in their firms. The issue of decision-making process varied from company to company. It was unanimous from almost all the respondents and firms, that the decision to initiate and approve ICT adoption and use emanated from their top management, owners or M/Ds.

For AbA, AbB, AbD, AbH, AbJ, AbL, AbN, and AbO, it was the top management or the M/Ds that were responsible for the decision and approval to adopt and use ICT in their companies.

But for AbC and AbG, it was the finance Directors that initiated the use and adoption ICT in their firm's subject to the approval of management.

While the farm Managers of AbE, AbF, AbI, and AbM initiated the idea of ICT adoption and use and are responsible for managing and taking decisions related to ICTs in their company's.

5.9 Drivers/Motivators &Barriers to ICT Adoption

Here, the respondents were asked to comment on the reasons for the drivers/motivators and barriers behind their decisions to adopt ICT. The participants gave a wide range of reasons that led to their decision to adopt and use ICT.

These reasons are listed based on the following.

5.9.1 Nature of business:

Most of the respondents thought it was important to adopt and use ICT based on the nature of their businesses. AbA, for example, as a company that is into animal husbandry and management consulting, relied heavily on technology in order to successfully carry out their business. According to the company's Managing Director.

"The major driver of ICT adoption in this company is due to the nature of our business…. The company works with computers and other ICT infrastructures which helps in data and decease control analysis services for our clients. The company also uses ICT for information management and accounts records. Furthermore, the company had to initiate ideas on how best to attain and achieve results in a business competitive environment".

There is a consensus among most of the companies, except for those who have not started adopting ICT (AbE, AbJ & AbO). That the major reasons/drivers/motivations for ICT adoption and use in their firms and companies among others include.

AbA,

- *To improve operational efficiency*
- *To have access to technologies and quality control*
- *To provide quality and shorter time in service delivery*
- *To manage and reduce cost,*
- *To venture into export*

AbB

- *To meet up with client's demand*
- *To provide quality services to customers*
- *To create and build a unique brand for the firm*
- *To enhance bountiful harvest*

AbC

- *To create an electronic storage system that will protect the company's data*
- *To create a system that will allow the organisation to be more efficient*
- *To maximise efficiency and productivity*
- *Faster communication within and outside the organisation*
- *To enhance the commercialisation of their business*

For AbD, AbF, AbG, AbH, AbI, AbH, AbI, AbK, & AbM, there was a general consensus and response among them, that indicated the major motivation for the adoption of ICT is based on the premise that, companies are undergoing extraordinary changes and seeking new ways of standing out in order to sustain their competitive advantage. Hence, companies including Agricultural Small and Medium Sized Enterprises (SMEs) are relentlessly searching for new ways of creating and delivering value to their customers and consumers, particularly with the use of ICT, especially when it involves large scale commercial farming or mechanised agriculture.

It is often agreed that the effective utilisation or increase in the use of ICT, sharpen their strategies, and helps in the transformation of many organisations. But there are also barriers and militating factors that affect the adoption and use of ICT in companies, especially for Agro small and medium scale firms with limited financial capabilities and resources.

According to the Managing Director of AbO, "Since we haven't started the use of ICT, it will be unfair to speculate. But the major inhibitor or barrier to us is the Cost/Finance limitations and the implications for a small business Enterprises like ours, with limited capital".

5.9.2 Information Availability

AbA*, Identified the need for information availability as a driver for adopting some forms of ICT in all its farms. According to most of the respondents, …'we the Agric- (SMEs) use ICT to obtain and manage information especially with regards to our (Company) targets…. there is always the need for information availability" (IT/farm Officer AbH).*

Three Agric-SMEs (AbA, AbB and AbD) reasons for adopting ICT are mainly for communicating with customers and clients. AbA for example, decided to invest in a new online computer e-commerce software, because the company realise the importance and advantage of providing customers services beyond the frontiers of Nigeria as a means of earning foreign exchange, thereby boosting its revenue base. The company understood the need to build an effective communication channel with its foreign customers.

The Managing Director and the IT staff of AbA comments.

"Initially we (the company) used to use manual system in our farms and shop outlets/operations……. relying mainly on telephone conversations and sending documents by post which used to cause a lot of delays especially with the poor postal system in Nigeria and courier services like DHL, UPS can be very expensive

For AbD*, "The company decided to adopt ICT to enable us to facilitate easy communication with our staff in other branches.*

5.9.3 Operational Efficiency

Efficiency was also identified as a driver for ICT adoption and use. Ten Agric-SMEs (AbA, B, C, D, G, H, I, K, M, and AbO) decided to adopt ICT in order to become more efficient in their various business activities. AbG for example, decided to adopt a software mainly for increasing efficiency and quick service delivery to customers as highlighted below:

"The reason for adopting this business software is to facilitate and enhance the booking of flights for our customers through e-ticketing. ICT is the technology of the day and the world is now a global village, therefore as a company, we had to move from manual booking of flight tickets to electronic" (Branch Manager-AbG)

5.9.4 Access to Information

Easy access to data has been identified as a reason for ICT adoption and use, as described by a company's manager:

"…When we started, we were using the manual system and methods in our operations, customers had to come and place order for their products physically. But with IT, the situation has changed. (Owner- Manager-AbO).

5.10 Knowledge Creation & The Impact on ICT

Here all the respondents in the Agric-SME), were requested to comment and explain what they understood by knowledge creation and its impact if any, on ICT.

The participants gave wide range of definitions and explanations to the best of their knowledge and understanding.

According to AbA…. "*Knowledge creation entails the continuous transfer, combination and conversion of the different types of knowledge, as employees interact and learn new things"*

AbB……. *"Knowledge creation to my understanding, involves the continuous transfer of knowledge in an organisation, this can simply be described as Training and Retraining of personnel to create and improve organisational performance".*

AbC …. *"Knowledge creation is the continuous combination, transfer, and conversion of different kind of knowledge. This occurs as users interact, practice, and learn new things. In other words, it is the creation of ideas, which is the heart of a company's competitive advantage".*

AbI…. *"Knowledge creation is the combination, transfer and conversion of different kinds of skills to improve knowledge". And*

AbM …. *"To compete globally and successfully, in today modern knowledge economy, companies must hire, develop, and retain excellent employees and managers through valuable knowledge assets. Therefore, knowledge creation can be actualised through continuous training and retraining of manpower".*

The respondents also commented on the impact of ICT on their firm's organisational performance. The responses to this question are similar to responses that were given regarding their reasons for adopting ICT. One of the companies is of the opinion that the impact of ICT is helping them transform most of their operations/farm processes, achieve goals and targets and stay competitive.

Also, Ab comments…. *"Agriculture is a branch of the country's economy that provides jobs for over 30% of the population and this is the highest in percentage of employment in West Africa. Agriculture is transformed by commercialisation at the Small, Medium, and large-scale levels through the adoption and use of modern technologies".*

According to company AbA, *"In today's fast paced environment, the adoption of modern technology is extremely crucial, as the implementation of ICT systems ensures the storage, retrieval, organisation and presentation of information and data in a systematic and helpful way".*

Another company is of the opinion that any organisation that wants to survive and create wealth must to a great extent commit itself to investment in technologies that will then help them develop strategies and gain competitive advantage.

Of the fifteen (15) Agric-SMEs that participated in the study, ten (AbA, AbB, AbC, AbD, AbD, AbF, AbI, AbJ, AbL & AbO), identified the importance and advantages of human capital training and development as a panacea for organisation efficiency and improve productivity. They also emphasised on the importance of skills acquisition and the use of novel Information and communication technologies (ICT) to offer a new range of opportunities in today's modern digital economies. The introduction of employees to modern farming methods and technologies through training and retraining, has to a great extent improve performance, increase outputs, bumper harvests, and productivity, reduce waste and losses resulting improper application of modern farming techniques and boost workers morale. Companies are moving away from analogue and traditional methods of Agriculture to more easy and efficient digital processes. Knowledge continues to be a critical or perhaps the critical factor for every firm in today's competitive business environment. In Addition, the unique feature of knowledge as a resource is that it can become obsolete in the future. Therefore, there is the necessity to create new knowledge continuously.

5.11 Knowledge Creation and Organisational Performance

Respondents in each of the Agric-SMEs were requested to comment and respond on the importance of knowledge creation on their company's organisational performance. The responses to this question are similar to a great extent to the responses that were given regarding their reasons for adopting ICT.

One of the companies is of the opinion that knowledge creation is helping them stay competitive and remain relevant in the challenging business environment.

According to AbA; *"The adoption of ICT is very much relevant and much needed for, innovation, knowledge sharing and development, allowing for some degree of support in the transfer of all knowledge types as it relates to Agricultural businesses".*

For AbB… *"Knowledge enhances performance and organisational productivity, as it makes our business transactions faster and easier*". (Farm Operations Manager).

Similarly, a respondent from AbC comments:

"The world is going digital and moving virtual now, and ICT adoption improves knowledge creation, which could bring about competitive advantage to SMEs. The overall strategy is hinged on the level of competition and the availability of new ICT farm techniques that are tailored to our organisational goals and objectives". (M/D-CEO).

"The computerisation of our company's operations and organisational processes has helped us to manage our data more efficiently. The intranet services help us to access and manage information from other branches on a daily basis. The company can also access and monitor market trends and statistics of the economy online". (IT Manager-AbK).

Another company is of the opinion that ICT increases your confidence, experience, and knowledge as a result of training and exposure to modern technologies.

"Efficiency is enhanced because you do not have to look through several documents spanning years to generate data which may be prone to human errors. It has brought a lot of competitive advantage and innovations to our operations. In other words, huge significance in terms of skills acquisition and competence has been achieve through knowledge creation and management". (AbG).

CHAPTER 6 DISCUSSIONS AND FINDINGS

6.0 Introduction

The purpose of this chapter is to examine the findings of the research in relation to the research questions/objectives. The chapter discusses analysis and the findings presented in Chapter 5 in relation to the literature review. Insights from the interviews have assisted in providing a robust view on issues related to the subject under consideration. The chapter forms a narrative of the entire thesis, incorporating ideas that have emerged over the course of the research, and whenever possible, the results are compared with previous findings. The research findings for each of the four research questions are summarised and explained within the context of current academic knowledge and the chapter concludes with a proposed framework that can stimulate ICT adoption and utilisation amongst Nigerian Agric- SMEs. The chapter is structured into four sections based on the study's four sub-research questions, in the order as presented below.

1. To what extent does ICT adoption and use on knowledge creation benefit Agric-SMEs in Nigeria?

2. What are the drivers and inhibitors to ICT adoption and use in Agric-SMEs in Nigeria?

3. To what extent does knowledge creation practices and skills acquisition impact on the performance of Agric-SMEs in Nigeria?

4. To what extent does knowledge creation impact on efficiency and productivity in Nigeria Agric-SMEs?

6.1 ICT Adoption & Use on Knowledge Creation Among Agric-SMEs

The first sub-research question was aimed at determining the level of ICT adoption and use among Nigerian Agric-SMEs, especially among the fifteen Agric-SMEs that has been selected for the purpose of this research. Studies on ICT adoption constitute a substantial area within the information systems domain, notwithstanding that there continues to be a need to better understand the factors that drives or inhibit the adoption and use of ICT within the specific context of SMEs (Harindranath et al., n.d.). This is as a result of the impact of globalisation which has forced so many SMEs to adopt ICT as a means of survival and staying competitive in the present digital era. The current use of ICT in many organisations in recent times has caused some form of revolution in their business practices (Apulu & Latham, 2011a). This research also supports the work of Rastrick & Corner, 2010), and Lin and Lin (2006) who stated that ICT is increasingly becoming related to organisational values and that there is growing support for the positive relationship between ICT and its advantages. The wide use of ICT is changing the manner in which people or organisations work as it has assisted in providing

several opportunities to organisations thereby assisting them to meet the challenges of an ever-changing socio and economic environment of the world.

Therefore, this research aims to determine the level of ICT adoption and utilisation amongst the fifteen Agric SMEs that have been selected for the purpose of this research. A measure of the level of their ICT utilisation simply means to identify the different types of ICT applications and facilities that are in use in the different Agic SMEs. Interviews which were conducted in the various Agric-SMEs enabled the researcher to elicit respondents' views and experiences regarding the utilisation of ICT in their firms. Every participant was given an opportunity to comment on the use of ICT in their various Enterprises. A wide range of ICT solutions and systems ranging from basic to sophisticated were identified as applications mainly used or utilised in the different Agric SMEs, these are summarised and discussed below.

The findings of the research reveal a lower level of usage of sophisticated ICT solutions and underutilisation of ICT. Factors such as the types and the number of computers, the use of software, hardware and communication applications were used in this research to determine the level of ICT utilisation amongst the Agric- SMEs in question.

The interview participants from the different Agric-SMEs, mentioned and highlighted a number of challenges that hinder their companies from effectively utilising ICT, despite being recognised as ICT users. This is because the Agric-SMEs are faced with some of the challenges experienced by other SMEs in other sectors. For example, the lack of steady electricity supply was identified by six out of the seven companies that participated in the interview as a major challenge affecting their effective utilisation of ICT. Another major challenge is the poor internet service offered by ISPs which makes the majority of SMEs that subscribe to internet service unable to realise the expected benefits. In other words, SMEs are of the opinion that they are exploited by the Internet Service Providers. Consequently, some of the employees (except for the managers and IT staff) in the SMEs lack ICT skills so they are incapable of effectively utilising ICT. In some cases, employees cannot operate the computer while in other cases some employees assume that ICT is for larger companies thus, they become sceptical of the benefits and value of utilising it. Basically, Nigerian Agric-SMEs should work towards the successful adoption and effective utilisation of ICT

ICT has become an indispensable management tool not only for large enterprises but for SMEs as well. At present, empirical findings suggest that Nigerian Agric-SMEs are not effectively utilising ICT. Nevertheless, it is important to note that the levels and outcomes of ICT utilisation determine the effects of ICT and its impact on the performance of a company. The researcher was unable to identify supporting literatures relating to this challenge faced by the Agric-SMEs. However, there was a general consensus among the Agric-SMEs, that, to compete globally and successfully in today's modern knowledge economy, businesses must hire, train, develop and retain excellent employees/managers through valuable assets. Therefore, knowledge creation can be actualised through continuous training and retraining of manpower through the adoption and use of modern ICT.

6.2 Drivers and Inhibitors to ICT Adoption & Use Among Agric-SMEs

Here, the respondents were asked to comment on the drivers/motivators and barriers behind their decisions to adopt ICT. The participants gave a wide range of reasons that led to their decision to adopt and use ICT. Most of the respondents were of the opinion that it was important to adopt and use ICT based on the nature of their businesses and profession. The research findings suggest that the nature of businesses plays a critical role in the adoption of ICT. A poultry and diary company among the participants, for example, indicated that the nature of their business was the main motivator for adopting ICT as it is impossible for them to function without utilising ICT. The company uses automated machines and other ICT infrastructures in their production processes. This finding relates to that of (Mpofu et al., 2009) who state that the organisational readiness of every organisation is reflected in the size, type, nature of business as well as ICT expertise and the perceived benefits upheld by management and employees. This proves that the nature or type of business can also be regarded as a key motivator and reason for the adoption of ICT amongst SMEs.

The level of technological advancements in recent times has compelled some owners/managers of Agric-SMEs to adopt ICT tools as a means of enhancing their business processes. Insights from the interviews confirm that the latest technological advancements in the business world motivated some of the SMEs to partake in the adoption of ICT, as ICT is now being applied in virtually every area of our daily lives. (Ongori & Migiro, 2010) assert that the impact of globalisation has compelled SMEs to adopt ICTs, to enable them to survive and compete with large companies; they emphasise that the evolution of technology has affected the pattern in which businesses operate by changing industry structures and altering the degree of competition. Moreover, responses from the respondents, confirm that ICT adoption has assisted in creating some form of competitive advantage for many of the Agro-Allied businesses. This finding supports (Wen et al., n.d.) research which identified that the widespread use of ICT is changing the manner in which people or companies' function. The authors describe the utilisation of ICT as a feature of technological advancements in the current era where there has been immense innovation in information management and communication. This finding confirms that recent technological advancements have made some Nigerian Agric-SMEs to adopt or effectively utilise ICT and have also, revolutionised the method in which some SMEs in Nigeria interact and conduct their businesses.

According to the Managing Director and the IT staff of one the firm's, comments; *"Initially we (the company) used to use manual system in our farms and shop outlets/operations……. relying mainly on telephone conversations and sending documents by post which used to cause a lot of delays especially with the poor postal system in Nigeria and courier services like DHL, UPS can be very expensive. Therefore, in order to solve and overcome this communication barriers, we adopted ICT. Presently we are relating and communicating with all our clients all over the world, providing efficient and quality services. Every business including Agric-SMEs need to adopt ICT because the world is now a global village"*.

Insights gained from the investigation also suggest that the need for constant access to information always is a key motivator for SMEs' decisions to adopt ICT in Nigeria as ICT daily increases the availability of information in many of the Agric-SMEs and enhances decision making within these organisations. The finding supports Ongori and Migiro's (2010) assertion that ICT adoption in SMEs provides a means to access, process and distribute greater amounts of data and quick information in order to make thoughtful decisions. It appears that

with the recent technological developments in every aspect of life, some SMEs in Nigeria, especially the Agric-SMEs, are keen to adopt ICT, especially as the evolution of mechanised farming and technology has continued to change the manner in which many Agric businesses operate.

Also, the need for effective communication with staff, customers and suppliers amongst others cannot be overemphasised as the utilisation of ICT enables organisations to increase their communication capabilities. For example, insights from the interview responses, reveal one of the companies was forced to adopt ICT in order to improve their means of communication with suppliers abroad which was usually done via the post. Communicating via the post caused several delays for the company as often, the company was unable to receive the delivery dates of their products from their overseas suppliers on time. But now with the aid of ICT such as the internet, the company can communicate effectively with their suppliers overseas via email. The use of email has assisted in speeding up communication within and between many organisations. This suggests that the adoption of ICT would not only assist in speeding up communication but also in cutting down courier costs.
Communication is vital for every business and (Klaas, 2008) affirm that communication can occur over large distances without problems, with the use of ICT systems. Effective communication provides the critical link between core functions in every organisation and plays a key role in the area of collaboration between various parties as well. Wertheim (no date) also states that people in organisations typically spend over 75% of their time in interpersonal communication thus it is no surprise to find that at the root of a large number of organisational problems is poor communications. The finding aligns with (Clegg et al., 2005) study, stating that communication is not just the flow of information between people but also a process of "creating, shaping and maintaining relationships and enacting shared values, common culture, agreed goals, and means for their achievement". The finding also corroborates with (Golding et al., 2008b) study which states that ICT improves communication systems, either internally to the firm or to an already established network of firms involved in productive or commercial relationships that make communications within the firm faster. Furthermore, ICT provides a strategy for reducing communication costs as emails, intranets and other electronic media could be used to cut costs and provide an effective means of communication. Again, with ICT, information can be sent to multiple recipients at the same time assisting in saving delivery costs and time. The empirical findings conclude that there is need for organisations, including Agric-SMEs, to adopt ICT in order to achieve a substantial level of effective communication.

Insights from the investigation have revealed also, that the need for Nigerian Agric-SMEs to remain efficient and productive, is another reason why some of them choose to adopt ICT. The majority of the Agric-SMEs' owner-managers and employees from the different organisations that participated in the interviews identified their desire to improve efficiency as a reason for adopting ICT. Results from the interviews conducted, also indicated that the manual processing of data was cumbersome which motivated some of the Agric-SMEs to adopt ICT in order to improve their company's operational efficiency. For instance, a respondent mentioned that their company went on to adopt ICT to enable them to become more efficient thereby increasing the speed at which they carry out their business. Generally, ICT can help to increase productivity, speed and efficiency of inventory control and increase sales through closer relationships and faster delivery times.
The finding is consistent with that of (Hsin et al., 2008a) who state that the adoption of technologies can be seen either to provide efficiency savings, or as a strategic response either

driven by necessity or due to competitive pressure. Efficiency is an important dimension in every organisation as it brings about organisational effectiveness. Levy et al. (2001) also found that investment in ICT is successful when it takes one of the following two forms: providing efficiency and savings or enabling added value. Embracing technology as a tool for efficiency would help lift the organisational competencies of many Agric-SMEs. Besides, (Alam & Mohammad Noor, 2009a) in their study confirm that the adoption of ICT is a means of enabling businesses to compete on a global scale, with improved efficiency, and closer customer and supplier relationships. This confirms that with effective utilisation of ICT, companies can begin to manage their resources more efficiently.

Also, automating a company's records enables easy access to data and was described by some of the respondents interviewed, as a motivator for their decision to adopt ICT. Generally, the automation of business processes in companies provides a quicker means for achieving their desired output. Furthermore, ICT not only creates a medium for easy access to data but also helps to build capacity, knowledge creation and repository, where information can be stored. With ICT, handling a company's information and producing reports can be straightforward as the details are usually stored on a system. Overall, ICT helps in facilitating the access to information in organisations. An Agric-SME manager confirmed during the interviews, that the use of a manual system was stressful, especially when the need to access documents arises and the documents were stored in cabinets. This made it very difficult for the company to access specific details. However, with the adoption of ICT, the company is now able to save all its data on various computers thereby enabling easy data access.

This finding validates that of Ongori and Migiro (2010) which confirmed that ICT adoption in SMEs would provide a means to access, process and distribute greater amounts of data and information quickly in order to make thoughtful decisions. Chen et al. (2003) also states that, automating a company's process can shorten the cycle time from ordering to distribution, thus resulting in enhanced production ability and increased efficiency. Suppliers can also benefit from ICT adoption as it will shorten business transaction cycle, lower capital cost of stocking, lower labour cost, increase efficiency, enhance accuracy, and give faster handling time and delivery speed (Hsin et al., 2008b).

Having some form of competitive advantage was described by the Agric-SMEs as a major force behind their uptake of ICT. The empirical findings from the interviews, reveal that SMEs try to have a competitive edge over their competitors by simply enhancing their customer service. It was observed that all the Agric-SMEs are searching for new ways to stand out in modern day mechanised agricultural farming/business, hence they are ready to use ICT applications/systems as a strategy for staying competitive. Similarly, the study of (Adebambo & Adebayo, 2011) mentions that the current highly competitive global marketplace puts pressure on organisations to find new ways of creating and delivering value to customers. Furthermore, one Agric-SME that participated in this research acknowledged the necessity to deliver business value and to have some form of competitive advantage as a motivator behind the company's decision to adopt ICT. It is very important for every company to maintain its competitive advantage, by for instance, providing unique services to customers. According to another respondent *"for you to deliver quality service, you must adopt ICT"*. In other words, empirical evidence suggests that competitive pressure is a key motivator of ICT adoption in Nigerian SMEs

6.2.1 Inhibitors

Although results from the interviews have identified different motivators for ICT adoption in Nigerian Agric-SMEs, a number of inhibitors hampering the adoption of ICT were identified by non-adopters in the interviews conducted by the researcher. Whilst empirical findings from the interviews indicate that some Agric-SMEs in Nigeria tend to have adopted ICT (either basic or sophisticated), the results also identify a number of issues inhibiting some of the Agric-SMEs in South-west, South-south and South-east regions of Nigeria from experiencing the benefits associated with the adoption of ICT in businesses. Most of the non-adopters interviewed were concerned about infrastructural inadequacies in the country such as electricity constraints and so on, as well as the lack of skills amongst employees. These concerns were ranked 1st and 2nd respectively. A discussion on the various issues raised by the interview participants is presented below; and evidence from the interviews provides additional information on factors inhibiting ICT adoption in Nigerian Agric-SMEs.

(a) **Lack of Electricity:** The interview results indicate that the most prevalent factor inhibiting the adoption of ICT amongst several Agric-SMEs in Lagos-Nigeria, is the lack of electricity. Electricity constraints in Nigeria have remained a bane to the adoption and effective utilisation of ICT amongst many Nigerian SMEs. (Lindsay et al., 2008) affirms that although Nigeria is recognised as the largest producer of oil in Africa and holds approximately one third of the proven gas reserves, the lack of electricity supply has continued to be a major problem in the country especially in rural areas where most of the farms and businesses are located, there is often total blackout. Moreover, in the cities where there is electricity, it is still very limited which has made power shedding a customary occurrence. It is very rare to live for a day in Nigeria without uninterrupted power supply, yet the cost associated with its provision remains very high.

The literature review and empirical findings of this research suggest that Nigerian Agric-SMEs are currently facing enormous challenges about the provision of utilities such as electricity, and so on. This has made many of the Agric-SMEs resort to approaching private companies for the hire/leasing of generators at extra cost, and it prevents them from successfully adopting or utilising ICT. This finding is also in line with (Tallapragada, n.d.) study which states that despite Nigeria's tremendous energy resources, the country remains highly energy deficient.

(b) **Lack of Requisite Skills**: Results from the interviews suggest that some Agric-SMEs are yet to adopt ICT simply because they lack the requisite skills. This finding corroborates that of (Alam & Mohammad Noor, 2009b) who identify the lack of suitable technical and managerial staff with sufficient ICT expertise as a major barrier to ICT adoption in Malaysian SMEs. The authors explain that SMEs have continually lacked skills amongst their workforces. Again, MacGregor et al. (1996) confirm that some SMEs avoid the use ICT in their businesses, especially if it is considered to be complex. Furthermore, Reynolds et al (1994) established the fact that SMEs owner-managers are unlikely to adopt technologies if they lack the requisite skills. This infers that employees' skills and those of owner-managers are crucial to the successful adoption of ICT within SMEs in general, thereby validating the finding of this research. It is important to note that the lack of skills amongst owner-managers and employees can also inhibit the effective utilisation of ICT

amongst Agric-SMEs that have successfully adopted ICT, thereby inhibiting them from adopting more sophisticated technologies. This validates the research of Apulu et al. (2011) involving 25 SMEs, which identifies skills deficiencies as a factor affecting several SMEs that have successfully adopted ICT from further adopting more sophisticated ICT solutions. Researchers (e.g., Darch and Lucas, 2002; Ramsey et al., 2003) confirm that a shortage of ICT skills and unfamiliarity with the internet and its potential are found to be reasons for a lack of adoption by SMEs. Lack of knowledge is another inhibitor. Without knowledge it would be difficult for the Agric-SMEs, in this context, to acquire the requisite skills. Although most of the non-adopters had a positive view regarding the use of ICT, they identified that their lack of knowledge on how to use computers remains a major issue for non-adoption. Several respondents expressed their desire to acquire some knowledge on the use computers and the internet if given the opportunity to do so. This research finding supports that of Duan et al. (2002) who note that lack of ICT skills and knowledge in some SMEs is one of the major challenges faced by all European countries, particularly in the UK, Poland, and Portugal. Likewise, Lee and Kim (2004) advocate that the lack of technological knowledge and their management capability amongst employees can be a barrier to the adoption and extension of information systems. Lee and Kim (2004) further highlight that some SME managers are concerned about the introduction of ICT because of the fear that their employees may not be familiar with it. This corroborates earlier literatures (e.g., Costello et al., 2007) that identified the lack of knowledge on how to use technology and low computer literacy as factors that can affect ICT adoption. Therefore, for a successful implementation of ICT in Nigerian Agric-SMEs, it is vital that employees and managers acquire some knowledge of ICT as well as the right technical skills.

(c) **Access to Quality Internet Service**: Access to quality internet service has remained a bane in Nigeria and significantly affects the adoption and effective utilisation of ICT in Nigerian SMEs. This is because Nigeria's Internet Service Providers (ISPs) have yet to improve on the quality of service they provide to customers which inevitably discourages several SMEs from adopting ICT. Surprisingly, a number of Agric-SMEs that participated in the interview are yet to adopt ICT, nevertheless they expressed their awareness of issues surrounding ISPs in Nigeria which inhibits them from adopting ICT. Several the respondents indicated; they were not willing to waste their resources. Similarly, Arendt (2008) while studying Spanish, Portuguese and Polish SMEs found that the most important barrier indicated by the participants was the lack of ISPs. Despite the unprecedented growth of the internet in Nigeria in the last 10years, much still needs to be done with regard to affordability of this service. Internet services, both broadband and the more popular dial-up service, are still very expensive and characterised by very slow network.

Although the rapid uptake of mobile internet has assisted in increasing ICT penetration and awareness within the last couple of years, nonetheless, much still needs to be done. The ISPs in Nigeria are responsible for providing broadband service, dial-up and mobile phone internet but they are still all very expensive. Many ISPs in Nigeria offer poor services to clients and struggle to stay afloat in their businesses. Broadband with its faster speeds improves the overall online experiences for both individuals and businesses, encouraging them to explore more applications and spend more time online. In contrast, slow internet connections discourage some Agric-SMEs from adopting ICT, effectively utilising ICT or further adopting more sophisticated ICT solutions.

Although the liberalisation of Nigeria's telecommunication sector now provides the opportunity for users to choose from a variety of services, there are still problems with the services the ISPs in Nigeria provide to end users. End users face challenges such as unavailability of internet service for several days, very low bandwidth, frequent

disconnection, slow connectivity speed and so on which in turn inhibits SMEs particularly from advancing in ICT. Besides, most Agric-SMEs are generally characterised by very limited funds, hence some Agric-SMEs experience difficulties in trying to acquire internet services due to the high cost. Interestingly, this finding supports (Kapurubandara & Lawson, n.d.) study which finds that poor internet connectivity affects the adoption of e-commerce in Sri Lankan SMEs. However, it is important to note that broadband connectivity is a key component in ICT development, adoption, and use. Consequently, (Lawrence et al., 2010) affirm that broadband accelerates the contribution of ICTs to economic growth, facilitates innovation and promotes efficiency. In addition, the cost of internet access has been described as very high in Nigeria, based on the responses and feedback from the interview participants, which also supports Lawrence and Tar's (2010) findings. These authors note that the monthly connection cost of the internet in most developing countries far exceeds the monthly income of a significant proportion of the population including the case of Nigeria. (Chibelushi et al., 2011) further state that the issue of support provided by service providers can influence the adoption of ICT. Therefore, for the Nigerian Agric-SMEs to successfully adopt and effectively utilise ICT there is the need for the major ISPs like, MTN, AIRTEL, GLO, etc in the country to improve their services.

(d) **High cost of Equipment's & Maintenance:** Issues such as cost of training, investment cost and maintenance were also identified from the interview responses, as inhibitors. Some respondents indicated that the investment cost required to implement ICT was very high. Interestingly, insights from the interviews, suggest that cost remains a critical issue for most SMEs that are already utilising ICT. This perception is consistent with Lee and Kim's (2004) study which emphasises that even the adopters of ICT are unwilling to upgrade their information systems or to adopt other advanced ICT service applications as a result of high adoption cost. The cost of training employees has continued to be a key issue among Agric-SMEs in Nigeria; moreover, Agric-SMEs in Nigeria do not develop training plans as many owners/managers are reluctant to invest in training their employees because they are afraid of losing their employees to large companies upon the completion of such trainings, which is in line with Arendt's (2008) research. Meanwhile, some Agric-SME managers are of the opinion that maintaining ICT infrastructures requires a substantial amount of money considering the fact that many Nigerian Agric-SMEs struggle with inadequate finance to run their businesses. Furthermore, the finding confirms the proposition of Apulu et al. (2011) which claimed that the high cost associated with ICT implementation makes SMEs in most cases ignore the adoption or effective utilisation of ICT.

(e) **Lack of Support from Government**: The present state of the Nigerian agricultural sector shows that agricultural engagement is still predominantly domiciled in the rural areas, highly populated with small-scale farms; low penetration of mechanized farming practices; poor adaptation of modern technology to enhance produce and livestock output; inadequate Agric capital and loans to encourage vertical integration; and, the most devastating of all, the sector has been plagued by high level of government policy summersaults and regulatory inconsistencies. Suffice it to say that the renewed emphasis to diversify the Nigerian economy and return to agriculture as its bedrock of growth and sustainable development necessitates that government, businesses, and the Nigerian society come together to confront the nearly insurmountable challenges and consumption patterns that have left the Agric sector moribund. The leading challenge is the preference of Nigerians for foreign agricultural finished products. This is responsible in no small way for high

import invoices, which in turn encourage capital flight, unfavourable terms of trade and consequently inhibit the export potential of the Nigerian Agric sector. For example, according to data obtained from the Nigerian Bureau of Statistics in 2015, by the end of the first quarter in 2015, a total of ₦738 billion (approximately $3.69 billion USD) worth of agricultural products were imported into Nigeria, compared to a total value of agricultural exports within the same period from Nigeria worth 99.5 billion (approximately $495 million USD). All of this amounted to Agric trade deficits in the excess of ₦600 billion ($3.2 billion USD). It is also important to reconcile the extent to which the Agric sector has been impacted by Foreign Direct Investments (FDI).

Therefore, the lack of government policies/regulations for Agric-SMEs is another main inhibitor to the adoption and effective utilisation of ICT in Nigerian SMEs. This is because the role of policy in creating an enabling environment for businesses cannot be underestimated. In Nigeria the policies that support Agric-SMEs are not properly implemented and can be described as inconsistent. The Nigerian political elites, lacks the necessary ICT expertise to formulate and implement a coordinated national ICT policy, hence there is considerable lack of awareness and practical experience. The role of government policies in supporting SMEs has been emphasised by several researchers (e.g., (Alam & Mohammad Noor, 2009b), (Mensah & Benedict, 2010) which helps to validate this finding of the research. For example, Alam and Noor (2009) in their research with Malaysian SMEs stressed that government support has a significant and strong positive link to ICT adoption. The authors further state that both industries and government bodies have a role to play in promoting and supporting small business networking and ICT. Similarly, Apulu and Latham (2009) comment that the lack of policy/institutional framework affects Nigerian SMEs as there has not been a purposeful policy on ICT for SMEs in the country. The authors also mentioned that a policy on information technology was formulated in 2001 by the Nigeria Information Technology Development Agency (NITDA) but has not been properly implemented to include Agric-businesses. It is vital to note that SMEs, unlike larger organisations, certainly require government support in order to gain a competitive edge. Likewise, (Tan & Teo, 2000) highlight that government policies are meant to assist SMEs to increase their competitiveness and enable them to have greater influence with regard to ICT use. Moreover, (Mensah & Benedict, 2010) find that government policies assist in shaping the macroeconomic environment of a country and further determine relevant issues such as policies that could sustain or hinder the growth of SMEs. This implies that a proper government policy for Agric-SMEs and ICT would assist in encouraging Agric-SMEs that are yet to adopt ICT to begin to adopt. But based on most of the responses and generalisation from all the other companies, the major barriers to ICT adoption and use among Agric-SMEs are listed thus.

- Capital intensive.
- High cost of acquisition of equipment's
- Poor infrastructural deficit
- Lack of skilled human resources
- Poor network signals
- Lack of stable electricity
- Frustrations from Internet service providers

- Logistics, initial installation implementation cost. Lack of Training and retraining of staff to acquire new skills etc.

These challenges have created seriously unfriendly business environment for many investors, including Agric-SMEs.

6.3 Knowledge Creation-Impact on Performance of Agric-SMEs In Adopting ICT

ICT plays a very important role in knowledge creation and the organisational performance of Agric-SMEs as it helps in creating business opportunities, building human capacity, skills and enables Agric-SMEs to fully compete with their competitors. Choosing the appropriate ICT applications for a particular business not only assists in cutting down costs but also helps in improving the company's internal processes, improve performance, productivity, enhancing communication and can also provide the opportunity for the company to advertise their products and services online. The research findings show that there are several positive impacts associated with the adoption and effective utilisation of ICT amongst the different Agric-SMEs that leads to knowledge creation. This was measured based on value added to the companies in terms of efficiency and productivity after adoption. It is quite interesting to note that some of the impacts or benefits experienced by the interviewed Agric-SMEs are in line with the reasons (motivators) behind their decisions to adopt or invest in ICT. This indicates that the Agric-SMEs are experiencing their returns on investment. It implies that the SMEs' desires or intended objectives are being fulfilled, thus improving their organisational performance. It is of critical importance to investigate the impact of ICT investments on knowledge creation and companies' organisational performance in various contexts. This is because ICT is an essential tool that should be aligned with a company's organisational strategy. However, the research findings also indicate that the benefits derived from ICT investment vary significantly amongst the Agric- SMEs, but to a large extent depend on the type of ICT investment or combination of investments (i.e., hardware, software, and communication applications). The interviewed Agric-SMEs in question all identified some benefits that have been derived from their various investments in ICT, which is knowledge creation. This means that the adoption of ICT can provide several wide-ranging benefits for SMEs. Some impacts and benefits of ICT on knowledge creation are identified, based on the following:

6.3.1 Enhanced Competitive Advantage

The results of the interviews, suggest that Agric-SMEs in Nigeria currently utilising ICT achieve a great deal of competitive advantage as ICT provides an opportunity for the firms to offer a better quality of service to customers. Agric-SMEs endeavour to adopt ICT for the purpose of business enhancement for example, having intranet enhances effective communication between departments and branches of the same company. ICT also helps to enhance a company's interactivity with customers thereby enhancing the overall business of the company. ICT can further be used to enhance knowledge acquisition from external sources. ICT enhances and supports business reform from the usual traditional method of conducting business to an automated method. This corroborates (Andersen & Foss, 2005) findings, which state that ICT provides an organisation with a richer endowment of diverse competencies that

enhance the organisation's ability to innovate and create strategic opportunity. Andersen and Foss (2005) further comment that the use of ICT can enable computer-mediated communication amongst managers, for instance, in multinational organisations. It can also enhance the internal exchange of rich and tacit information. Such ICT enhanced communication can facilitate the knowledge creation and innovation processes in many enterprises including Agric-SMEs. Again, from the literature review, (Udo & Edoho, n.d.-b) and Ion and (Apulu & Latham, 2011b) highlight that ICT contributes to enhancing business operations.

Furthermore, ICT helps SMEs to become more proactive in their approach, innovative and efficient, thereby assisting in improving the core business processes of the organisation. Organisations are able to achieve some level of competitive advantage by providing better customer service with the use of ICT. (Pavic, Koh, Simpson, et al., 2007) identify that SMEs have the opportunity to achieve a competitive advantage from the advances in ICT through innovation, marketing, efficiency gains, better quality and customer responsiveness. Also, appropriate use of ICT can assist SMEs to gain competitive advantage by reducing costs and improving core business processes. Similarly, the finding confirms Ongori's (2009) study which states that the adoption of ICT would change the way businesses operate in this era of globalisation by changing business structures and increasing competition, by creating competitive advantage for businesses and by changing business operations. There is need for Agric-SMEs to build and enhance their organisational processes by having some form of competitive advantage. Having competitive advantage simply means a firm's ability to measure their success relative to that of their competitors and the effective utilisation of ICT is a strategy for achieving such competitive advantage. Again, the finding appears to be in line with (Modimogale & Kroeze, n.d.) (2009) argument where ICT is regarded as a competitive tool for enterprises and if implemented and used correctly, can bring with it many benefits for enterprises. Moreover, Ashrafi and (Ashrafi & Murtaza, 2008b) report that ICT deployment helps in establishing the best relationship with customers. All Nigerian Agric-SMEs should consider not only adopting ICT but properly utilising it as well. This is an important approach for businesses to attain their competitive advantage in global markets. In addition, the finding supports (Harindranath et al., n.d.) study which discovered, while studying SMEs in the UK, that the adoption and use of ICT is widely seen as critical for the competitiveness of SMEs in the emerging global market. Having competitive advantage could be in the area of efficiency since ICT enables a company to become more efficient. Therefore, for Nigerian Agric-SMEs to enhance their competitive advantages, they must become effective users of ICT. ICT adoption and knowledge creation is increasing globally, offering unique opportunities to companies since it is the current trend amongst organisations all over the world. Nigerian Agric-SMEs can set themselves apart from their competitors if they decide to invest in ICT, as this will bring about sustainable competitive advantages.

6.3.2 Improved Efficiency and Performance

Insights from the interviews conducted, also suggest that ICT brings about efficiency in organisations. The responses, confirm that the adoption of ICT has assisted in computerising their companies' records thereby assisting in managing data more efficiently. The adoption and utilisation of ICT has also assisted in shortening lead times in terms of attending to customers' enquiries as the internet, for example, enables companies to access information speedily. In

essence, the use of ICT increases the speed of carrying out transactions in organisations. Results from the interviews and literature review (see Chapter 2) ascertained that firms all over the world have continued to make significant investments in ICT aiming to increase efficiency and effectiveness. This finding supports that of (Ongori & Migiro, 2010) argument. The authors argue that ICT enhances SMEs, efficiency, reduces costs and broadens market reach, both locally and globally. Likewise, (Matambalya & Wolf, 2001) conducted research on SMEs in East Africa and asserts that ICT improves efficiency and increases productivity in different ways including, improving efficiency in resource allocation, reducing transaction costs, and technical improvement leading to the outward shifting of the production function. The research finding further corroborates that of (Udo & Edoho, n.d.-c) and (Andreea, n.d.) which states that ICT enhances business operations as well as organisational efficiency. This infers that ICT has a positive impact on organisations' efficiency and knowledge creation. Then the inability of Nigerian Agric-SMEs to understand or accept the benefits/impacts that are associated with ICT means they risk remaining uncompetitive. Utilising ICT as a means of improving organisational efficiency and knowledge creation, would enable firms of all sizes to innovate and gain access to new markets. ICT offers prospects for more business transactions due to its fast and accurate means of processing information. Even though the inability to use ICT deprives unskilled workers of their jobs sometimes, it still increases the efficiency and effectiveness with which businesses operate. The use of digital technologies in running businesses increases productivity, hence a country that is slow in adopting these technologies may not have a fast-growing economy. An increase in Agric-SMEs' efficiency would assist in developing new methods, products, markets and efficient new business opportunities.

6.3.3 Improved Communication & Facilitates Information Access

ICT provides speedy and convenient means of communication. The study reveals that ICT has influenced communication, especially in the areas of sending and retrieving information both within and across organisations. The use of ICT enables the Agric-SMEs to store customers' details, showcase their products, services and communicate with them online. This confirms that ICT provides an inexpensive medium for communication, as highlighted in the literature review. The utilisation of ICT enhances communication amongst employees and reduces co-ordination cost. It also provides a speedy medium for communication. For example, having internet service enables an organisation to send information in minutes via email. Also, Agric-SMEs can use the intranet to communicate with their other branches. Effective communication in every organisation is crucial to achieving the company's desired outcome. This finding is in line with the findings of other researchers in the literature review chapter (e.g., Konde, 2007; Apulu and Latham, 2009). Also, (Brynjolfsson & Hitt, 2000) describe ICT as a tool which helps to cut down the costs of coordination, communication, and information processing, and enables efficient service provision at lower cost. Again, Apulu and Latham (2011) confirm that ICT aids organisational planning and improves organisational communication and flexibility. Additionally, (Me, 2003) describe ICT as a technology that supports the communication and co-operation of "human beings and their organisations". For example, the use of email and other communication technologies can be used to communicate with customers, informing them about special offers as well as resolving customer complaints. The ability of organisations to communicate effectively with customers would enable a company to attain greater levels of competitive advantage.

The research findings affirm that the effective utilisation of ICT facilitates organisations access to information and improved performance. For instance, one of the Agric-SME specified that the company's manager is able to access the company's account balance anywhere in the world due to the adoption of an accounting software. This means that the company now always has access to timely and accurate information. ICT supports speedy access to and exchange of information, opinions, and shared interests. The ability to access and transfer information is critical for every company including Agric-SMEs, so as to fully compete in the present digital and knowledge economy. This position finds support from existing literatures such as (Sahlfeld, 2007) and (ERT Chiware & Dick, 2008). Sahlfeld (2007) asserts that the main importance of ICT to businesses in developing countries is its use in accessing timely and accurate information regarding the supply and demand of products and services in various markets. Whereas Chiware and Dick (2008) affirm that accessing business information has been greatly enhanced with the emergence of various information and communication technologies. ICT allows organisations to store, share and use acquired knowledge and know-how within the firm. Thus, for every Agric-SME in Nigeria, that intends to stay competitive, it is essential for them to embrace ICT so as to continue to have access to information.

6.3.4 Improves Planning, Increase Awareness and Profit

ICT helps companies to plan ahead as reported by some interviewees. The dairy/Livestock company (AbC) highlighted that; their company is able to use different types of ICT applications in planning the execution of various projects well ahead of time before their actualisation. ICT helps organisations and its employees acquire skills, to plan, or put together actions that must be practiced in order to achieve organisational effectiveness, which is the outcome and benefits of knowledge creation. For example, the use of ERP software helps in the area of capacity planning, material planning, supply chain planning, procurement planning and so on. With the knowledge acquired, Organisations are able to focus on how to minimise risks with the help of ICT. This is because the organisations are able to always gain access to information using the internet. Having access to information also assists in managing the financial budget for a particular project and can determine the duration of such project, which is referred to as forecasting. Likewise, ICT supports organisations in the area of database management, production and inventory management, which together enable companies to effectively plan and focus on key issues or gaps that exist in a particular project, thereby leading to an effective management of companies' businesses. This perception is consistent with the findings of other studies (e.g., Apulu and Latham, 2011) which agreed that some organisations focus on using technology to minimise risks and help in organisational planning, improving organisational communication and flexibility.

The adoption of ICT can also play an important role in increasing the awareness of companies' potentials. It also helps to create awareness of the services that are being offered by a particular company. The utilisation of ICT enables some Agric-SMEs to feel competent about their services. Likewise, it offers Agric-SMEs the opportunity to advertise themselves which in turn enables customers to know about their existence especially if the SME has its own website. The literature review confirms that awareness has a positive influence on an organisation's inclination to adopt ICT (Tarafdar & Vaidya, 2006a). Insights from the study reveal that every organisation aims to make a profit and investing in ICT has enabled some of the Aric-SMEs to increase profit without having to invest in more employees. This may be because companies use ICT to obtain vital information

regarding their sales target. A World Bank report in (2006) acknowledges that firms which utilise ICT grow faster, invest more, and are more productive and profitable.

Insights from the study uncovered that the adoption and effective utilisation of ICT brings about business confidence. The ability to conduct businesses online provides some sort of confidence for organisations, especially SMEs. This is because the internet opens a gateway of opportunities for many organisations. Having a website enables companies to share business information, maintain business relationships, and conduct business transactions via various ICT networks. Although a number of Agric-SMEs are concerned about the security issues relating to online business activities, quite a number of the SMEs have testified that there are advantages associated with them. Furthermore, some Agric-SMEs are also concerned about the cost involved in maintaining a website, which gives credence to (Poon & Swatman, n.d.) argument that it is difficult to ascertain the costs of maintaining a website. Nevertheless, (Porter, 2003) states that the internet is a critical factor that improves a business's commercial success as well as its operational efficiency. Hence, having a website could assist in improving the overall business process in an organisation. Undoubtedly, not all businesses are going to reap the same benefits from the internet, thus, there is a need for businesses always to determine if the above advantages outweigh the disadvantages of owning a website. It was observed that one of the firms decided to computerise their organisational processes, own a website and sets up an ERP system in order to effectively manage their business and use e-mail to efficiently communicate with customers. This simply means that having a website can be regarded as a strategic tool that gives SMEs a competitive edge and helps in determining a firm's position in the mind of their customers which brings about business confidence.

In spite of the positive impacts of ICT on organisational performance of Agric-SMEs, as revealed by the study, based on their effective utilisation, there are still a number of factors that were raised by interviewees which negatively affect their organisational performance. Interestingly, several the issues described by the interviewees have also been identified as reasons behind the non-adoption of ICT amongst several the Agric- SMEs. A respondent stated that over-dependence on technology could negatively impact on a company's organisational process as sometimes when there is power outage or internet failure employees are unable to carry out their tasks. Systems unavailability can create chaos in organisations especially when users rely solely on those systems. For example, if a system is unavailable or users cannot access information even if the system appears to be operational or when a system is slow and cannot work efficiently, it can frustrate end-users. It is wrong to assume that a company would never experience system failure. Thus, it is advised that organisations put measures in place or become conversant with various manual approaches for carrying out tasks in case there is system failure. The overdependence on technology can have unintended adverse consequences on business operations which is why there is a need for Agric-SMEs managers especially, to create awareness or enlighten employees of these sorts of issues in all organisations. Companies should adopt strategies that would assist them to deal with system downtime effectively always.

One manager suggested the need for software developers to design applications that are not very complex. The respondent urged software developers to design packages that would be easy to use and for the developers to always provide a manual as a guide. It is known that Agric-SMEs regularly face the challenge of limited resources, hence after purchasing a software package, some SMEs would find it extremely difficult to hire consultants that can teach them how to use it. This can even discourage some Agric-SMEs from purchasing the software package if they realise it would be difficult for them to operate without some form of external support. In addition, the issue regarding ISPs was identified by a respondent who

described the present stage of ISP service in Nigeria as elementary due to frequent internet disconnections, as discussed earlier. Besides, some respondents mentioned that ICT infrastructures are energy consuming and also the perilous electricity constraints in Nigeria currently, have made it extremely difficult for some Agric-SMEs to effectively utilise ICT.
Other issues, such as the economic situation of Nigeria, were highlighted by a number of interviewees who stated that it affects the overall status of some of the Agric-SMEs' businesses in Nigeria. Fuel scarcity, animal feeds, tractors and farm implement also hampers greatly the performance of Agric-SMEs and other logistic challenges, often makes it difficult for employees and companies to travel and move from one place to another in order to carry out their businesses. Moreover, most of the generators that are used to generate electricity use diesel/petrol. Nigeria is Africa's largest producer of oil (see Chapter 4) and the importance of fuel to Nigeria's economy cannot be overemphasised, yet the country still imports fuel and petroleum products, yet still often fails to meet the demand of its citizens with the required amounts of supplies of petrol thereby making scarcity unavoidable which affects many businesses, especially SMEs. Again, infrastructural inadequacy, such as bad roads, hinders many SMEs especially in the aspect of transferring their farm products from one location to another. In most cases the drivers spend several hours or days trying to reach their destinations which cause huge delays and loses for small businesses.
The case of corruption in Nigeria was also highlighted since it greatly affects Nigerian SMEs. This comprises illegal payoffs, government officials extorting money for one form of tax or other, and so on (multiple taxation). Some interviewees made mention that often truck drivers are forced to pay bribes to law enforcement agents. This finding conforms to that of (Dike et al., 2015) study which describes corruption as more or less the way of life for Nigerians. Dike (2015) stresses that in Nigeria, it is an acceptable practice to hold out a hand for a bribe. Again, the much-emphasised problem with ISPs' poor services and high subscription charges in Nigeria currently, were mentioned by some of the interviewees. Finally, an interviewee from the Agric-SMEs company (AbG) highlighted that the cost of deploying ICT is usually very high and that only a few Agro companies deploy ICT to a level close to theirs as at the time of the interview. The reason could be because many Agric-SMEs do not meet their sales targets which can discourage most of them from deploying ICT even though SMEs try to always manage their limited resources.

6.4 Knowledge Acquisition & The Impact on Productivity

Skills deficiencies and lack of knowledge are other factors which prevent the adoption of more sophisticated ICT solutions in several Nigerian Agric-SMEs. Most especially, some SMEs refuse to adopt ICT due to the lack of skills amongst its employees. This validates (Alam & Mohammad Noor, 2009b) study which identifies the lack of suitable technical skills and managerial staff with sufficient ICT expertise as a major barrier for Agric-SMEs in terms of adopting ICT. The authors establish that SMEs always lack skills amongst their workforces. Similarly, Apulu et al. (2011) in their research involving 25 SMEs, identified skills deficiencies as a contributing factor hindering a number of SMEs that have successfully adopted ICT from further adopting more sophisticated ICT solutions. Therefore, employees' technical skills and knowledge acquisitions are crucial to improving productivity and efficiency in an organisation, with the adoption and effective utilisation of ICT.

In Nigerian educational institutions, computers are rarely used for teaching purposes as there is a late introduction to the use of computers and internet services. Given that technical skills are required for ICT adoption and utilisation in SMEs, it is vital that SME owners/managers develop strategies that would assist them to overcome the problem of skills deficiency. Similarly, (Arendt, 2008) comments that the deficiencies that appear in SMEs not only include technical abilities but also management skills. The author further comments that SMEs are reactive in their training activities, and they usually do not develop training plans. In other words, it is important for owners/managers to determine their employees' ICT skills as knowledge gained or previous experiences may influence the decision to adopt more sophisticated ICT solutions and effectively utilise them.
Moreover, a manager or owner's prior knowledge of ICT would definitely increase the opportunity of utilising it. (Reynolds et al., 1994) stresses that small business owner-managers are unlikely to adopt more sophisticated technologies if they are not familiar with the basic ones. This means that the lack of skilled employees can prevent Nigerian SMEs from effectively utilising sophisticated ICT solutions in their companies. Therefore, having skilled employees in SMEs and the requisite ICT knowledge would not only assist these SMEs to adopt more sophisticated ICT solutions, but could also bring about further development in their businesses.

Furthermore, even though most of the non-adopters who participated in the survey had a positive view about the use of ICT, still they indicated that their lack of knowledge on how to use computers remains a major issue for non-adoption. Insights from the literature review confirm that the lack of knowledge on how to use technology and low computer literacy are factors that can prevent the adoption of ICT (Chibelushi et al., 2011). Lee and Kim (2004) also state that the lack of technological knowledge amongst employees and their management incapability can be a barrier to the adoption and extension of information systems. The authors further state that some SME managers are concerned about the introduction of ICT, as a result of the fear that their employees might not be familiar with it. Thus, the acquisition of relevant knowledge and technical skills should be regarded as critical success factors in small enterprises.

Based on the findings, respondents in each of the Agro SMEs were requested to comment and respond on the importance of knowledge creation on their company's organisational performance and productivity. The responses to this question are similar to a great extent to the responses that were given regarding their reasons for adopting ICT. One of the companies is of the opinion that knowledge creation is helping them stay competitive, improve performance, increase productivity, and remain relevant in the challenging business environment. Also, according to some of the Agric-SMEs IT managers, *"ICT is positively associated with Agric-SMEs learning process and performance". "In this Nigerian economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is KNOWLEDGE. When the markets shift, technologies proliferate, competitors multiply, and products become bad and obsolete almost overnight. Successful companies are those that consistently create new knowledge, technologies and disseminate it widely throughout the organisation, and quickly embody it in their products". "The world is going digital and moving virtual now, and ICT adoption improves knowledge creation, which could bring about competitive advantage to SMEs. The overall strategy is hinged on the level of competition and the availability of new ICT farm techniques that are tailored to our organisational goals and objectives". "Efficiency is enhanced because you do not have to look through several documents spanning years to*

generate data which may be prone to human errors. It has brought a lot of competitive advantage and innovations to our operations. In other words, huge significance in terms of skills acquisition and competence has been achieve through knowledge creation and management". "Knowledge creation is key to human capital development in any business endeavour, it has it's both positive and negative impacts. Negative in the sense that you may spend so many resources on staff training and acquiring skills, at the end of the day, they still find excuses to resign to join other competitor or decide to leave to set up their own business".

Also, IITA (International Institute for Tropical Agriculture) a research institute based in Ibadan-Nigeria, offers a range of capacity building opportunities to meet the needs of agricultural professionals and businesses in Nigeria and from across sub-Saharan Africa. Below are some training opportunities;(IITA, 2022).

- Graduate fellowship
- Short-term training
- Interns and volunteers
- Sabbaticals
- Graduate scholarship

IITA recognizes the importance of capacity development in strengthening research for development (R4D). Since its inception about 50years ago, IITA has supported formal and informal training activities as part of their strategy to support Agric-businesses, improve food security and reduce poverty in the African region. Thousands of professionals and Agric-businesses in sub-Saharan Africa, particularly in Nigeria, have profited from IITA's capacity development program and many more benefit indirectly through knowledge these professionals have in turn passed on to others. IITA offers capacity development to international program partners to aid the improvement of research practices and knowledge creation. The overall goal of our training activities is to strengthen the capability of partners in the national agricultural research and extension systems. Our training activities facilitate research collaboration between IITA and the NARES, ultimately allowing those involved to conduct research in their own regions. (IITA Bulletin, 2022). IITA uses a mix of training approaches, from individual short-term and long-term courses to group training opportunities. Individual training activities include the Graduate Research Fellowship Program (GRFP), and Undergraduate Internships. These comprehensive training offerings comprise of graduate research, individual attachments, and the development and distribution of group training course materials. The Institute also assists in upgrading the skills of national scientists by actively engaging them in our R4D projects and through our non-degree training programs. In addition to increasing the pool of trained personnel, these activities also build strong personal bonds that facilitate research collaboration and ongoing information exchange. Our sabbatical opportunities offer national scientists the chance to interact and collaborate with our researchers and Agric businesses more closely on important ongoing projects. Internally, we continue our rich training tradition by enabling staff to acquire new knowledge and skills through staff training and development programs, thereby extending same to field officers. These programs improve their work, attitudes, and performance, and help to build capabilities for new and higher responsibilities. Capacity development is continually needed in Africa and Nigeria in particular, and IITA is committed to providing wide-reaching training through knowledge acquisitions, that meets this need. We are constantly working to improve and expand the knowledge base in the agricultural

sector of sub-Saharan Africa as a part of our wider strategy and as a part of our longest ending goals to tackle poverty and hunger in Africa. (IITA Bulletin, 2022).

6.5 Organisational Success Strategies

As a strategy, the government should as a matter of deliberate policy and responsibility, from time to time, conduct training sessions that will educate farmers and Agric-SMEs on the importance of modern methods of managing Agric businesses. It should make specific provisions to complement existing initiatives for SMEs, with new strategies aimed at upgrading them. Trainings and skills acquisitions that are sector-specific should be put in place by the government which will focus on the needs and practical problems of Agric-SMEs. Also, there is need for the government to make ICT related skills and technology form part of the curriculum in educational institutions. It has been identified that lack of knowledge and technical skills limit the ability for SMEs to adopt ICT applications which can potentially improve their business processes. However, in most cases while SME managers typically have a high-level of understanding of their business and operational processes, they often lack employees with the right experience and skills necessary to utilise ICT, especially the sophisticated ICT solutions. Thus, the government must give selective and special support to Agric-SMEs in Nigeria, in order to enhance their core competencies in terms of management and technical skills.

Having the right skills is a part of the strategic requirement for every organisation. Likewise, SMEs owner-managers must ensure they adopt the right skills and identify the roles which the skills will play in making sure they are successful in leveraging ICT. Managers should also be conscious of staff development and training and, if possible, establish a unit to serve such a purpose. Training of staff and knowledge creation should be an ongoing process or should be done on a regular basis. After all, if a company possesses some sophisticated ICT systems but not all the systems are integrated and the employees are not fully trained on how to use the systems, then it means they will be under-utilised. Since ICT proficiency is essential for all companies to effectively participate and engage in modern society, there is a need for owner-managers to conduct training sessions for employees as this will assist in creating awareness of the benefits of adopting ICT in organisations. Besides, continuous national programme to upskill owner managers' knowledge of ICT can play an important role in enhancing the further development of SMEs.

Insights from the interviews also suggested that the non-adoption of ICT could be attributed to the lack of awareness amongst owner-managers. Apulu and Latham (2009) highlight that a number of SME owner-managers in Nigeria are not familiar with the conceptual basis and potential benefits of adopting ICT. Similarly, (Chibelushi et al., 2011) in their research on SMEs in the UK highlight that lack of awareness could hinder SMEs from understanding the potential benefits that are associated with new technologies which can enhance their efficiency and increase productivity. (Tarafdar & Vaidya, 2006b) state that awareness has a positive influence on an organisation's inclination to consider new ICT. This suggests that the owner-managers' personal characteristics play a vital role in technology adoption, as agreed by (Chibelushi et al., 2011). Levy et al. (2002)

also mention that the major factor in increasing investments in IS/IT is the owner's enthusiasm. Additionally, the interview results clearly suggest that managers with relevant training are more likely to run successful businesses as compared to their untrained counterparts. Many Agric-SME owners or managers in Nigeria are still not prepared to face changes in the business environment and plan appropriate changes in their company's use of technology due to their lack of awareness, thereby placing a heavy reliance on external advice and support. Managerial decisions regarding all aspects of ICT are central to the success of a company and cannot be made without the manager being aware of the available options.

Owner-managers' of SMEs should set good examples in acquiring ICT knowledge and skills and endeavour to motivate their employees to do the same, since enthusiasm for technology by owner-managers plays a major role in motivating employees to adopt. Consequently, owner-managers' awareness of the potentials of ICT needs to be developed. Therefore, the government should set up programmes that will stress the importance of managerial skills and knowledge of owner-managers as a way of increasing their awareness of the need to effectively utilise ICT. It is important to note that owner-managers' personal skills and mind-sets would greatly influence the organisational culture of many SMEs. After all, if the owner-manager is unaware of the relevance of ICT it will be difficult to adopt ICT and use it as a tool. Hence, owner-managers should also be enlightened by the government on how to conduct training courses for their employees. To encourage a higher adoption rate of ICT amongst Agric-SMEs, the government or relevant authorities must seriously focus on awareness and training programmes for owner-managers. The potential benefits of ICT in Agric-SMEs can only be realised if the owner-managers implement them wisely.

In conclusion, it should be noted that the adoption and utilisation of ICT must be aligned to the type of business. Aligning the ICT strategy with the business strategy will ensure that ICT is used to deliver Agric-SMEs' goals and objectives. The strategic alignment of ICT with business strategy can also offer SMEs an opportunity to internationalise and be transformed into knowledge-driven businesses in the present-day knowledge-based economy. The research has shown that the lack of electricity supply and basic infrastructures has an adverse effect on Agric-SMEs in their quest to utilise sophisticated ICT systems in modern day mechanised farming and business. Also, lack of capital as a result of inadequate financial support from the government and most especially commercial banks affect many Agric-SMEs in Nigeria. Modern Agric business is capital intensive. To this end, credit must be given to the present-day government of Nigeria for its initiative and support to the Agric-sector through the central bank of Nigeria (CBN)-Anchor Borrowers Program (ABP) to farmers.

The Central Bank of Nigeria (CBN) in line with its developmental function as enshrined in Section 31 of the CBN Act 2007, established the Anchor Borrowers' Programme (ABP). The Programme which was launched by President Muhammadu Buhari (GCFR) on November 17th, 2015, is intended to support and create a linkage between Agric- anchor companies involved in the processing and small holder farmers (SHFs) of the required key agricultural commodities and challenges. The programme thrust of the ABP is provision of farm inputs in kind and cash (for farm labour) to small holder farmers to boost production of these commodities, stabilize inputs supply to agro processors and address the country's negative balance of payments on food. At harvest, the SHF supplies his/her produce to the Agro processor (Anchor) who pays the cash equivalent to the farmer's account. The Programme evolved from the consultations with stakeholders comprising Federal Ministry of Agriculture

& Rural Development, State Governors, millers of agricultural produce, and smallholder farmers to boost agricultural production and non-oil exports in the face of unpredictable crude oil prices and its resultant effect on the revenue profile of Nigeria. The core of the Programme is to provide technical support and loans (in kind and cash) to smallholder farmers to boost agricultural production, acquire skills and knowledge, create jobs, reduce food import bill towards conservation of foreign reserve. Etc.

The broad objective of the ABP is to create economic linkages between smallholder farmers and processors with a view to increasing agricultural output and ensuring food price stability.

- The CBN stated that it would increase banks' financing to improve agricultural productivity by creating an ecosystem that drives value chain financing.
- The CBN would bear 50% credit risk after satisfactory evidence that every means of loan recovery has been exhausted by the PFI.
- The CBN may vary the risk-sharing ratio based on the specific peculiarities/prospects of the Anchor/Project.
- For losses arising from the negligence and/or inaction of the PFI in the execution of any project, the PFI shall bear the full risk and financial losses thereof.
- The PFI shall foreclose on pledged collateral one year after expiration of the initial facility and the risk-sharing ratio prescribed above shall apply on the amount net in default.
- The maximum loan limit for each eligible farmer under the Programme shall be decided based on CBN ratified Economics of Production (EOP) and validated land size. Repayment shall be by produce and/or cash as may be prescribed by the CBN.
- The loans granted under the Programme shall be fully repaid within the tenor of the facility.
- Where the facility was accessed through a Commodity Association, the leadership of the Association shall be responsible for full repayment of facility granted to its members.

According to the CBN, the revised Guidelines will address current realities, challenges, and developments in the Agric-Business sector, Anchor Borrowers' Programme, aimed at promoting best practice in the implementation of the Programme. (Development Finance Dept CBN, 2020).

So far, the discussion has shown that there are more challenges and external factors that are currently affecting and preventing many Nigerian Agric-SMEs from adopting and effectively utilising ICT. Because poor services provided by ISPs, lack of infrastructural facilities and lack of transparency due to the high level of corruption in the country, lack of ICT skills amongst employees and lack of awareness amongst some owner-managers militate against SMEs' advancements in Nigeria.

The present era of globalisation requires businesses to adopt strategies that would enable them to operate on a global scale and utilise sophisticated or specialised technologies to carry out their operations. (Turan & Urkmez, 2010) also state that adopting new or sophisticated ICT is very important as it initiates the movement for a higher quality and competitiveness of SMEs. Hence, in order to work out proper success strategies for Nigerian SMEs in relation to the

adoption and effective utilisation of ICT, there is need to highlight the internal and external factors that affect them. These factors if resolved can assist in the further expansion of their businesses. The findings have also led to the development of a framework which suggests possible success strategies that could assist these SMEs to adopt and effectively utilise both basic and sophisticated ICT solutions since the further development of Nigerian SMEs would play a vital role in the country's economic growth. Meanwhile, other factors that affect the further development of Nigerian SMEs in general, such as the poor state of roads networks, were identified in the research; nevertheless, the framework concentrates mainly on strategies that would increase the take-up of ICT.

6.6 Learning Orientation (LO)

The new organization that emerges will need to possess greater knowledge, flexibility, speed, power, and learning ability to better confront the shifting needs of a new environment, more demanding customers, and smarter knowledge workers (Stephen M. Soffe et al., 2011), p. 2). Majority of the scholars view organizational learning as a process that unfolds over time and link it with knowledge acquisition and improved performance. Learning orientation has proved to be elusive over the past few decades because of several meanings and conceptualizations. Learning orientation is an organizational characteristic that reflects the value that a firm place not only on adroitly responding to changes in the environment but also on constantly challenging the assumptions that frame the organization's relationship with the environment (W. E. Baker & Sinkula, 1999). Learning orientation (LO) stands for the tendency of the organization to create and apply knowledge in an organization (Vij & Farooq, 2015). Vij and Farooq (2015) found that LO is an important predictor of business performance which is more pronounced in smaller firms than larger firms. The successes are obvious. Organizations that learn faster will be able to adapt more quickly and thereby achieve significant strategic advantages in the global world of business.(Calantone et al., n.d.) conclude that learning orientation affects firm performance and firm innovation capability mediates the relationship between learning orientation and business performance. However, organization age moderates the relationship between learning orientation and firm performance. (W. E. Baker & Sinkula, 1999) conclude that effect of learning orientation on organizational performance is mediated by market orientation. LO is the tendency towards a strong commitment to knowledge, open-mindedness and shared vision. Organizations believe that learning is only a matter of shared vision, optimism and providing training to their workforce. This statement is equivocal in nature as it may change the preferences of the customers. The organizations need to shift their focus from organizational learning to learning organization by conducting training and development programs, workshops, and seminars so that these organizations will be able to adapt themselves to this knowledge-based economy. Learning provides the scope for development of knowledge, skills, and abilities to stay ahead in this competitive environment. There are several ways to conceptualize the relationship between learning orientation and KM. (W. R. King et al., 2009) opines that organizational learning focuses on the process, and KM focuses on the content of the knowledge that an organization acquires, disseminates, processes, and uses. KM has an organizational form that corresponds, at least loosely, to the idea of the idealized learning organization (Firestone & Mcelroy, 2004). The literature suggests that learning orientation is the determinant of KM (Garvin, 1993; Baker and Sinkula, 1999; Vij and Farooq, 2015).

6.7 Knowledge Sharing (KS)

Knowledge sharing orientation is defined as the "tendency in the organization to facilitate, encourage and reward knowledge exchange with the motive of capturing tacit and explicit learning gained by the employees (Vij and Farooq, 2014b). Knowledge sharing is defined as the belief towards exchanging knowledge, insights, and skills in an organization (Lin, 2015). Knowledge sharing is an important predictor of KM (Farooq, 2018). Knowledge sharing is one of the major challenges faced by many organizations in the field of KM as most of the workforce tends to hoard the knowledge with the rest of an organization. However, knowledge sharing activities are sustained by knowledge-based systems including organizational memory. Organizational memory, organizational culture and reward, and trust are one of the critical success factors that encourage and motivate the employees from bottom to top and vice versa to share the knowledge. However, knowledge can be both subjective as well as objective, the former is personal, context-specific, and not so easy to communicate to others which are often referred to as tacit knowledge which cannot be easily codified while as later is objective in nature, not so difficult to process with computers which are referred to as explicit knowledge. Knowledge sharing is an important predictor of business performance and knowledge sharing is equally important for both manufacturing and service organizations. The study further concludes that organizational culture, structure, reward systems, motivation, trust, management support and ICT are the significant determinants of knowledge sharing (Farooq, 2018).

The integration of both tacit and explicit knowledge creates the knowledge spiral which is referred to as knowledge sharing. According to Vij and Farooq (2014a) "knowledge sharing orientation is the critical means through which employees can contribute to knowledge application, innovation and ultimately the competitive advantage". It is the sharing of knowledge that will allow the generation and transfer of ideas that enable resources to be used efficiently and benefit the organization (Boumarafi and Jabnoun, 2008). Wang et al. (2009) conclude that knowledge sharing is an important dimension of KM orientation. The quintessence of knowledge sharing is to mobilize knowledge because effective KM requires a constant flow of knowledge (Wang et al., 2008). Lin (2015) suggests that knowledge sharing positively affects KM orientation. Tuan (2016) argues that knowledge sharing is a means to make an organization knowledgeable, leading to its superior performance and external positioning. The question arises which strategy organization should use to share the knowledge in an organization. The firms adopt two types of strategies to manage the knowledge, in some firms; the strategy focuses on the systems or computers. Where knowledge is easily codified and stored in the form of documents so that it can be easily available for use in the firm which is often referred to as codification strategy. In other firms, the knowledge which resides in the minds of the people and is difficult to codify is known as personalization strategy.

6.8 Organisational Memory (OM)

Organizational memory is an organizational mechanism that captures, stores, and disseminates knowledge learned from previous experience that can be brought to bear on decisions (Wang et al., 2008). Organizational memory is a kind of codification strategy where explicit knowledge is being stored and memorized on an organizational level. Organizations gather the knowledge and then knowledge is being stored in the form of databases and documents and decision-making is taken into consideration. Organizational memory is defined as the acquisition, storing, dissemination and retrieval of information by individuals. Organizational memory operates in the same way as the human mind. (Chirumalla & Parida, 2016) opine that many organizations consider knowledge reuse as a major justification for KM and effective business performance. (Watson & Hewett, 2006) suggest that firms can leverage knowledge by reusing the existing knowledge that is codified in a knowledge repository to gain competitive advantage. According to (Jennex & Croasdell, 2003), organizational memory can be defined as the way an organization stores organizational knowledge and applies it to present activities. The knowledge, which is created, or which resides in the minds of the people so-called tacit knowledge is converted into explicit knowledge also called codification strategy. Organizations cannot store all the knowledge which has been created rather they have to be selective in their approach to retaining important knowledge and ignoring other redundant knowledge which can create the value in the long run. Firms which consider information technology as a valuable resource can gain a competitive advantage by adopting and implementing the information technology systems which can reinforce the structures and processes, and which ultimately enhances the performance of an organization (Farooq, 2016b). Hansen et al. (1999) opine that companies that use knowledge effectively pursue one strategy predominantly and use the second strategy to support the first. We think of this as an 80–20 split: 80 per cent of their knowledge sharing follows one strategy, 20 per cent the other. Hence, the firms with robust organizational memory can enhance their business performance by adopting the codification strategy. The literature suggests that organizational memory is positively related to KM (Jennex and Croasdell, 2004; Wang et al., 2008, 2009; Vij and Farooq, 2016).

6.9 Knowledge Reuse

One of the important themes in KM is the use of information systems in the sharing of knowledge between users and non-users. Each type of reuse may have different requirements for knowledge repositories and rouser's requirements often remain unmet. If quality dimensions are associated with these repositories, it may help refusers to identify the repositories that best suit their needs (Rao & Osei-Bryson, 2007), p. 370). By reconfiguring and reusing foreground and background knowledge and reusing the available assets and different sets of interaction, an organization can build a new asset of knowledge (Penzel et al., 2007) identifies four types of knowledge reuse situations including shared work producers, shared work practitioners, expertise-seeking novices, and secondary knowledge miners. Knowledge creation is regarded as significant and difficult to manage and knowledge reuse is also a matter of great concern that leads to the better organizational performance. The researchers are equivocal about the findings of the knowledge reuse. The knowledge reuse process starts with the creation of knowledge, storing of knowledge and dissemination of knowledge. Knowledge creation is the more important and vital aspect of whole KM process.

Knowledge creation is not an easy task as different communities of practices are formed by a group of people who participates in a process of collective learning. Knowledge reuse is considered as an intermediate outcome that enhances work performance. The outcomes include faster, better and less costly service, as the reuser does not have to reinvent solutions already present in the repository (Kankanhalli et al., 2011)p. 108). Capturing and documenting knowledge can happen in four ways: First, it involves the different communities to learn and share their knowledge which can be later searched. Second, documenting knowledge for possible re-use can happen with a structure using brainstorming facilitated using electronic meeting systems. Third, documenting knowledge needs the technical infrastructure, and fourth documentation involves the purifying, indexing, packaging, and sanitizing knowledge for later re-use (Markus, 2001). Storing knowledge in the form of documents or objects requires a lot of effort and resources. Knowledge gained by individuals, converted into documented or electronic form, stored in a repository for public access and knowledge seekers search and explore this knowledge from the repository. Knowledge dissemination involves the sharing of knowledge which is stored in the form of databases as it involves the willingness to share the knowledge. There is a lot of time and resources involved in organizing, storing, and retrieving the knowledge, the cost involved in capturing and retrieving and reusing the knowledge. Knowledge reuse requires the support from the top management including the availability of technical infrastructure which serves as the backbone for explicit knowledge. Majority of the studies developed a positive link between knowledge reuse and KM (Markus, 2001; Harsh, 2007).

6.10 Knowledge-Based View

A knowledge-based view of the firm evolved in the strategic management literature (Nonaka and Takeuchi, 1995). The knowledge-based view was first proposed by Grant (1996), the knowledge-based view is an extension of resource-based view proposed by Barney (1991 and was later extended by others including (Alavi & Leidner, n.d.) (1998. The emerging knowledge-based view is not, yet, a theory of the firm. There is an insufficient consensus as to its precepts or purpose, let alone its analysis and predictions, for it to be recognized as a theory (Grant, 1996). Knowledge is the important resource to gain and sustain competitive advantage. However, knowledge-based view raises many questions: What is knowledge, what are the different types of knowledge, how different types of knowledge improve the business performance? Knowledge is embedded in and carried through multiple entities including organizational culture and identity, routines, policies, systems, and documents, as well as individual employees (Alavi and Leidner, 2001). Even though resource-based view considers knowledge as a generic resource to gain competitive advantage, but knowledge-based view contends that resource-based view considers knowledge as a generic resource rather than having special attributes. It does not emphasize different KM capabilities including organizational memory, knowledge sharing, learning orientation and knowledge reuse. Knowledge-based resources including knowledge, skills and capabilities are difficult to imitate due to immobility and heterogeneity of resources. According to (Lin, 2015b), it is recognized that firm ability to exploit existing knowledge (knowledge stocks) and explore new knowledge (knowledge flows) are the main source of firm sustainable competitive advantage. Knowledge-based resources are difficult to copy and imitate as these knowledge assets may produce long-term benefits. These knowledge resources need to be explored and exploited for creating, storing, and disseminating the knowledge. Technical infrastructure (e.g., internet, intranet,

databases, and decision support systems) can play a vital in managing and enhancing knowledge within and outside the organization.

6.11 Competitive Advantage

The term competitive advantage refers to capability gained through resources including knowledge skills and abilities to perform at a higher level than its competitors. The concept of competitive advantage was introduced by (Porter, 2003) based on lower cost and differentiation. Porter published a book in 1985 titled, "Competitive advantage: Creating and sustaining superior performance", which emphasized three strategies including cost leadership strategy, differential strategy, and focus strategy. The book gained a lot of prominence in the 20th century. The major focus of Porter's strategy is the productivity growth. Knowledge is itself a generic resource which cannot be copied or imitated for gaining the sustainable competitive advantage. In an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge (Nonaka, 1991). In the present era of knowledge economy, organizations are continuously striving to create mechanisms for distinguishing themselves from their competitors. The four dimensions of the model described above should be viewed as a source of competitive advantage. Different research questions can be formulated, namely. Does knowledge share lead to the sustainable competitive advantage? Does learning orientation lead to the sustainable competitive advantage? Does organizational memory lead to the sustainable competitive advantage? Does knowledge reuse lead to the sustainable competitive advantage? Which dimension of KM leads to the sustainable competitive advantage? The KM process starts with the learning through communities of practices, sharing the tacit as well as explicit knowledge and then storing the knowledge in the form of databases and then re-using the knowledge which ultimately creates the sustainable competitive advantage. Knowledge is often regarded as a resource which is difficult to imitate and a major contributing factor towards sustainable competitive advantage. According to (Halawi et al., 2005), the sustainable competitive advantage is no longer rooted in physical assets and financial capital but in the effective channelling of intellectual capital. Knowledge is seen as a strategic asset to create a sustainable competitive advantage for the firm. The knowledge-based view of organizations extends the resource-based view of the firm proposed by Penrose (1959). One of the major apprehensions for the organizations is to sustain the competitive advantage. Halawi (2005) defines competitive advantage as the capability to earn returns on investment constantly above the average of the industry. Sustained competitive advantage can be created by following the value creating strategy which is not being implemented simultaneously by others.

6.12 Value Creation

Knowledge-worker productivity requires that the knowledge worker is both seen and treated as an "asset" rather than a "cost." It requires that knowledge workers want to work for the organization in preference to all other opportunities (Drucker, 1999). The view that knowledge embodied in new products and services has become the primary source of wealth creation and the source of sustainable competitive advantage is driven by a number of inter-related, apparently irresistible impulses of the new economy (Clarke, 2001). Organization's ability to create new knowledge is regarded as a primary source of a competitive advantage already today and increasingly so in the future and finding ways to actively support the process of organizational knowledge creation is, therefore, an activity that should be prioritized (Farooq, 2019). (Smedlund, 2008) suggests that intellectual capital including social capital, human capital, and financial capital forms the knowledge which offers the organization its value and the organizations uses this knowledge to make a profit. Value creation is knowledge-intensive and delivered by highly educated employees, who are frequently closely linked with research and scientific development within their area of expertise (Løwendahl et al., 2001). Research which focuses on knowledge as a possible source of innovation and value creation can enhance their organizational performance. It is not the stock of knowledge that provides the organizations with a competitive advantage, but the way knowledge is applied in creating value. When both tacit and explicit knowledge is combined into unique processes at an organizational level, core competencies may be developed which creates the sustainable competitive advantage (Lowendahl et al., 2001). Value creation process in KM starts with input process-output. Employees and their contributions as input in knowledge value creation, the knowledge created by the employees also called tacit knowledge is processed by retaining the necessary knowledge and excluding the other insignificant stock of knowledge. The knowledge which is processed is often converted into explicit knowledge whereby knowledge is stored and codified. Therefore, the knowledge value creation cycle continues. KM is an important predictor of value creation. Value creation process starts with an organizational learning whereby individuals and groups develop a shared vision, strong commitment to learning and open-mindedness to capture knowledge and make sense out of it. However, knowledge sharing is the critical success factor in improving the business performance by motivating and encouraging the employees to share their knowledge to create superior value and improve performance. Organizational memory facilitates connection and collaboration from any place and location to improve the access to new and existing knowledge. Knowledge stored or codified is often reused for creating meaningful products and services in order to gain a sustainable competitive advantage. The integration of learning orientation, knowledge sharing, organizational memory and knowledge reuse enhances the value creation and creates the superior business performance. Therefore, managing knowledge without improving the business performance and value creation can be problematic and may lead to competitive disadvantage.

6.13 Promoting Cashless Economy and Policy in Nigeria:

Electronic modes of payment have become the new channels for financial transactions worldwide. In the early years of business dealings and transactions, doing business and paying for goods, products and services required the physical presence of the parties involved in a physical store or office space. However, in recent times, the narrative has changed as people can now transact businesses and pay for goods and services right from their comfort zones using Internet-enabled devices such as computers, laptops and smartphones. This ease of

conducting business is made possible by electronic payment (e-payment) systems, which is also referred to as online payment system or cashless payment system. The payment system consists of infrastructure, procedures and standards put in place to ensure the exchange of monetary worth between two or more parties discharging financial or mutual commitments. The payment system links bank accounts with sellers and buyers and allows for easy monetary exchange (Summers, 2012). An electronic, online or cashless payment system is a system where monetary transactions are performed via digital devices such as internet banking, mobile wallets, debit and credit cards, electronic fund transfer and mobile payments (Muyiwa et al., 2013). Several e-payment systems have emerged with the advent of information and communication technologies (ICTs), which are electronic fund transfers, direct debits and credits, point-of-sale terminals and online or internet banking, among others. The development and sustainability of nations' economies rely on the promotion and implementation of a payment system that is readily available, convenient, easy to use, secure and affordable. This is premised on the fact that an effective and efficient payment system is the channel for the exchange of financial resources, which also provides useful information for important financial decision making. This makes nations develop and implement e-payment systems for seamless financial transactions needed for sustainable development and economic expansion. The Nigeria cashless policy, launched in 2012, was designed to upgrade the country's payment system (in conformity with the country's vision 2020), bring the cost and stress associated with banking transactions to the barest minimum, minimize the volume of paper money in circulation, improve the economy and the success of the monetary policy. The policy, through the advanced use of ICTs, helps to minimize the rate of physical cash movement in the country and facilitates easy and convenient transfer of funds, thereby alleviating the stress experienced and the time wasted in banks. The cashless economy, as explained by the Nigeria Inter-bank Settlement System Plc (2015, p. 15), was focused on 'reducing and not eliminating the stock of paper currency circulating within the economy'; hence, does not translate to eliminating cash transactions in the country but aimed at ensuring that cash-based transactions are drastically reduced.(Omotayo & Tony-Olorondu, 2023).

Several e-payment systems introduced by the Central Bank of Nigeria (CBN, 2013) have led to remarkable acceptance and increase in the use of online payment systems and have helped reduce the volume of physical cash transactions in Nigeria's economy (Adeoti & Oshotimehin, 2012; Faniran & Odumeru, 2015). The payment systems in use in Nigeria are card technology (smartcards, scratch cards, debit cards, credit cards, etc.); point-of-sale terminals, electronic payment platforms, automated teller machines (ATM), web transactions and e-money products, among others. Smart card technology enables seamless debit, credit and other financial transactions. Smartcards facilitate personal identification, data storage, application processing, authentication and effortless transactions. They are used for balance inquiries, fund transfers, generation of account statements, cash withdrawals and other transactions using ATMs, point of sale (POS) or online financial transactions. Many organizations in Nigeria such as educational institutions, government agencies, hospitals, public transit, healthcare and many more, have developed and adopted the use of smartcards for financial transactions because of their convenience and strong security authentication. The POS is an e-payment channel introduced in Nigeria to promote a cashless economy. POS allows ATM cards for payment of products and services and allows for online real-time access to bank accounts of cardholders via debit and credit cards. E-payment platforms such as Remita, Paga, PayPal, PaywithCapture, QuickTeller and e-Tranzact are dominant players in Nigeria's financial industry. These channels have made financial transactions a lot easier by reducing the need for people to join

long queues in banking halls or restrict people's financial transactions to banks' official work hours only. There are also various banks' ATMs that allow customers to complete financial transactions with or without the use of ATM cards. Quick self-service transactions such as cash deposit and withdrawal, funds transfer, bill payments, etc., can be performed by bank customers on the machines. All these platforms are being used in Nigeria for many financial transactions which also include the payment of electricity bills.

Online payment systems come with many benefits. These benefits are factors driving its fast adoption. Some of the identified benefits are reaching wider coverage of customers, more time-effective and efficient transactions, convenience, ease of use, safety, time and cost savings of transactions, decreased technology costs, easy monitoring of accounts for customers, as account balances and transaction history can be monitored anytime anywhere. The e-payment systems also help ensure effective use of the banking system as most cash transactions and exchanges pass through the banks, while it also allows for tracking of individual spending, reduction in the cost incurred for cash handling and printing of currency, as well as facilitating the design of electronic products by the banks. However, with the many benefits linked with the use of e-payment systems, their acceptance in developing economies is not encouraging (Eelu & Nakakawa, 2018). Major reasons adduced for the low usage included lack of security (Akudo et al., 2012; Barkhordari et al., 2017), low customer trust (Nguyen & Huynh, 2018; Barkhordari et al., 2017; Akudo et al., 2012), convenience (Akudo et al., 2012), lack of awareness, high transaction costs (Sidek, 2015), lack of or inadequate infrastructure, low ICT literacy level, high poverty rate and lack or insufficient legal provisions and government policies (Okifo & Igbunnu, 2015). Vulnerability to fraudsters, hackers and scammers, bad Internet services, the technophobic nature of users and loss of data and personal information, among others, are some other challenges to the adoption of online payment channels in Nigeria (Akudo et al., 2012; Faniran & Odumeru, 2015; Igudia, 2017; Okifo & Igbunnu, 2015). These challenges make many prefer cash rather than online transactions as they are discouraged from using online payment systems for their transactions to avoid loss of data and money. Many purchasers and sellers of goods and services in Nigeria, especially in rural areas, still engage in high cash transactions. Another barrier to online payment adoption relates to the non or low computer skills of consumers as many consumers are low tech-savvy.

6.14 Cashless Policy and the Nigerian Economy: A Disaggregated Approach

Over the years, the Central Bank of Nigeria (CBN) has engaged in series of reforms aimed at making the Nigerian payment system formidable. These reforms were meant to enhance the overall economic performance of Nigeria so as to place it on the right path and in tune with global trends. Since Nigeria's independence in 1960, successive reforms such as the change in economic and banking policies mainly targeted at stabilizing the economy have been channelled at enhancing social welfare and achieving other economic developmental goals. The introduction of mobile banking, electronic banking and online transactions (cashless policy) in Nigeria has paved way for a new era of development where the use and demand for physical cash is gradually declining. The increase in emerging Information Technology (IT), has made banking services become more and more automated and less paperwork than in the past as averred in the Central Bank of Nigeria (CBN) reports. Banks in Nigeria have realized that they would soon go out of corporate existence unless they keep with the pace at which Information Technology (IT) has redefined the creation of value and worth for their customers (Austin, 2016). The recent evolution of information technology in the Nigerian financial institutions possess interesting questions regarding the current economic status, logistics, and

availability of instruments to guarantee economic growth and stability in the era of cashless policy. The cashless policy was aimed at curbing some of the negative consequences associated with the usage of physical cash in the economy, including high cost of cash, high risk of using cash, high subsidy, armed robbery, inefficiency as well as corruption (CBN, 2011). Some analysts (Austin, 2016; Muhammed (2012), Klee (2004); Swartz (2016) suggested that the increased use of cashless payment system has led to the predictions of a cashless society. (Agu, 2020)

However, before the inception of cashless policy reform, various payment methods have been used to purchase goods and services, starting with the trade by barter system of transaction. The trade by barter method of transaction has been the foundation for the introduction of paper money and coins to solve the problem of double coincidence of wants and the indivisibility faced by trade by barter. The use of paper money and coins were introduced to solve the various challenges associated with trade by barter.

Developed countries like US have enjoyed various advantages inherent in cashless policy which has prompted the Central Bank of Nigeria (CBN) to adopt the policy. The Nigeria's vision to be among the largest economy by 2020 has driven her to gradually move from a pure cash economy to a cashless economy. While cash and cheques are still prevalent in some parts of the world, electronic payment mechanism like mobile payments are gaining consumer acceptance in many economies due to the high penetration of mobile phone technology (Herzberg, 2003).

In view of being one of the best economies in 2020, the CBN started implementing the cashless policy in Nigeria since 2012. The Nigerian apex bank asserted reduction in crime rates, minimized risk associated with carrying huge sums of money, reduction in banking running cost, improvement in monetary policy management of inflation and the overall growth and development of the economy of Nigeria as advantages inherent in the implementation of the cashless policy. Nevertheless, before the introduction of cashless policy by the CBN in 2012, our financial institutions have been characterized by so many hiccups ranging from poor handling of physical cash, high cost of banking operation, leakages, money laundering and other financial related offences (Ademola, 2014).

Meanwhile, the poor implementation of cashless policy across the country has over the years contributed to high cost of cash movement and cash management by banks thereby impacting negatively on banks profitability in particular and economic growth in general. Most Nigerians are still unbanked as the slow adoption of cashless policy has as well slowed down the inculcation of savings habit necessary to encourage investment and boost economic activities and development of the aggregate economy (Nonor, 2011). The challenges of the relatively low adoption of the use of electronic payments have seriously affected the implementation of cashless policy by bank customers, the public as well as the commercial banks and other financial intermediaries. Some recent studies in Nigeria like, Adewoye (2013), Ajayi (2014), Alagh (2014) and Ashike (2017) could not directly examine the impact of cashless policy on Nigeria's economic performance using cashless policy variables such as value of ATM transactions, value of POS transactions and value of cheque transactions.("Cashless Policy and the Nigerian Economy: A Disaggregated Approach," 2020).

6.15 Summary

There is a need for Nigerian Agric-SMEs to embrace the state-of-the-art modern technologies, through skills acquisition, adopt and use ICT, in order for them to penetrate the international markets, improve output, productivity and remain competitive globally. Agric-SMEs are vital to the Nigerian economy, because of the present-day government policy on diversification and shift from over dependence on crude oil, which accounts for over 90% of Nigerian revenue. Therefore, there is the need for Nigerian government, all other groups and stakeholders to assist in resolving the challenges preventing Agric-SMEs from their adoption and advancement in ICT, now that ICT has become indispensable for all kinds of businesses. This chapter has presented an analysis and the benefits of adopting and use of ICT amongst Nigerian Agric-SMEs, leading to knowledge creation, acquisition and value creation that will facilitate a successful deployment of modern tools for modern-day farming. The analysis also depicts empirically, the contextual factors that prevent the implementation or upgrade of ICT use in Nigerian Agric-SMEs. The chapter also determined organisational benefits by way of knowledge creation that are associated with the utilisation of ICT as well as motivators for SMEs' decisions to adopt ICT. Knowledge is a critical determinant of competitiveness in a world economy given the prevalent globalisation and rapid technological advancement and change. Globalisation and the knowledge society are about electronic networking of people and resources available to them. These themes run on the wheels of information and communication technologies which when used strategically, have the potential to act as a social equalizer, increasing skills that can bring marginalised people into global conversation and create enormous economic opportunities for their families, their communities, and their nation. However, before any country can optimize its ICT potentials, it must develop a vibrantly structured ICT policy backed with an appropriate legal framework. Policies and strategies that support information communication infrastructures and skills development are critical to ensuring that equitable opportunities exist for all stakeholder's collaboration.

Wide ICT adoption and use can lead to improved value chain interactions and development for increased productivity in the Agric-SMEs Business sector. The value chain consists of the various users from development, production stage to the output and consumption stage. In this study, effort has been made to present a systematic review of the state-of-the-art ICT innovations within the Agric-SMEs sector in Nigeria.

However, of all the identified challenges, if properly addressed, could enable the further development of the Agric-SME sector in Nigeria. This will not only assist in increasing their competitiveness on a national level but also enable them to compete worldwide. Efforts should be made to reposition the power sector in order to improve the electricity supply in Nigeria. Nigerian Agric-SMEs will benefit from the effective utilisation of ICT only if the government implements initiatives that would help to establish a legal regulatory framework which will legitimately aid the adoption and effective utilisation of ICT amongst the SMEs. The regulatory framework would assist in eliminating factors affecting ICT adoption and thus, create a conducive business environment for Nigerian Agric-SMEs. Overall, in answering the research questions, the research findings concur with some findings in the literature review but call for a better understanding of factors affecting ICT adoption amongst Agric-SMEs in Nigeria, which are somehow unique. More importantly, Agric-SMEs should be given access to low interest rates and long-term loans by the government so they can have sufficient funds to use and grow their businesses.

CHAPTER 7 CONCLUSIONS AND RECOMMENDATIONS

7.0 Introduction

This chapter is aimed at concluding the research and provides an extensive explanation of the entire research, in analysing the effects of ICT Adoption and use on knowledge creation by SMEs and the identification of strategies that can assist in enhancing the adoption and effective utilisation of ICT in Nigerian SMEs, and Agric-SMEs in particular. The research further examines the challenges associated with ICT adoption and use on knowledge creation by SMEs in developing countries. Information and communication technologies (ICTs) potentially offer diverse benefits for developing and least-developed countries in Africa in relation to the production and dissemination of, and access to, knowledge and information. A major difficulty in discussing the application of computing technology in developing countries is that such countries as a group are quite heterogenous. Developing countries differ widely in both the extent to which they have introduced computer and networking technology and the extent to which the necessary infrastructure exists for exploiting the technology.(Ayim et al., 2022).

The goal two of the sustainable development goals (SDGs) enacted in 2015 is to end hunger, achieve food security, improved nutrition and promote sustainable agriculture in the world. To achieve this goal, strategies would have to be put in place by countries especially in the developing part of the world to meet up the 2030 deadline. To achieve sustainable agricultural goals in this modern age, the application and the importance of information and communication technology (ICT) cannot be under-utilized. Agriculture plays a significant role in economic and social development in most less developed and developing countries. Agriculture faces a range of modern and serious challenges, particularly in developing countries exposed to price shocks, climate change, poor policy direction and direction by governments, continued deficiencies in infrastructure in rural areas. Adequate dissemination of detailed information is a necessary condition for improvement of all areas of agriculture (Zhang et al., 2016). Empirical research also suggests that ICT has a positive impact on the development of any nation. Rational thinkers as human beings would prefer to engage in activities that would yield highest levels of utility. Information and Communication Technology (ICT) found its way into Nigeria territory few decades ago. Its dominance and influence on the economy of the country cannot be overemphasized. Research has shown that ICT has the largest market in Nigeria among other African countries (Ayo et al., 2010).

Nigeria has for decades placed enormous emphasis on diversifying its economy beyond oil and into sectors such as MSMEs, agribusinesses and manufacturing. Lack of progress on the diversification agenda could be blamed on weak implementation and misalignment of public spending, but it also reflects more profound underlying issues. For example, declarations that any particular sector should drive diversification without offering clarity on specific investment priorities and expected outcomes will not persuade budget holders to allocate development resources. The lack of clarity also deprives policy makers and practitioners of the information, inspiration, and conviction to develop and execute sector plans that could operationalize diversification.

There is the need to transform Agribusiness in Nigeria for Inclusive Recovery, Jobs Creation, and Poverty Reduction. Policy Reforms and Investment Priorities aims to provide that clarity by illustrating the potential of the agribusiness sector to accelerate inclusive growth, create jobs, and reduce poverty. Building on an early finding that this sector provides the best prospects for inclusive growth and more and better jobs, the research identifies the specific agricultural value chains with the highest potential to create jobs, reduce poverty, and improve nutrition outcomes. The findings demonstrate, however, that the value chains with the most

potential to pursue one policy objective are not necessarily as effective for other objectives, clearly calling for selectivity of value chains, depending on policy objectives.
The research also estimates the level of growth required to meet specific jobs targets and finds that the growth burden is lower when on-farm and off-farm segments of agribusiness grow in tandem and higher if either segment stagnates. It concludes that a whole-of-agribusiness approach that emphasizes coordinated investments between on-farm and off-farm segments is needed to enable the sector to meet its potential in creating jobs and generating inclusive growth.
With that whole-of-agribusiness approach in mind, the research next highlights the complex set of factors affecting the performance of agricultural value chains, distinguishing among issues that pertain to upstream primary agriculture, those that affect downstream off-farm agribusiness, and cross-cutting challenges. The agribusiness-enabling environment takes centre stage, focusing on identifying specific policy reforms to effectively regulate seed development and quality control, fertilizer quality control, warehouse receipts, agricultural trade, and land reforms for responsible and inclusive agricultural investments. Finally, the research identifies policy reforms and investment priorities to increase competitiveness in the priority value chains for jobs creation, poverty reduction, and nutrition enhancement among Agric-businesses.

7.1 An Overview of the Research

In today's economy, modern advances in ICT coupled with the need for improved business processes, increased efficiency, and the need for additional access to information have continued to motivate companies, including SMEs, to adopt and use various ICT solutions. There is much research on technology adoption, but most is focused on developed countries with few on developing countries especially in the sub-Saharan Africa region (SSA) region, for example like Nigeria. In developing countries and emerging markets generally, the adoption and effective utilisation of ICT is often hampered by factors such as lack of resources, lack of technological infrastructure amongst others as identified in chapters two and four of this thesis. The adoption of ICT and its effective utilisation amongst SMEs, especially in SSA countries, has remained low as reported by the Parliamentary Office of Science and Technology (2006). In Nigeria, there have been few attempts to precisely capture the actual situation of ICT adoption and utilisation in the SMEs sector based on empirical studies that can provide a good explanation of the existing situation. However, the findings of the research have provided a comprehensive report on the case of Nigeria with specific emphasis on some regions, south-west of Nigeria, south south and some cities in the south-east). The northern region and the middle-belt was excluded because of the high risk and rate of insecurity. Samples for the research were carefully drawn rather than randomly selected. The research integrated elements of previous studies in IS, e-business and so on with empirical data, to address the research concerns.
The overall purpose of the research has been to ascertain and analyse factors affecting the adoption and effective utilisation of ICT, including sophisticated ICT applications and systems in Nigerian SMEs and the Agric-SMEs in particular. Furthermore, the research is also aimed at knowledge creation as it relates to the benefits and effects of ICT adoption and use, identifying strategies which can assist in stimulating the adoption and effective utilisation of ICT by Nigerian Agric-SMEs. In the research, key motivators for and inhibitors to SMEs' decisions to adopt ICT have been identified, also Agric-SMEs' use of ICT with respect to competitive advantage and improving organisational performance has been discussed. It is intended that the recommendations put forward, based on empirical findings in the research, would help to provide a guide for Nigerian Agric-SMEs in increasing their take-up and adoption of ICT.

7.2 Overview of the Research Findings and Research outcomes

The research has played a significant role in investigating and analysing the effects of ICT adoption amongst some Agric-SMEs in Nigeria and the extent to which various ICT applications and systems, especially the sophisticated ones are utilised among firms. The key objective of the research was to analyse and determine the benefits of ICT adoption and use on knowledge creation and to identify strategies that could assist in resolving the challenges faced by Nigerian SMEs, especially the Agric-SMEs, with respect to ICT adoption and utilisation. Reviewing literatures in the area of information systems in general, and in particularly the area of ICT adoption among Agric-SMEs, revealed the lack of a success strategy that could serve as a guide in promoting the adoption and effective utilisation of ICT in Nigerian Agric-SMEs. In the research, the emergent themes of facts from participants in respect of their organisation's adoption of ICT and usage, were not framed by any specific theoretical perspective, since the purpose of the research was to analysing the challenges and effects associated with ICT adoption and use in MSMEs resulting in knowledge creation, human capital development and capacity building in developing economies, with particular emphasis on Agric-SMEs in Nigeria. The subsequent sections briefly present and discuss the significant findings of each phase, then examine whether the research aim, and objectives was achieved. The study's academic contribution and implications for practice are also discussed.

7.3 Achievement of the Research Objectives and Research Questions

The objective of the research which is to analyse and determine the importance and benefits of ICT adoption and use on knowledge creation by Nigerian Agic-SMEs, having identified strategies which led to the development of a framework that can assist in resolving the problems/challenges facing Nigerian Agric-SMEs with respect to the adoption and effective utilisation of ICT solutions including sophisticated applications/systems. The research found that some motivating and inhibiting factors that affect ICT adoption and utilisation amongst Nigerian Agric-SMEs are like those identified in existing literature whereas others are based specifically on the Nigerian context. Although, from the analyses of literature, an overall understanding on ICT adoption in SMEs was gained, most of the existing research are based on western and developed countries and their experiences. Fewer researchers have focused on the adoption and use of ICT in Agric-SMEs in developing countries.

The first research question considered to what extent does ICT adoption and use on knowledge creation benefit Agric-SMEs in Nigeria. The question was answered by the interview participants, as the research identified several key factors that motivate Nigerian Agric-SMEs to adopt ICT. They included, the need for information availability whereby individual farmers and companies are able to access information at all times, the need for effective communication within and outside the SMEs so as to increase collaboration with other companies, Agric-SMEs' desire to improve their individual company's efficiency or speed leading to improvement in the company's effectiveness, the desire of Agric-SMEs wanting to automate and update their company's records in order to increase accuracy and in some other circumstances, was due to the nature or type of their businesses. Also, ICT has become an indisputable and indispensable management tool, not only for large enterprises alone, but also for SMEs as well. However, the research also found out that many of the Agric-SMEs were eager to have some sort of competitive advantage by identifying strategies that would allow them to compete. Also, some of the Agric-SMEs were willing to increase their customers' satisfaction, through improve and quality products, hence they were motivated to adopt ICT in

order to provide exclusive products and services online. Likewise, the level of technological advancement in modern day Agri-business in recent years and the need for some of the Agric-SMEs to acquire a better profile by advertising their products and services online, motivated them to adopt ICT.

Furthermore, in addressing the first question, the research confirmed some inhibitors that hinder the adoption of ICT amongst some Nigerian Agric-SMEs that were yet to adopt ICT. Likewise, a good number of the Agric-SMEs that were classified as users of ICT indicated similar reasons that hinder their non-adoption of sophisticated ICT applications or their ineffective utilisation of ICT in general. The lack of power and energy and basic infrastructures in the country was found to be the prominent issues affecting many Agric-SMEs. This account for some reasons why some of them resort to private companies for support or improvise ways in which they can provide electricity to run their businesses. The research shows that the problem associated with the lack of power supply contributes to many Agric-SMEs' huge investments in power generating sets. Another key factor that emerged from the research is the poor service offered by internet service providers. Other factors which were identified included the lack of requisite skills and training, such as employees' inexperience with the internet, inadequate computer literacy, the cost associated with the implementation of the systems, training cost for employees on how to use the new systems and the cost of maintenance. The world is now a global village and there is the need for firms, managers, and individuals to upgrade and update their mode of operations and activities. Similarly, the lack of awareness amongst Agric-SMEs owners and managers on the usefulness and benefits of adopting and effectively utilising ICT in their daily business operations was regarded as another major factor.

Furthermore, the government's failure to also implement suitable policies or regulations that can stimulate the uptake of ICT in Nigerian Agric-SMEs was also identified as a factor. In addition, Agric-SMEs with limited resources usually encounter challenges while trying to apply and obtain loans from banks and other financial institutions. There is also a challenge linked to multiple payments of taxes and levies, by various levels of government, caused mainly by the high level of corruption in the country. The fear of online fraud was also found to be another major constraints and inhibitor, especially with respect to the adoption of sophisticated or professional Agric ICT applications.

The second research question addressed the issues of drivers and inhibitors to ICT adoption and use among Agric-SMEs in Nigeria. The research found out that the level of usage of ICT applications and systems among Agribusinesses is generally low, even though 65% of the Agric-SMEs who participated in the research were classified as users or adopters of ICT. Most of the ICT users and adopters mainly utilised the traditional computer-based technologies such as standard office applications and basic tools, as telephone, fax and Microsoft office software. The internet is an exception, as many Nigerian SMEs have access to the internet, even though the service is characterised by poor service delivery, very slow transmission speed as a result of the poor services offered by the different ISPs in the country. Hence, it is concluded that Nigerian Agric-SMEs are not effectively utilising the internet. The research findings also suggest that the nature or type of businesses plays a critical role in the adoption ICT.

Consequently, only a limited number of the SMEs make use of sophisticated communication technologies which facilitate and assist them to communicate and share information digitally. More technically advanced software such as finance Core, HRM, CRM, ERP and custom-based packages are not utilised despite the increase in the utilisation of ICT in the present era. This indicates that Nigerian Agric-SMEs are yet to realise the benefits and value of conducting businesses with the use of sophisticated ICT applications and systems.

The benefits and impact of ICT adoption and use on organisational performance by Agric-SMEs was addressed as the third question for the research. ICT has been identified as an essential tool that should be aligned with all company's organisational policies and strategies.

Although the research findings indicate that the benefits resulting from ICT investment vary significantly amongst the Agric-SMEs who participated in the study, to a large extent they all identified one or more benefits which their companies have experienced since the inception of the adoption and use of ICT. All the participants and respondents noted that their companies have derived a lot of benefits and ease of doing business, as a result of their investments in ICTs, ranging from hardware to software applications. Some of the benefits attributed to their use of ICT, included increased competitive advantage, improved efficiency, improved communication, increased access to information, improved method of planning, increased awareness and more potential to increase profit and promote business confidence especially if a company owns a website.

The fourth research question attempted to determine in detail to what extent does knowledge creation impact on efficiency and productivity in the Nigerian Agric-SMEs. Some Nigerian Agric-SMEs utilise ICT applications, after determining the importance of ICT utilisation in general amongst SMEs as part of the second objective. The researcher further observed skills deficiencies, low level of education and lack of knowledge as other factors which prevented the adoption and use of more ICT solutions in several Nigerian Agric-SMEs. Some Agric-SMEs just refused to adopt ICT due to lack of skills amongst its owner-managers and employees. Having the right education and skills is part of the strategic requirement for every organisation to grow and succeed globally. Likewise, Agric-SMEs owner-managers must ensure they keep abreast with modern technologies, adopt the right skills and training, identify the roles which the skills will play in making sure they are successful in leveraging ICT. Managers should also be conscious of staff development and training and if possible, establish a unit to serve such a purpose.

The researcher also observed many strategies identified, that can impact on efficiency and productivity and bring about an increase in technology use, as one of the responsibilities of government and other stakeholders, in supporting Agric-SMEs, such as the access to cheap internet services and support and incentives to owners-managers of SMEs. Responsibilities of the government, owners' managers and ISPs were clearly indicated to guarantee a successful process. This will also assist policy makers in developing a general framework to develop a successful ICT strategy. Overall, in addressing the research questions and objectives, the research findings concur with some findings in the literature review chapters. The literature review, in conjunction with the empirical data, confirmed that the adoption and effective utilisation of ICT in Nigerian Agric-SMEs require significant overhaul and changes in policy directions in order to increase take-up of ICT. It is important to note that a range of issues such as managerial strategies, organisational structures amongst others can lead to the success or failure of ICT adoption as well as effective utilisation in SMEs. The research has stressed the need for every Nigerian Agric-SME to adopt ICT by revealing the importance of effectively utilising ICT, more especially with modern-day ICT applications and systems for mechanise agriculture.

7.4 Research Contributions

This chapter presents the contributions of the research. The argument for developing countries to globalize is important and is designed to enhance access to foreign capital, improved technology in order to enhance the prospect for larger markets. The continued increase in globalization and integration of food markets has intensified competition and efficacy in the agriculture sector and has brought unique opportunities to include more smallholders into supply chains. With the rapid development of Information and Communication Technologies (ICTs), data and information can be effectively generated, stored, analysed, disseminated, and used to support farmers and farming communities to improve agricultural productivity and sustainable development. Globalisation has led to several innovations in technology such as the use of the internet, mobile phones, television sets, personal computers, radios, and others that have made communication anywhere around the world easier and faster. These modern tools for communication, are now collectively called Information and Communication Technologies – ICTs adoption and use, which is the main purpose of this study. Information and communication technology could be used as a very effective medium to harness this potential as applied by many developed & developing countries. South Africa, Zimbabwe, India, Zambia, Kenya, Ghana has all made use of ICT innovations and have had increased agricultural outputs. India for example, has improved farmers' productivity by 14-16 percent with farmers selling even more profitably (J. V. Braun et al., 2020) (IFPRI, 2020).

Even though studies have shown e-agriculture increases total agriculture output in developed countries and the fact that Nigeria has the required labour to carry out such great agriculture exploit coupled with one of the highest arable fertile lands for growing crops, Nigeria still relies partly on the importation of some agricultural products to combat food insecurity. Many studies in relation to information and communication technology on agricultural productivity have been conducted in Nigeria, but few of them have attempted to provide a comprehensive review in terms of implementation.

Modern economic policy making in Nigeria has placed enormous emphasis on diversifying the economy to non-oil productive sectors. For example, long before the 2015–16 recession, the National Economic Empowerment and Development Strategy (2004) outlined a strategy for private sector development focusing on diversification to non-oil sources of growth, among other objectives. Agriculture has always been considered an important sector for diversification, most recently as outlined in the Economic Recovery and Growth Plan (ERGP) 2017–20 and the Economic Sustainability Plan (ESP) 2020 (Farayibi & Asongu, n.d.). With the aim to restore economic growth following the 2015–16 recession and lay the foundations for long-term structural change, the ERGP recognized the need to diversify the economy to non-oil productive sectors such as agriculture and Agro-allied industries in order to build an economy that can generate inclusive growth and create jobs. More recently, the government of Nigeria launched the ESP in July 2020 to mitigate the adverse impacts of the COVID-19 (coronavirus) crisis and lay the ground for a robust recovery. Among the major interventions proposed in the ESP is a Mass Agriculture Programme "to create millions of job opportunities, directly or indirectly, over a 12-month period." Similar programs were proposed in roads, renewables, and housing. Why has diversification preoccupied modern economic policy making in Nigeria? It is mainly because growth has largely been non-inclusive and without jobs. Furthermore, the dependence on oil has severely limited the ability of the economy to absorb external shocks, such that falling global oil prices have led to two recessions in the last five years. A key feature of Nigeria's economy is that high oil prices lead to strong economic growth and vice versa. Nigeria experienced strong and stable economic growth during 2000–10, with an annual gross domestic product (GDP) growth rate of more than 6 percent, well above its population growth rate. Oil prices rose during this period. However, the strong years

of growth did not appreciably reduce the unemployment rate, which remained nearly flat at about 4 percent. Nigeria's dependence on oil can be traced to the 1960s, when exports of crude oil and gas increased sharply to provide a stream of enormous revenues to the government. The oil boom diverted attention away from non-oil sectors such as agriculture and manufacturing, and those sectors have become less competitive. Although the agriculture and manufacturing sectors feature prominently in policy dialogue around diversification, there is not enough clarity or consensus on the parts of agriculture (or manufacturing or services) to diversify into or on the expected outcomes on jobs, poverty reduction, and so on. Without clarity on investment priorities and expected outcomes, declarations that agriculture should drive diversification have often failed to persuade budget holders to allocate resources. That lack of clarity has also deprived policy makers and practitioners of the information, inspiration, and conviction to develop and execute sector plans that could operationalize diversification.

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7.4.1 Contributions to the General Body of Knowledge

This research has contributed to the existing body of literature and the field of information systems by identifying the inadequacies of previous studies regarding ICT adoption in developing countries, with particular emphasis on Nigeria. The research has empirically identified key factors affecting the adoption and effective utilisation of ICT on knowledge creation by SMEs, particularly among some Agric-SMEs in Nigeria.

No previous study had empirically considered how Nigerian Agric-SMEs utilise ICT or had identified the types of ICT applications and systems commonly used by Nigerian Agric-SMEs. There is lack of scholarly articles on the level of utilisation of ICT applications and systems amongst Nigerian Agric-SMEs. Therefore, this study adds to the existing body of literature and makes specific contributions to the field of IS by providing insights on the level of ICT utilisation or use amongst Nigerian Agric-SMEs as well as being able to identify the types of ICT applications-systems mostly used by the Agric-SMEs.

It was observed that no previous research had put forward success strategies or a guide for resolving the various issues facing Nigerian Agric-SMEs with respect to ICT adoption and effective utilisation. Hence, this research is considered as one of the pioneer studies in the area, as the study has put together success strategies that can assist the Nigerian government, stakeholders such as ISPs, as well as owners-managers of Agric-SMEs, to resolve the problems facing these SMEs. In other words, creating a novel strategy to aid the successful adoption and effective utilisation of ICT constitutes the central contribution of this research as the strategies are developed, based on empirical data, and provides a comprehensive guide to assist many Agric-SMEs in Nigeria. Overall, the strategy provides a dynamic view of the factors that can increase the adoption-effective utilisation of ICT in Nigeria as the recommendations/strategies for success will improve understanding of the process for successful ICT adoption.

The research has also made a novel contribution in the area of ICT adoption as it has identified the major stakeholders responsible for promoting the adoption and effective utilisation of ICT amongst Nigerian SMEs and Agric-SMEs in particular, which has not been identified in previous research.

The strategy that has been developed in this research can be applied by other researchers considering research in similar areas such as the adoption or use of new technologies as well as research involving Agro-Allied-SMEs. The research has also identified key motivating factors for ICT adoption in Nigerian SMEs and common benefits of ICT with respect to the organisational performance of many Agric-SMEs, who effectively utilise ICT solutions. Although some literatures have identified both the barriers to and the benefits of ICT adoption,

only a few literatures have considered Agric-SMEs' effective use or utilisation of ICT. Adopting ICT is not just a solution to SMEs having the latest advancements, as their effective utilisation is paramount as well, especially in their utilisation of specialised, sophisticated, advanced, professional information and communication technology applications-systems and solutions. Besides, the benefits identified in this research can provide further insights on the impacts of ICT. Thus, insightful findings from this research can complement previously accumulated knowledge on the benefits of ICT in organisations.

The research contributes to knowledge by validating the findings which comprise the key factors hampering SMEs' advancements in Nigeria, particularly Agric-SMEs, as well as validation of the success strategies that have been put together in this research to assist in overcoming the challenges. The research contributes to existing literature as it provides suggestions to bridge the digital divide, by emphasising the need for relatively advanced ICT infrastructures in Nigeria that can speed up the deployment of ICT both in urban and rural areas and the need for stakeholders such as the commercial banks amongst others, to help develop Agric-SMEs' capability in Agribusinesses in Nigeria.

Insights from this research show that factors which affect the adoption and effective use of ICT in every country are different, although some factors may be similar. Previous research, as indicated in chapter four, had identified, for example, the lack of finance as a key factor that affects ICT adoption in SMEs. However, in this research, although finance is important, but the poor service provided by ISPs was more prevalent as an inhibitor for adoption. The research findings suggest that many SMEs would like to adopt sophisticated ICT if the internet service providers were reliable, and the cost reduced. This research provides a richer view of the factors that affect ICT adoption in Nigeria than found in the previous studies uncovered during the review of existing literatures. The research has contributed to policy and practice by providing a rich insight into Agric-business in Nigeria.

7.4.2 Practical Contributions

The agribusiness sector includes all farms and firms involved in producing, harvesting, packing, processing, preserving, distributing, marketing, and disposing of food and non-food agricultural products. Those activities could be classified into the following categories: agriculture, processing, trade and transport, food services, hotels, and inputs. The agriculture segment of agribusiness includes all of the classical agriculture sector GDP, the primary production of all crops, livestock, forestry, and fishing. The processing segment includes the part of the manufacturing sector GDP that involves processing, value addition, and preservation of food and non-food agricultural products. Examples include food processing, beverages, tobacco, cotton yarn, and timber. The trade and transport segment includes the part of the services sector GDP that entails transportation, storage, logistics, and trading for agricultural commodities and products between farms, firms, and final consumers. The food services segment is the part of the classical services sector GDP that involves the preparation and sale of food outside the home (for example, restaurants and street vendors). The hotels segment includes the part of the hotels and accommodation GDP associated with food. The inputs segment includes all GDP generated during domestic production of the inputs used by farmers and processors, excluding the inputs produced by the above five segments.

Agribusiness is a large part of Nigeria's economy, directly providing more than 50 percent of jobs and contributing more than 35 percent to the national GDP. It has enormous potential for transformation because primary agriculture is much larger than off-farm agribusiness. Primary agriculture accounts for 21 percent of the national GDP, whereas off-farm agribusiness contributes 14 percent. The 1.5 ratio of primary agriculture to off-farm agribusiness GDP indicates that transformation is still in the early stages. Therefore, there are enormous

opportunities to design policies and investments to accelerate transformation and create more and better jobs. With the current low level of transformation, primary agriculture provides more jobs (about 21 million) than off-farm agribusiness (about 8 million jobs). However, off-farm agribusiness provides better jobs than primary agriculture does, with GDP per worker at least 1.6 times higher than in primary agriculture and comparable to the economywide average. Within agribusiness segments, labour productivity is highest in input supply and processing and lowest in hotels, food services, and primary agriculture. Labour productivity in primary agriculture tends to be underestimated, however, when measured as GDP per worker because workers in primary agriculture are engaged seasonally and not throughout the year. The GDP attributable to these workers is generated only during the cropping season; therefore, the average annual labour productivity measure is biased downward unless corrected for seasonality. Furthermore, primary agriculture also tends to be a residual employer that absorbs low-skilled rural individuals who cannot find jobs elsewhere. (… Executive Directors of the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA)--collectively known as the World Bank & World Bank - 2022 - elibrary.worldbank.org, 2022) (World Bank Group,2022). Agric-SMEs' experiences with respect to ICT adoption and use. This is evident, based on the different views of the individual participants who participated in the study. The analyses of the participants' views opened areas for further attention of the government and other stakeholders, as discussed in the research. As a result of this study, Agric-SMEs can now benefit more from the government and other stakeholders that are involved in their affairs. Consequently, this can result in Agric-SMEs becoming more enlightened about certain government policies and the effects of such policies on their business. The research has offered suggestions on how the Nigerian government and people at ministerial level can support ICT development in SMEs, particularly among Agric-SMEs, which can help to expand the country's economy. Moreover, in view of the factors that have been identified as issues militating against the adoption and effective use of ICT by Agric-SMEs in Nigeria and given the current effort of the Nigerian government to formulate a new ICT policy, adopting the proposed strategy in this research will bring about laudable socio-economic developments that the Nigerian government is aiming to achieve.

The contribution of this research is timely, as the country's Minister of Communications Technology is now urging Nigerian Agric-SMEs to embrace ICT for development/food security and has requested stakeholders to make contributions that can be incorporated into a new national ICT policy. The promotion of ICT by the government will facilitate rapid economic and social growth and national development not only in SMEs, but in all facets of the national economy.

7.5 Research Implications

Given the importance of ICT adoption and the low level of utilisation amongst Nigerian Agric-SMEs, there is great need for more understanding of key factors relating to the adoption and use of ICT, which this research has attempted to examine. Moreover, the findings of this research have several important implications that may assist owners/managers, ISP providers, the government and other policy makers to facilitate the adoption of ICT, as earlier stated. Other implications of this research are highlighted in the following sections.

7.5.1 Implications for Practice

In terms of implications for practice, the research offers a guide for the adoption process which will be useful for those involved in ensuring the further development of Agric-SMEs, to inspire many other SMEs to shift from utilising mainly traditional-based ICT applications/systems to utilising more sophisticated/modern ICT applications. The recommendations and strategies for success have been highlighted and were considered to be very useful by respondents, hence the strategy can be proposed to other SMEs in different regions within Nigeria as well as other developing countries, especially in Africa. The research would assist Agric-SMEs that are classified as adopters or users of ICT to recognise the key adoption issues that can facilitate or restrict their further adoption and effective utilisation of more modern/sophisticated ICT systems/applications, and how issues surrounding the entire process could be handled in practice.

7.5.2 Implications for Managers

Findings from this research have important implications for managers who are making efforts to adopt modern ICT solutions such as e-commerce into their businesses. These are managers who are interested in expanding their base and generating more revenue. Indeed, this research sought to assist SMEs to become more successful in migrating from the use of only traditional-based ICT applications to more advanced or modern/sophisticated ones. Empirical findings from this research have established the importance of the various roles played by owners/managers in stimulating the adoption/effective utilisation of ICT in SMEs. Without the commitment and support of owners/managers of Agric-SMEs, the rate of ICT adoption and effective utilisation will remain low. Top management support is imperative for enhancing the level of ICT deployment. Owners/managers should offer continuous support to initiatives that will increase the use of ICT in Agro-Allied businesses.

7.5.3 Implications for Government and Policy Makers

Government bodies and other policy makers that have the task of supporting SMEs should ensure that Agric-SMEs incorporate ICT applications/systems in their business processes as it will help to improve their competitiveness in the present digital economy. This would need the government to review its policies and introduce more initiatives that will promote ICT adoption within the Agric-SME sector.

Taking all the above into account, it can be argued that the contributions of this research are important to Agric-SMEs owners/managers, ISPs, the government and other vendors and policy makers. This research is considered relevant to this current era of rapid advancements in Agriculture and food security in the world, and the results obtained will help to fill a gap in the academic literature. The issues raised in this study, will help small businesses not just in SSA but in the other developing countries, to transform their SME sector by taking advantage of the opportunities offered by ICT. Implementing the framework will help Agric-SMEs in Nigeria, and SSA in general, to attract more businesses including foreign businesses as more companies will be willing to enter into business relationships.

7.6 Limitations of the Research

There can be no research without limitations. As is the case with other studies, this research has several limitations that need to be addressed, as discussed below.

One limitation of this research is the fact that the collection of empirical data depended mainly on the level of access that was granted to the researcher. Therefore, the participants could have hidden some vital information from the researcher, which could possibly have improved the research outcome, without the researcher's knowledge.

The study was limited to Agric-SMEs in some regions of Nigeria. It is the researcher's belief that although the research was limited to some regions, nevertheless, some of the research findings are likely to be similar to those in other parts of Nigeria, especially the northern region. However, the present research findings cannot be generalised without additional research. Similarly, even though issues concerning Agric-SMEs in Nigeria are homogeneous, it is still difficult to generalise Nigeria's results to other developing countries of the world without conducting additional research.

7.7 Recommendations for Further Research

The findings of this research and the research limitations have resulted in the identification of potential future research directions for investigation. The recommendations for further research as a result of this study are indicated below.

More research is needed to further validate the findings, in order to increase the generalisation of the results in different areas within Nigeria and over different regions in Africa. Re-testing the research findings and the recommendations in different regions within Nigeria especially, will help to determine whether the findings have the same impact or are less significant in other areas.

Also, there could be further investigations that can extend the research as new factors could emerge after some time.

Comparative studies can be conducted in other SSA countries, for example Ghana, South Africa, to determine differences in the context of developing countries. For example, in the developed countries, researchers have compared ICT adoption strategies between countries such as the UK and the USA.

Although much research has been conducted around ICT adoption, the area related to ICT use or utilisation among Agric-SMEs is still relatively new. Thus, more research still needs to be conducted in other areas within Nigeria as well as other developing countries. Future research should expand the understanding of ICT adoption and effective utilisation beyond the scope of the current research.

From the review of the literature, it appears that no existing research had examined the level of utilisation of traditional-based or sophisticated ICT solutions in Agric-SMEs. It will be useful to conduct further research in this area.

The researcher notes that results of data gathered from the various participants were reported by only one person. Hence, another researcher may interpret the participants' views or the research results in a different way.

7.8 Summary

It is expected that future research will extend knowledge creation of ICT adoption and effective utilisation by considering other regions beyond the area covered by this research. Insights from the investigation suggest that, as organisations adopt and utilise modern ICT applications, issues relating to power/electricity supply, amongst others, stand as major barriers to ICT adoption in Nigerian SMEs. However, due to the benefits associated with ICT, some Agric-SMEs are still motivated to utilise modern ICT applications/systems. The benefits range from enhanced competitive advantage to increased production/outputs, improved customer service, increased market reach and so on. This research found that Agric-SMEs' owners/managers attitudes towards ICT play a key role in promoting the effective utilisation of ICT amongst employees.

Research conducted by (Harindranath et al., n.d.) on adoption issues concluded that "progress in the deployment of ICT typically depends on a single individual with vision, who then takes full responsibility for ICT initiatives, as well as continuing with their regular activities". It is expected that the findings obtained in this study would be beneficial in providing some necessary guidance for SMEs and Agric-SMEs in particular, wishing to adopt and effectively use ICT in other developing countries. This research has fulfilled its goals and expectations and has answered all research questions set out at the beginning of the study. The research has provided significant contributions towards explaining the factors influencing/affecting the adoption and effective utilisation of ICT in Nigerian SMEs, particularly in Agric-SMEs. Although many researchers have tried to investigate the factors that affect ICT adoption in SMEs, no approach had yet been put forward which could serve as a guide in resolving the problems facing Nigerian Agric-SMEs.

This chapter has presented the contributions of the research to the body of knowledge which include the research insights/strategy, the research methods adopted for the study and how they were applied, key limitations of the present research as well as recommendations for future research. The research also adds to the body of knowledge by empirically providing evidence that can increase the knowledge of ICT adoption and usage in micro and small businesses thereby expanding the research area, in the field of IS. The research findings are beneficial to academics, practitioners, and policy makers.

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APPENDICES

Appendix: 1

RECRUITMENT LETTER FOR INTERVIEW 24TH July 2019

Dear Sir/Madam,

I am a Doctoral Researcher at the Liverpool John Moores University Business School, United Kingdom. I am currently conducting research on, the Effects of Information communication Technology Adoption and Use on Knowledge creation by Small and Medium Sized Enterprises (SMEs), A case study of selected SMEs in Nigeria. I am writing to invite you to participate in this research study.

The aim of the study is to better understand the key factors affecting the Adoption and Use of ICT on Knowledge creation by Nigerian SMEs and further identify strategies that could help encourage and stimulate the adoption and effective utilisation of ICT by Nigerian Small and Medium Sized Enterprises leading to innovation, improve productivity and efficiency. You have been invited because you fit the criteria of the sample needed to collect and produce meaningful data, which will contribute towards the research outcomes.

Your participation in this study is entirely voluntary. This means that it is your own decision to decide whether to take part in the research. If you do wish to participate, you will be given a participation information sheet and asked to sign a participant consent form. The interview will last just for an hour and will be of a time and place that is convenient to the participant. Whilst there will be no direct benefits to you for taking part in the study. It is hoped that this work will participants use the findings to their own advantages.

L will be very grateful if you could participate in an interview regarding this research. Please indicate your willingness to participate in this exercise.

Thank you.

Yours faithfully,

Ajobo Roghoke Tom (PhD

Research scholar Liverpool John Moores University Business School

APPENDIX 2.

This is an automatically generated email to certify completion of the LJMU Research Ethics Training. You are receiving this because the LJMU REC has specified your email address for sending the certificate of completion.

Certificate to confirm: **"Completion of LJMU Research Ethics Training"**

User:	Ajobo, Tom <T.R.Ajobo@2017.ljmu.ac.uk>
User ID:	scone_prod.56309
ID number:	783151
Final quiz Score	**3** (100%)
Final quiz Score	**3**
Final quiz Score	**3** (100%)
Final quiz time:	**00:02:03 of ∞**

LJMU REC training result: **PASSED**

1. Research Ethics Committees:

Select one or more correct answers from the choices below

Protect the safety, dignity and rights of participants in research

Provide assurances of good quality research being conducted within an evidence base and for the benefit of society

Protect all stakeholders

Points: **1**/1 | Attempts **1**/∞

2. Research ethics is the set of principles and guidelines that help us to uphold the things we value

Choose whether the statement is true or false

True

False

Points: **1**/1 | Attempts **1**/∞

3. Ethical approval must be in place BEFORE starting participant recruitment

Choose whether the statement is true or false

True

False

Points: **1**/1 | Attempts **1**/∞

APPENDIX:3

Liverpool Business School
Redmond Building, Brownlow Hill,
Liverpool,
L3 5UG

30th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbA**

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: MANAGING DIRECTOR

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. What is the history of this firm? Kontiki limited was registered as a Nigerian company in 1993 with the sole aim to provide Printing and Branding services to would be clients.
2. What is the current Organisational structure of your firm? The organizational structure is that the managing gives directives and instructions to all staff to do the assigned duties as required by the client.
3. What products or services do you offer to your customers? Printing and Branding services
4. What are your firm's goals or objectives? To be one of the leading Small and Medium Scale Enterprises with a high level of integrity in the printing industry in Nigeia.
5. How many employees do you have in your company? 5
6. Are they all on full time or part time? Yes
7. Please describe your target market? My target market is primarily the Corporate Industry such as Financial Institutions, Oil & Gas Companies, High Networth Individuals, etc
8. Has your target market changed over the years? No
9. How would you describe the Nigerian business environment? Moderately Hostile- due to the fact that you provide most of the facilities such as utility by yourself without recourse to the government, finance is also a challenge, there is also trust dificit.
10. Who are your competitors? Academy Press, Printserve, Ingram Press, Oduduwa Press. etc
11. Do your employees abide by the company policies and objectives? Yes

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? YES
2. Who initiated the idea to adopt ICT in your firm? THE MANAGING DIRECTOR
3. Who are those involved in the decision-making process? THE MANAGING DIRECTOR
4. What was the type(s) of ICT solution considered for adoption? INTERNET SERVICES, EMAIL SERVICES, DIGITAL MARKETING SERVICE, INTERNET BANKING, ONLINE SERVICES etc

5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? TO MAKE OUR WORK SEAMLESS, TO BE ABREAST WITH COMPETITION, TO MEET UP WITH CLIENTS' DEMANDS & EXPECTATIONS
6. What are the inhibitors to the adoption process? INTERNET SERVICE
7. What are the impacts of ICT on your firm's performance? FANTASTIC PROGRESSION IN OUR SERVICE PROVISION

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation? Knowledge Creation in my understanding involves the continuous transfer of knowledge in an organisation, this can simply be described as Training and Retraining of personnel to create performance and organizational improvement.
2. Do you think or consider ICT adoption as necessary for KC? YES…..Why?
3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing? YES ……How?
4. Do you think the use and deployment of ICTs help to enhance SMEs performance? YES ….How?
5. Do you think the use of ICT is positively associated with SMEs innovative performance? YES…How?
6. Do you think the higher the use of ICT, the better for skills acquisition and innovation? YES …. How?
7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage? YES …. How/Explain?
8. Can you comment on the overall ICT strategy in your organisation? The overall strategy is hinged on the level of competition and the availability of new ICT technique that is tailored to our organization.
9. Would you consider adopting more sophisticated ICT in the future? YES. IF NECESSARY AND COST EFFECTIVE.
10. Is there any information you want to share with me personally or generally?
    The use of ICT in my organization has its own challenges that are hinged on Power supply, the willingness of the staff to learn new things, the rising cost of internet services that is not commensurate with the quality of service provided by the service providers.

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? As the Managing Director, it is my responsibility to coordinate and drive all the activities in the Organization including but not limited to the IT functions.
2. Is your position in the company related to ICT implementation? YES ….How/Explain please.
3. Does your company have a functional IT department? NO ……Why?
4. Please briefly describe the various ICT applications in your company. INTERNET SERVICES, DIGITAL MARKETING, GRAPHICS DESIGN SOFTWARE. EMAIL SERVICES. INTERNET BANKING
5. How do you acquire ICT facilities in your firm? FROM IT CONSULTANTS , and SERVICE PROVIDERS

6. Please describe the experiences you have gained over the years from adopting ICT? IT HAS MADE OUR WORK TO BE SEAMLESS AND ENHANCED OUR SERVICE PROVISION TO THE SATISFACTION OF OUR CLIENTS.
7. Does ICT have any significant effect on Knowledge creation in your company? YES …..How ?
8. Does ICT have any effect on your company's organisational performance? YES ……How?
9. What are the benefits associated with the use of ICT in your company? SPEEDY AND ACCURATE SERVICE DELIVERY, MINIMIZES PHYICAL CONTACTS WITH CLIENTS AND ON SOME OCCASIONS THE CLIENTS ARE NOT PHYSICALLY SEEN THROUGHOUT THE DURATION OF THE TRANSACTION.
10. Are there any factors affecting the effective utilisation and adoption of your company's ICTs? POWER SUPPLY, UPDATING OF IT USAGE BY STAFF, COST OF IT PROVISION
11. What are the drawbacks associated with the use of ICT in your firm? YOU MAY NOT KNOW YOUR CLIENT PHYSICALLY WHICH IS NOT AN IDEAL IN OUR ENVIRONMENT.
12. From your point of view, what are the factors that contribute to the success of ICT adoption?
    A. To meet up with competition
    B. To satisfy our clients demands
    C. Ability to update information and designs on real time
    D. Minimum cost implication in some areas of the organizational structure.
    E. Acquisition of knowledge in the area of ICT.

APPENDIX:4

Liverpool Business School
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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbB**

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: COMMERCIAL DIRECTOR

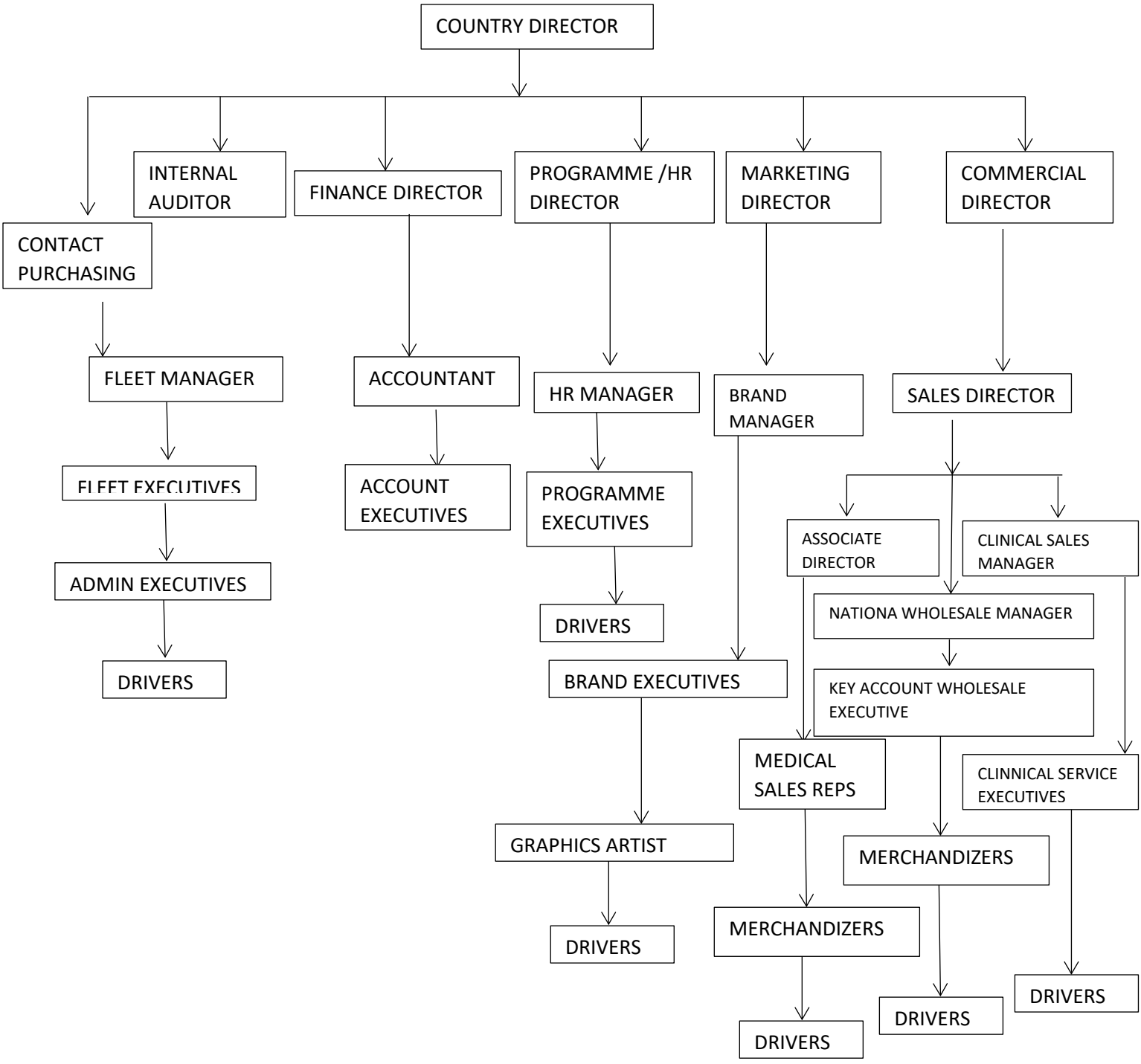
Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. **What is the history of this firm?**

   It is a social marketing organization founded in the year 2012. AbB is now the largest private providers of reproductive health products and services in Nigeria. AbB Nigeria contraceptive and family planning services reach the poor, rural and adolescent population who have limited access to reproductive health services. We are an innovative and adventurous social marketing NGO that promotes family planning, HIV/AIDS prevention and improves people's lives.
   AbB Nigeria is ensuring women continue to have access to the care they need to maintain their social and reproductive autonomy.

2. What is the current Organisational structure of your firm?



3. **What products or services do you offer to your customers?**

   We offer contraceptives / family planning products and services. These include condoms, contraceptive pills, abortion pills and training of health care providers - doctors, pharmacists nurses and midwives.

4. **What are your firm's goals or objectives?**

   Our goal is to change the behaviour of Nigeria citizens on reproductive health, adopt safe sexual behaviour, reduce unwanted pregnancies and ensure they give birth to the number of children they can adequately take care of, child spacing inclusive.

5. **How many employees do you have in your company?**

   Two hundred and fifteen (215) Employees

6. **Are they all on full time or part time?**

   All are on full time.

7. **Please describe your target market.**

   -Couples who are sexually active.
   -Young ladies (singles) between the ages of 18 – 45 years.
   -Men who are sexually active.

8. **Has your target market changed over the years?**

   Yes, our target market was women between 18 – 45 years but has actually expanded to include 15 and 50 years.

9. **How would you describe the Nigerian business environment?**

   The Nigeria business environment is highly competitive and unpredictable. Consumers are loyal to known brands and strong brands easily become generic. But innovative brands with enormous benefits and a strong sales team to drive the process could make quick in-road into the market.

10. **Who are your competitors?**

    All companies involved in importation, marketing and distribution of contraceptives and reproductive health products and services.
    -Society for family health (SFH).
    -Marie Stopes Nigeria.

11. **Do your employees abide by the company policies and objectives?**

    Yes, our employees are dedicated, loyal and honest to the organization. They understand the core values and goals of the organization and so work hard to drive these policies to ensure successful accomplishment of these objectives.

Section 2: Questions on ICT Adoption/Use

1. **Do you use or engage in any form if IT in your organisation?**
   Yes. we use various forms of ICTs – SAP, Telynet (sales automation application) whatsapp Zoom for video conferencing, Tele conferencing etc.

2. **Who initiated the idea to adopt ICT in your firm?**
   The Finance Director initiated the use of SAP for accounting purpose. The Country Director initiated the use of Telynet (sales automation application).

3. **Who are those involved in the decision-making process?**
   There is a management team consisting of:
   - Country Director.
   - Commercial Director.
   - Finance Director.
   - Sales Director.
   - HR / Programme Director.

4. **What was the type(s) of ICT solution considered for adoption?**
   SAP for accounts and Telynet (sales automation system), zoom videos conferencing and Tele-conferencing using phones.

5. **What were the major reasons/drivers/motivators for ICT adoption and use in your firm?**

   - To create an electronic storage system that will protect our company's valuable documents.
   - To create a system that will allow the organization to work more efficiently and maximize productivity.
   - Faster communication within and outside the organization.
   - Wants an electronic system that can store, receive, and transmit information.
   - To cut cost, eliminate waste in generating, processing, and transmitting business information.
   - To work with ease and maintain efficiency – Zoom video conferencing.

6. **What are the inhibitors to the adoption process?**

   - High cost of acquisition of system, training and re-training of personnel.
   - Lack of stable electricity.
   - Poor network signal.
   - Lack of skilled human resources.
   - Lack of system infrastructure and application.
   - Economic constraints.

7. **What are the impacts of ICT on your firm's performance?**

   - Improves efficiency and increases workflow considerably.
   - Our sales automation system (Telynet) makes monitoring and supervision of field sales force easy.
   - Communication on price changes and trade promotions to customers is easy, quick and efficient.

Section 3: Questions on Knowledge Creation

1. **What do you understand by Knowledge creation?**

   Knowledge creation is the continuous combination, transfer, and conversion of different kinds of knowledge. This occurs as users interact, practice, and learn. In otherworlds, it is the creation of ideas, which is the heart of a company's competitive advantage.
   Knowledge creation can also be referred to as the formation of new ideas through interactions between easily searchable knowledge (explicit) and knowledge that exist only in our minds (tacit).

2. **Do you think or consider ICT adoption as necessary for KC?**

   ICT adoption is very necessary for knowledge creation for the following reasons.
   - Organization requires new knowledge resulting from innovations to enhance performance and ICT makes it happen.
   - ICT brings about knowledge creation through application of information and problem solving.
   - ICT leads to acquisition of information knowledge and network integration.

3. **Do you think there is any impact of ICT Adoption on knowledge creation or sharing?**

   Yes, adoption of ICT enhances knowledge creation skills acquired through education or experience. These are transferred to others through interactions, practice, learning etc. using telecommunication , broadcast media, zoom video and transmission system is the same way.

4. **Do you think the use and deployment of ICTs help to enhance SMEs performance?**

   Yes, many manual processes have been automated with the use of ICT, efficiency has increased tremendously since SMEs deployed ICT.

5. **Do you think the use of ICT is positively associated with SMEs innovative performance?**

   Yes, the use of ICT accelerates business processes and workflow. It also leads to competitive advantage among SMEs in terms of innovation, marketing, sales, and business efficiency.

6. **Do you think the higher the use of ICT, the better for skills acquisition and innovation?**

   Yes, the use of ICT produced new skills acquisition programmes, IT/Network engineer, data analysis as well as create more ICT innovations e.g., A1 machine learning etc. All these are transformational tools, which contribute rapidly to technological progress, productivity growth and business efficiency.

7. **Do you think ICT adoption on Knowledge creation will lead to competitive advantage?**

   Yes, ICT will surely enhance acquisition of knowledge through education or experience and further leads to competitive advantage as follows
   - Productivity growth
   - Organizations expansion

- Efficiency and effectiveness
- Information dissemination with customers, suppliers and the general public including government is enhanced.

8. **Can you comment on the overall ICT strategy in your organisation?**

   DKT Nigeria ICT strategy includes having the right technology for business to succeed, ease task and to compete with the latest industry trend.

9. **Would you consider adopting more sophisticated ICT in the future?**

   Yes, I will consider cloud computing, because our premises do not give 24/7 access to the server unlike the cloud

10. **Is there any information you want to share with me personally or generally?**

    No 1 have exhausted all I know.

Section 4: Questions for IT Mangers/IT officers/Administrative Staff.

1. **What are your duties and responsibility in the company?**

- Manage Administration and support of IT Infrastructures (Servers, Laptops, desktop, Monitor, Ups etc.) and key applications (Gsuites, Google forms, SAP Business one, Office 365, Kaspersky Antivirus, Telynet(Data analysis application)) ensuring equipment and application are fit for purpose.
- Manage Procurement of IT assets, Ordering and claiming Warranty on damaged PCs, Manage Asset allocation, monitoring stock level, and disposal of obsolete IT items.
- Ensure users are sensitized about IT work process which include ticket logging and I ensured ticket logged were resolved within SLA and with minimal impact to work.
- Ensure timely resolution of user issues and proffer solution or workaround to problem encountered by users.
- Manage user account Administration on active directory, windows server 2012 platform, security administration of system user right and privileges on network systems.
- Ensure the backup process is conducted effectively and ensure re-run is done when failure is recorded and implement disaster recovery where system crashes.
- Manage the project of Configuring and networking of Cisco and Mikrotik routers, switches and access point at the head office. I also manage day to day monitoring of Bandwidth Utilization and users Internet usage

2. **Is your position in the company related to ICT implementation?**

   Yes, As an IT manager my position enables me to head any ICT implementation in the company.

3. **Does your company have a functional IT department?**

   Yes, we have a fully functional IT department that service over 100 Staff.

4. **Please briefly describe the various ICT applications in your company?**

- SAP BUSINESS ONE: This is an ERP Software which is majorly used by the finance department and the Sales department. Finance uses it for financial and Management Accounting while the Sales department uses it for Sales quotation, Sales order and logistics.
- Telynet (Sales and data analysis application): This application is used for sales, receipt generation, also Customers and Stock analysis.
- Adobe Suite: This is used by the graphics designers to create product designs and social media creatives.
- Microsoft Suite: This is used by every staff, power point for presentation, excel for data analysis, word for drafting letters etc.

5. **How do you acquire ICT facilities in your firm?**

   We source for registered vendors, add to our vendor list by signing an agreed SLA with the vendor. This is followed by the procurement department making purchases once a request is made from IT.

6. **Please describe the experiences you have gained over the years from adopting ICT?**

- Data analysis experience using excel for data analysis
- Programming experience as I have been tasked several times to make changes on our website.
- Customers service experience having to support all the staff in the organization.
- Project management experience, by having to head the project to implementing all ICT infrastructures in the organization.

7. **Does ICT have any significant effect on Knowledge creation in your company?**

   Yes, in data analysis, it has helped to forecast future occurrence, also helped organization in decision making by studying the trends of data.

8. **Does ICT have any effect on your company's organisational performance?**

   Yes, it has improved overall organizational performance.

9. **What are the benefits associated with the use of ICT in your company?**

- Business and workflow have improved.
- Informed decision making from data analysis.
- Improvement in the financial performance, easier financial reconciliation and cost reduction.

10. **Are there any factors affecting the effective utilisation and adoption of your company's ICTs?**

- Epileptic power supply.

11. **What are the drawbacks associated with the use of ICT in your firm?**

Cost of data protection, hackers are constantly trying to steal information more money is spent to secure data.

12. **From your point of view, what are the factors that contribute to the success of ICT adoption?**

- Organization driven by customer satisfaction.
- Organization driven by staff development.
- Organization driven by efficiency.

APPENDIX:5

Liverpool Business School
Redmond Building, Brownlow Hill,
Liverpool,
L3 5UG

20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbC**

Address: N/A

Phone Number: 07036231117

Name of Participant: N/A

Position: Executive Directors

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. What is the history of this firm?

Animal4Profit has been in existence for over 2 years now. The business started as an online retail enterprise before an office was opened 6 months ago.

2. What is the current Organisational structure of your firm? Since we are a small firm, we are structured in terms of Management department, sales and marketing department.

3. What products or services do you offer to your customers?

Agricultural products like (day old chicks, point of layer, etc), raw materials, farm equipment's, processing machines and equipment's, Food products (processed chicken and chicken parts such as chicken gizzards, wings, etc)

4. What are your firm's goals or objectives?

To ensure timely and cost-effective supply of products.

To ensure production of quality food products.

5. How many employees do you have in your company? We have 6 staff.

6. Are they all on full time or part time? They are all Full Time.

7. Please describe your target market.

We supply Hotels and restaurants, caterers, distributors and retailers of agriculture and allied products, consumers of animal meat. etc

8. Has your target market changed over the years? No,

   The target market has not changed overtime.

9. How would you describe the Nigerian business environment?

The Nigerian business environment does not encourage and support business growth. There are a lot of challenges which put more burden, pressure on the business which in turn lead to a high running cost via cost of production, preservation/storage and transportation.

10. Who are your competitors?

Producers and Distributors of agricultural and other allied related products, like animal feeds, eggs, chicken, and other dairy products.

11. Do your employees abide by the company policies and objectives? Yes, to some extent. Because we do overtime emphasized on the need to obey company rules, policies and guidelines, which will lead to achieving our general goals and objectives.

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? NO,

   Not for now. But we are thinking towards that direction.

2. Who initiated the idea to adopt ICT in your firm? Nobody for now, work or idea in progress.

3. Who are those involved in the decision-making process?

   Executive Directors/Manager

4. What was the type(s) of ICT solution considered for adoption? Non for now. WIP.
5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? NON FOR NOW.
6. What are the inhibitors to the adoption process?
   Since we haven't started the usage of ICT, there are no inhibitors.

7. What are the impacts of ICT on your firm's performance? Non yet.

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation? Knowledge creation is the process of getting and developing new insight on how to carry out a or productive activity.
2. Do you think or consider ICT adoption as necessary for KC?
   I believe the adoption of ICT is necessary for knowledge creation. This is because with the fast rate of data's available on the internet one can easily get variations of things necessary to create innovation.
3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing?

The impact of ICT in knowledge creation or sharing is obvious, this is because ICT in recent times has proven to be avenue for innovation, efficiency and productivity.

4. Do you think the use and deployment of ICTs help to enhance SMEs performance? Yes of course, because the usage of ICT will boost SMEs performance in the sense that ICT over time has proven to boost productivity and performance. Customers can easily do online bookings and payment by usage of ICT platforms.
5. Do you think the use of ICT is positively associated with SMEs innovative performance? YES,

This is because when ICT is properly deployed to an SME business venture, it will overtime lead to increase in sales turnover. This will as well increase business/firm's performance overtime.

6. Do you think the higher the use of ICT, the better for skills acquisition and innovation? YES,

As SMEs begin to adopt usage of ICT, it will increase and improve their acquired knowledge in terms of multiplier effects.

7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage?

Yes, to a great extent through training and development of staff and the business.

8. Can you comment on the overall ICT strategy in your organisation?

ICT is yet to be adopted in our business, but a major plan in progress is on the drawing table.

9. Would you consider adopting more sophisticated ICT in the future?

Yes, because of its enormous benefits and potential.

10. Is there any information you want to share with me personally or generally? Adoption of ICT in SMEs has been threatened and hampered by high cost and other logistics, by both network providers as well as poor infrastructures and support from government. All this has affected our resolve to adopt ICT in our business for now.

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? N/A, SINCE WE HAVE NOT ADOPTED ICT.

2. Is your position in the company related to ICT implementation? N/A

3. Does your company have a functional IT department?

NOT YET

4. Please briefly describe the various ICT applications in your company?
   NON
5. How do you acquire ICT facilities in your firm?
   NON
6. Please describe the experiences you have gained over the years from adopting ICT? N/A

7. Does ICT have any significant effect on Knowledge creation in your company? N/A

8. Does ICT have any effect on your company's organisational performance? N/A
9. What are the benefits associated with the use of ICT in your company? N/A

10. Are there any factors affecting the effective utilisation and adoption of your c

APPENDIX:6

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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: AbD

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: Customer Service Team Lead

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

What is the history of this firm?

It was incorporated in 1993, the company was relaunched as Ensure Insurance plc in 2016. It was acquired in 2018 by rebranded as AbD Nigeria Insurance plc. In 2017, the company generated gross written premiums of N7.67billion representing an 86% growth over 2016 (N4.19billion). In May 2018, Allianz Nigeria Insurance plc officially became a company of The Allianz Group.

1. What is the current Organisational structure of your firm?
   We operate a flat structure. In a bid to integrate all generations in the work place, we encourage managers to make members of their teams to be comfortable around them as this will promote efficiency and innovation.

2. What products or services do you offer to your customers?

Allianz Nigeria Insurance plc is a composite Insurance company licensed to transact Life and Non-Life Insurance business in Nigeria, delivering a range of retail products such as Motor, Life, Home Insurance and corporate products to more than 30,000 customers

3. What are your firm's goals or objectives?

Our goal to ensure that we satisfy our customers optimally.

We offer world class insurance products and excellent delivery of our promise which is to settle all claims within 24hrs.

4. How many employees do you have in your company?

We have 200 employees.

5. Are they all on full time or part time? They are all full time.
6. Please describe your target market.
   Our target market is middle- and high-income earners in Nigeria.
7. Has your target market changed over the years?
   Over the years, young graduates who are part of our target market leave school with partial or no knowledge of the essence of insurance. This dynamic makes acceptance of insurance a big deal for them.

8. How would you describe the Nigerian business environment?

Nigeria is the largest investment market in Africa. It is a safe for foreign capital and offers investors fiscal incentives, investment guarantees, stable political and legal environment. It also offers low corporate tax regime, VAT rate and flexible labour market conditions, and simple procedures for establishing a business.

9. Who are your competitors?

Our major competitors are Standard Alliance, Leadway Insurance, Sovereign trust insurance and Axamansard Insurance.

10. Do your employees abide by the company policies and objectives?

Our company have been able to maintain its legacy of excellence because we have staff who are dedicated to the accomplishment of its objectives.

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? Yes we do
2. Who initiated the idea to adopt ICT in your firm? The IT project manager
3. Who are those involved in the decision-making process? The board of directors
4. What was the type(s) of ICT solution considered for adoption? CRM, online payment, intranet, CUG, Printers, online meetings etc.
5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm?

To enable us to connect with our stakeholders and customers effectively.

We needed I.C.T tools to help us work smart and smoothly, delivering our promise to our customers, storage of information and internal control.

6. What are the inhibitors to the adoption process? It's costly. Another factor is internet connection issue, not too reliable.
7. What are the impacts of ICT on your firm's performance? It has helped to reduce administration costs, lead time and increased sale. Also it has helped to improved relations with business partners, improved internal controls and quality of information.

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation?

Knowledge creation is the combination, transfer, and conversion of different kinds of knowledge.

2. Do you think or consider ICT adoption as necessary for KC? YES,

Because ICT is needed for offering information, communications and exchange of information, and the automation of internal business processes.

3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing?

The adoption of ICT on KC will help businesses to perform more effectively as they are able to carry out their task and access information easily.

4. Do you think the use and deployment of ICTs help to enhance SMEs performance?

Yes, it helps to enhance business performance and productivity greatly.

5. Do you think the use of ICT is positively associated with SMEs innovative performance?

Yes, it does as they are able to carry out their duties timely and accurately.

6. Do you think the higher the use of ICT, the better for skills acquisition and innovation?

Yes. Major skills needed for current skills development.

7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage?

Yes it will. Businesses will be able to access information that will help to satisfy their customers and manage prospective customers.

8. Can you comment on the overall ICT strategy in your organisation?

Our ICT strategy is mainly to give our customers world class services also to help our staff to deliver their task effectively and increase productivity.

9. Would you consider adopting more sophisticated ICT in the future? Yes we will.

10. Is there any information you want to share with me personally or generally? N/A

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

What are your duties and responsibility in the company? I manage the office supplies stocks, prepare regular reports on expenses and office budgets, Maintain and update company databases, organize a filing system for important and confidential company documents. I also distribute and store correspondence (e.g. letters, emails and packages) and arrange travel and accommodation for executives.

1. Is your position in the company related to ICT implementation? No.
2. Does your company have a functional IT department? Yes we do
3. Please briefly describe the various ICT applications in your company? We currently use Outlook for mails, Salesforce, intranet, Primus and our data base. Hard wares such as printers, scanners, recorders etc.
4.

5. How do you acquire ICT facilities in your firm? We created our website where purchase and settlement of insurance claims are made. We bought all our hard and soft wares.
6. Please describe the experiences you have gained over the years from adopting ICT? Adopting ICT has made our transactions and interaction with our customers and stake holders effective. We are more analytical and our team are more effective.
7. Does ICT have any significant effect on Knowledge creation in your company? Yes it does. It has help us to produce, translate and store wealth of knowledge and also increase our research and development capacity.
8. Does ICT have any effect on your company's organisational performance? Yes it does. It has made our employees more efficient and effective with the ICT tools provided.
9. What are the benefits associated with the use of ICT in your company? ICT helps the company to effectively manage transactions with employees, customers and other stakeholders. With ICT the company is able to manage it's customers and attract potential customers. E.g. accessible website, efficient payment system, data base etc.
10. Are there any factors affecting the effective utilisation and adoption of your company's ICTs? All factors relatively attracts cost. E.g. Update of soft wares, depreciation of hard wares, technology upgrade that makes machines , soft wares obsolete
11. What are the drawbacks associated with the use of ICT in your firm? The draw backs are related to the question above, however one major drawback is the license right, especially for data base management.
12. From your point of view, what are the factors that contribute to the success of ICT adoption? The factors include Quality research by the ICT team for the right soft and hard wares. Management willingness to finance all ICT projects. And lastly, employee's willingness to work with tools provided by the IT team.

APPENDIX:7

Liverpool Business School
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30th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbE**

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: MANAGING DIRECTOR

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. What is the history of this firm? AbE Limited was registered as a Nigerian company in 1993 with the sole aim to provide Printing and Branding services to would be clients.
2. What is the current Organisational structure of your firm? The organizational structure is that the managing gives directives and instructions to all staff to do the assigned duties as required by the client.
3. What products or services do you offer to your customers? Printing and Branding services
4. What are your firm's goals or objectives? To be one of the leading Small and Medium Scale Enterprises with a high level of integrity in the printing industry in Nigeria.
5. How many employees do you have in your company? 5
6. Are they all on full time or part time? Yes
7. Please describe your target market? My target market is primarily the Corporate Industry such as Financial Institutions, Oil & Gas Companies , High Networth Individuals, etc
8. Has your target market changed over the years? No
9. How would you describe the Nigerian business environment? Moderately Hostile- since I provide most of the facilities such as utility by myself without recourse to the government, finance is also a challenge, there is also trust deficit.
10. Who are your competitors? Academy Press, Printserve, Ingram Press, Oduduwa Press. etc
11. Do your employees abide by the company policies and objectives? Yes

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form of IT in your organisation? YES
2. Who initiated the idea to adopt ICT in your firm? THE MANAGING DIRECTOR
3. Who are those involved in the decision-making process? THE MANAGING DIRECTOR
4. What was the type(s) of ICT solution considered for adoption? INTERNET SERVICES, EMAIL SERVICES, DIGITAL MARKETING SERVICE, INTERNET BANKING, ONLINE SERVICES etc
5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? TO MAKE OUR WORK SEAMLESS, TO BE ABREAST WITH COMPETITION, TO MEET UP WITH CLIENTS' DEMANDS & EXPECTATIONS

6. What are the inhibitors to the adoption process? EXPENSIVE AND POOR INTERNET SERVICES.
7. What are the impacts of ICT on your firm's performance? FANTASTIC PROGRESSION IN OUR SERVICES, PROVISION OF EFFICIENT AND QUALITY SERVICES/PRODUCTS & TIME SAVING.

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation? Knowledge Creation in my understanding involves the continuous transfer of knowledge in an organisation, this can simply be described as Training and Retraining of personnel to create performance and organizational improvement.
2. Do you think or consider ICT adoption as necessary for KC? YES, as it enhances productivity.
3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing? YES, as it makes our total business transactions faster and easier.
4. Do you think the use and deployment of ICTs help to enhance SMEs performance? YES, SMEs improve and grow better with the use of ICT in terms of productivity.
5. Do you think the use of ICT is positively associated with SMEs innovative performance? YES, SMEs are impacted positively in innovation with the use of ICT. ICT itself is an innovative tool.
6. Do you think the higher the use of ICT, the better for skills acquisition and innovation? YES. It is generally agreed by SMEs that the use of ICT enhances skills acquisition which drives their business to the next desirable level.
7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage? YES. The world is moving virtual now and ICT adoption improves knowledge which could bring about a competitive advantage to SMEs.
8. Can you comment on the overall ICT strategy in your organisation? The overall strategy is hinged on the level of competition and the availability of new ICT technique that is tailored to our organization.
9. Would you consider adopting more sophisticated ICT in the future? YES, IF NECESSARY AND PROVIDED IT IS COST EFFECTIVE.
10. Is there any information you want to share with me personally or generally? Yes, The use of ICT in my organization has its own challenges that are hinged on electricity and Power supply, the willingness of the staff to learn new things, the rising cost of internet services that is not commensurate with the quality of service provided by the service providers. Etc etc.

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? As the Managing Director, it is my responsibility to coordinate and drive all the activities in the Organization including but not limited to the IT functions.
2. Is your position in the company related to ICT implementation? YES, as stated above, I am at the top of all activities from policy formulation to policy implementation in the organization.
3. Does your company have a functional IT department? NO, since we are not a big company, I don't think it is necessary for now, but as times go on, we may have need for a department for ICT as we grow our business.
4. Please briefly describe the various ICT applications in your company. They are, INTERNET SERVICES, DIGITAL MARKETING, GRAPHICS DESIGN SOFTWARE. EMAIL SERVICES. INTERNET BANKING

5. How do you acquire ICT facilities in your firm? FROM OUR VENDORS/CONSULTANTS, and SERVICE PROVIDERS
6. Please describe the experiences you have gained over the years from adopting ICT. IT HAS MADE OUR WORK TO BE SEAMLESS AND ENHANCED OUR SERVICE DELIVERY TO THE SATISFACTION OF OUR CLIENTS.
7. Does ICT have any significant effect on Knowledge creation in your company? YES, BECAUSE WE HAVE TO TRAIN AND UPDATE OUR STAFF WITH LATETEST AND SOPHISTICATED EQUIPMENTS/TECHNOLOGIES.
8. Does ICT have any effect on your company's organisational performance? YES, IN TERMS OF PRODUCTIVITY AND EFFICIENCY.
9. What are the benefits associated with the use of ICT in your company? SPEEDY AND ACCURATE SERVICE DELIVERY, IT ALSO MINIMIZES PHYICAL CONTACTS WITH CLIENTS AND IN SOME OCCASIONS, THE CLIENTS ARE NOT PHYSICALLY SEEN THROUGHOUT THE DURATION OF THE TRANSACTION.
10. Are there any factors affecting the effective utilisation and adoption of your company's ICTs? POWER SUPPLY, UPDATING OF IT USAGE BY STAFF, COST OF IT'S PROVISION.
11. What are the drawbacks associated with the use of ICT in your firm? YOU MAY NOT KNOW SOME OF YOUR CLIENTS PHYSICALLY WHICH IS NOT AN IDEAL THING IN OUR ENVIRONMENT.
12. From your point of view, what are the factors that contribute to the success of ICT adoption?
    F. To meet up with competition
    G. To satisfy our clients demands
    H. Ability to update information and designs on real time
    I. Minimum cost implication in some areas of the organizational structure.

APPENDIX:8

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20th April, 2020

COMPANY NAME: AbF

ADDRESS: N/A

Phone N/A

NAME OF PARTICIPANT: N/A

POSITION: M/D CEO

Questions for Owners/Managers:

Section 1: General Background Questions about the Company.

Name of Firm: N/A

1. What's the history of this Firm?

   Answer: AbF is a confectionaries outfit that deals with cakes, small chops, events management etc, established in the year 2014 in Port Harcourt.

2. What's the Current Organisational Structure of your Firm.
   Answer: CEO ---PRODUCTION MANAGER--- MARKETING.

3. What products or services do you offer to your customers
   Answer: Confectionaries and event management
4. What are your firms' goals or Objectives?
   Answer: Our firm goals/Objective is to make our customers life moment a whole lot sweeter.

5. How many Employees do you have in your company?
   We have 6 Employees on our Payroll as at April 2020.

6. Are they all on full time or part time?
   No: We have 5 part-time staff and one on full time.

7. Please describe your target market.
   Answer: Middle to high income earner in PortHarcourt and its environs

8. Has your target market changed over the years?
   Not yet really.
9. How would you describe the Nigerian business environment?

Answer: Unpredictable, very challenging and ever changing.

10. Who are your competitors?
    Answer: Our competitors are other confectionary outfits providing similar services in our environment.

11. Do your employees abide by the company policies and objectives?
    Answer: Yes they do. We have in place corrective measures to focus behaviours divergent conducts.

Section 2: Questions on ICT Adoption / Use:

1. Do you use or engage in any form of IT in your Organisation?
   Yes, I do sparingly for now.

2. Who initiated the idea to adopt ICT in your firm?
   Answer: The CEO.

3. Who are those involved in the Decision-making process?
   Answer: The CEO and staff.

4. What are the type of ICT Solutions considered for adoption?
   Answer: Internet and online services, Customer management and ordering solutions. Social media platforms.

5. What are the major reasons/drivers/motivators for ICT adoption and use in your firm?
   Answer: Better customer service and experience, easy reach to market and improved productivity and feedback.

6. What are the inhibitors to the adoption process?
   Answer: High Cost, unstable operating environment

7. What are the impact of ICT on your firm's performance?
   Answer: Will helps reduce cost, improve customer experience delivery

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge Creation?
   Answer: Knowledge creation is the formation of new notions and concepts, this can happen within and outside the business environment.

2. Do you think or consider ICT adoption as necessary for KC?
   Answer: ICT is necessary in knowledge creation in modern times because it makes for efficient planning; organizing their work and for information storage.

3. Do you think there's any impact of ICT adoption on knowledge creation or sharing?
   Answer: YES I think so though it has both positive and negative impacts

4. Do you think the use and deployment of ICTs help to enhance SMEs performance?
   Answer: Yes, SMEs can leverage ICT to better deliver service and compete favorably, SME can easily take appropriate decisions that will enhance profitability.

5. Do you think the use of ICT is positively associated with SMEs innovative Performance?
   Yes, I believe so. SMEs for instance seeks information from internet on how they can improve their businesses.

6. Do you Think, the higher the use of ICT, the better for skills acquisition and innovation.
   Answer: Yes. This largely depends of the nature of the business.

7. Do you think ICT adoption on knowledge creation will lead to competitive advantage?
   Answer: I think ICT will greatly aid competitive advantage. ICT plays a major role in supporting tactical and strategic objectives. For instance, in development of products, customer services and after sales support, the role of ICT cannot be over emphasized thus giving a firm ***competitive advantage*** in the market.

8. Can you comment on the overall ICT Strategy in your Organization?

   Answer: Overall ICT strategy is low for now, as we increase, we will progress and the business demands.

9. Would you consider adopting more sophisticated ICT in the future?
   Yes: We are looking at progressing towards e-order bookings etc.

10. Personal or general Information.
    Operating environment is largely hostile in Rivers state with lots of multiple taxation issues and lack of basic infrastructure that will aid business development.

SECTION 4:

1. What are your duties and responsibility in the company
   Answer: I am one of the CEO

2. Is your position related to IT implementation?
   Answer: No: Am not ICT Staff

3. Does your company have a functional ICT department:
   Answer: NO

4. Briefly describe the various ICT applications in your company?
   Answer: NIL;

5. How do you acquire ICT facilities in your firm?
   Answer; N/A

6. N/A

APPENDIX:9

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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbG**

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: MD/CEO

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. What is the history of this firm? Started in 2014 in Warri, Delta State.
2. What is the current Organisational structure of your firm? MD/CEO – GENERAL MANAGER – OPERATIONS – ACCOUNTANTS – SALES – OFFICE ATTENDANTS.
3. What products or services do you offer to your customers? Ticketing of local and International flights, hotel reservations and bookings, airport pick up, tours and holidays.
4. What are your firm's goals or objectives? To attain the best in the travel industry in Nigeria.
5. How many employees do you have in your company? 10 employees
6. Are they all on full time or part time? All are full-time
7. Please describe your target market? Warri city and environs, Delta state, Nigeria and Nigerians in diaspora.
8. Has your target market changed over the years? Yes, target market is changing daily. Even non-Nigerians now patronize us.
9. How would you describe the Nigerian business environment? The business environment is very unstable, but we are coping.
10. Who are your competitors? Other travel agents and those who plan their travels individually without recourse to anyone.
11. Do your employees abide by the company policies and objectives? Yes, they abide by company policies and objectives.

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? YES
2. Who initiated the idea to adopt ICT in your firm? International Travel Agent Association (IATA)
3. Who are those involved in the decision-making process? Management
4. What was the type(s) of ICT solution considered for adoption? IT solutions for ticketing, hotel bookings etc

5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? For ease of doing our work as its mostly 100% online. This guarantees efficient service delivery to our esteemed customers.

6. What are the inhibitors to the adoption process? Poor infrastructures to support ICT, poor network from internet providers.

7. What are the impacts of ICT on your firm's performance? Very impressive and efficiency is at the highest.

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation? Getting new skills in application to our work to improve our services.
2. Do you think or consider ICT adoption as necessary for KC? YES
3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing? YES, it makes knowledge creation or sharing to be easy.
4. Do you think the use and deployment of ICTs help to enhance SMEs performance? YES
5. Do you think the use of ICT is positively associated with SMEs innovative performance? YES
6. Do you think the higher the use of ICT, the better for skills acquisition and innovation? YES
7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage? YES
8. Can you comment on the overall ICT strategy in your organisation? Its helping efficiency and service delivery.
9. Would you consider adopting more sophisticated ICT in the future? YES
10. Is there any information you want to share with me personally or generally? ICT is the ultimate in online businesses and it is recommended to all as its efficiency and result is second to none.

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? As MD/CEO, I oversee the daily activities of the company and all sections report to me.
2. Is your position in the company related to ICT implementation? YES
3. Does your company have a functional IT department? YES
4. Please briefly describe the various ICT applications in your company? As stipulated by IATA and we abide strictly because we can't do otherwise.
5. How do you acquire ICT facilities in your firm? From open market
6. Please describe the experiences you have gained over the years from adopting ICT? We have improved in our services to our numerous clients and its awesome.
7. Does ICT have any significant effect on Knowledge creation in your company? YES, information and updates in the industry are disseminated online.
8. Does ICT have any effect on your company's organisational performance? YES
9. What are the benefits associated with the use of ICT in your company? ENORMOUS AND GREAT
10. Are there any factors affecting the effective utilisation and adoption of your company's ICTs? Electricity which is not constant, employees' apathy towards learning new stuff.
11. What are the drawbacks associated with the use of ICT in your firm? As stated in number (10)
12. From your point of view, what are the factors that contribute to the success of ICT adoption? It creates efficiency and result oriented; we do not have a choice.

APPENDIX:10

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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbH**

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: MD/CEO

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. What is the history of this firm? The Company was registered in 2005 but did not commence operations until January 2009. The company was registered whilst I was still in employment. In November 2008, my employers asked me (us) to move on. We started the business from my home and with two staff, a Lady graphic Artist and myself.
2. What is the current Organisational structure of your firm? We presently have ten direct staff and thirty-two out-sourced staff. The current structure of company can be said to be flat. We have three departments headed by a Manager. These Managers report direct to the MD/CEO. The company has two Director with one managing.
3. What products or services do you offer to your customers? Our services are in three broad categories; Graphic Designs/Print Production, Experiential Marketing and Marketing Research
4. What are your firm's goals or objectives? To help businesses grow by creating awareness and visibility for their Brands, Products and Services.
5. How many employees do you have in your company? We have Forty-two staff
6. Are they all on full time or part time? Ten full time and thirty-two out sourced
7. Please describe your target market? High net worth individuals, Small businesses, Medium and Large Corporates
8. Has your target market changed over the years? Our target market has not change par say but customers' demands for quality and pricing have changed and it keeps changing
9. How would you describe the Nigerian business environment? The business environment can be said to be very hostile but with so much opportunities. Cost of doing business is high but with high ROI as well.
10. Who are your competitors? Small to Large off-set printers, Digital Press Owners, Graphic Artists, Marketing Communications companies, Brand Management Consultants and more.
11. Do your employees abide by the company policies and objectives? Yes

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? Yes, we do.
2. Who initiated the idea to adopt ICT in your firm? The MD/CEO

3. Who are those involved in the decision-making process? The Management Committee

4. What was the type(s) of ICT solution considered for adoption? Simple network technologies, connecting workstations with printer, digital printing machines and large format

5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? To ease the flow of work for effectiveness and efficiency

6. What are the inhibitors to the adoption process? Knowledge gap and inadequate training

7. What are the impacts of ICT on your firm's performance? Very positive in terms of cost savings, quick service delivery and increase in productive capacity.

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation? Sharing knowledge through interactions, trainings, apprenticeship through skills acquisition.
2. Do you think or consider ICT adoption as necessary for KC? Yes

3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing? Yes

4. Do you think the use and deployment of ICTs help to enhance SMEs performance? Yes

5. Do you think the use of ICT is positively associated with SMEs innovative performance? Yes

6. Do you think the higher the use of ICT, the better for skills acquisition and innovation? Yes

7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage? Yes

8. Can you comment on the overall ICT strategy in your organisation? Yes

9. Would you consider adopting more sophisticated ICT in the future? Yes

10. Is there any information you want to share with me personally or generally? Not really

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? Chief Marketing Officer, Business Development, Policy Formulation and Implementation strategist.

2. Is your position in the company related to ICT implementation? No

3. Does your company have a functional IT department? No (out sourced)

4. Please briefly describe the various ICT applications in your company. Hard wares, software; graphics, Microsoft office, systems/printers' networks soft/hard wares, digital software; email marketing software, and more.

5. How do you acquire ICT facilities in your firm? Hard wares from the open market, software online/open market, etc.

6. Please describe the experiences you have gained over the years from adopting ICT? ICT has enhanced our work flow, working/productivity has been more effective and efficient using ICT.
7. Does ICT have any significant effect on Knowledge creation in your company? Yes

8. Does ICT have any effect on your company's organisational performance? Yes

9. What are the benefits associated with the use of ICT in your company? Ease of work flow, effectiveness and efficiency

10. Are there any factors affecting the effective utilisation and adoption of your company's ICTs? Yes, inadequate training, lack of commitment to signed ICT contracts and funding.

11. What are the drawbacks associated with the use of ICT in your firm? Frequency of obsoleteness of software/hand wares, cost of replacement of obsolete hand wares and more.

12. From your point of view, what are the factors that contribute to the success of ICT adoption? Continuous training and retraining, funding, availability, or ease of upgrading both hard and soft wares to measure up with trends.

APPENDIX:11

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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: AbI

Address: N/A

Phone Number: N/A

Name of Participant: N/A

Position: ASSOCIATE DIRECTOR(SALES)

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1 What is the history of this firm? AbI is a not-for-profit established, in Nigeria since 2014 as an offshoot of a global Family Planning and Women reproductive health not-for-profit to help Nigeria achieve her goals of getting more people to use child-spacing products and services and reduce the maternal mortality rates.

2 What is the current Organisational structure of your firm? The organization is led by the Country Director supported by the Commercial Director who coordinates the activities of the various Departments namely: Sales, Marketing, Finance, Clinical Services & Training, Administration, Logistics, IT, Fleet Management, Human Resources and Programs.
What products or services do you offer to your customers? Child spacing Products like Condoms, Intrauterine Devices, Injections, Pills and Implants. Reproductive health products like Misoprostol to aid safe delivery for women during birth.

3. What are your firm's goals or objectives? Prevent unwanted pregnancy and reduce maternal mortality significantly while making products easily accessible and highly affordable.
4. How many employees do you have in your company? Over 150 employees
5. Are they all on full time or part time? Full time
6. Please describe your target market. Women and Men between 18 and 54(for women) and older for men
7. Has your target market changed over the years? It has changed depending on the product offering we introduced per time
8. How would you describe the Nigerian business environment? It's a very tough business environment wrought with dearth in availability of power and poor road network and IT infrastructure. However, the opportunities are massive because Nigeria is a developing economy with a huge population who are predominantly young and creative.
9. Who are your competitors? Society for Family Health, Marie Stopes and a few Pharmaceutical Companies that have similar products with DKT
10. Do your employees abide by the company policies and objectives? Absolutely

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? Yes
2. Who initiated the idea to adopt ICT in your firm? Top Management
3. Who are those involved in the decision-making process? Management
4. What was the type(s) of ICT solution considered for adoption? SAP, Sales Automation System (Telynet) for the field force
5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? The importance of generating data at the touch of a button as a tool for decision making
6. What are the inhibitors to the adoption process? High cost
7. What are the impacts of ICT on your firm's performance? Rapid growth within a short time of starting our operations in NIgeria

Section 3: Questions on Knowledge Creation

1 What do you understand by Knowledge creation? Keeping an open mind to adopt what works and jettison what does not work based on information gathered about work practices over a period of time
2 Do you think or consider ICT adoption as necessary for KC? Absolutely
3 Do you think there is any impact of ICT Adoption on knowledge creation or sharing? Yes considering how fast data can be generated using ICT
4 Do you think the use and deployment of ICTs help to enhance SMEs performance? Yes
5 Do you think the use of ICT is positively associated with SMEs innovative performance? Yes
6 Do you think the higher the use of ICT, the better for skills acquisition and innovation? Yes
7 Do you think ICT adoption on Knowledge creation will lead to competitive advantage? Yes
8 Can you comment on the overall ICT strategy in your organisation? DKT depends a lot on the generation of data especially as it relates to sales activities. Therefore, every Sales Department Staff that is hired gets software, hardware and training necessary for carrying out their daily activities. Refresher trainings are implemented from time to time whenever there's an upgrade to keep Reps and Managers up to date.
9 Would you consider adopting more sophisticated ICT in the future? Yes if necessary
10 Is there any information you want to share with me personally or generally? The adoption of ICT has also helped to significantly reduce wastage rising from not being able to account for free products utilized for promotions for example. Rather than rely on the information provided by the Rep, it is available at the touch of a button based on search criteria.

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? I coordinate the activities of 9 Managers and 52 Medical Sales Representatives on the field pan Nigeria
2. Is your position in the company related to ICT implementation? No
3. Does your company have a functional IT department? Yes
4. Please briefly describe the various ICT applications in your company? SAP is used for our Accounting and Finance processes and Primary Sales activities while Telynet is used for our Sales Processes and Secondary sales activities.
5. How do you acquire ICT facilities in your firm? Procurement Department handles it

6. Please describe the experiences you have gained over the years from adopting ICT? Efficiency is enhanced because you do not have to look through several documents spanning years to generate data which may be prone to human errors
7. Does ICT have any significant effect on Knowledge creation in your company? Huge significance
8. Does ICT have any effect on your company's organisational performance? Yes
9. What are the benefits associated with the use of ICT in your company? Cost efficiency, Time efficiency, Faster decision-making process leading to rapid growth
10. Are there any factors affecting the effective utilisation and adoption of your company's ICTs? There have been cases of some staff who are late adopters of ICT. These categories of staff require more supervision and training to get them to deploy ICT as they should
11. What are the drawbacks associated with the use of ICT in your firm? Non-availability of network in some hard to reach areas that some of our Reps cover.
12. From your point of view, what are the factors that contribute to the success of ICT adoption? Availability of funds, Trainable staff, Stable electricity because the devices need power.

APPENDIX:12

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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: AbJ

Address: N/A

Phone Number: N/A

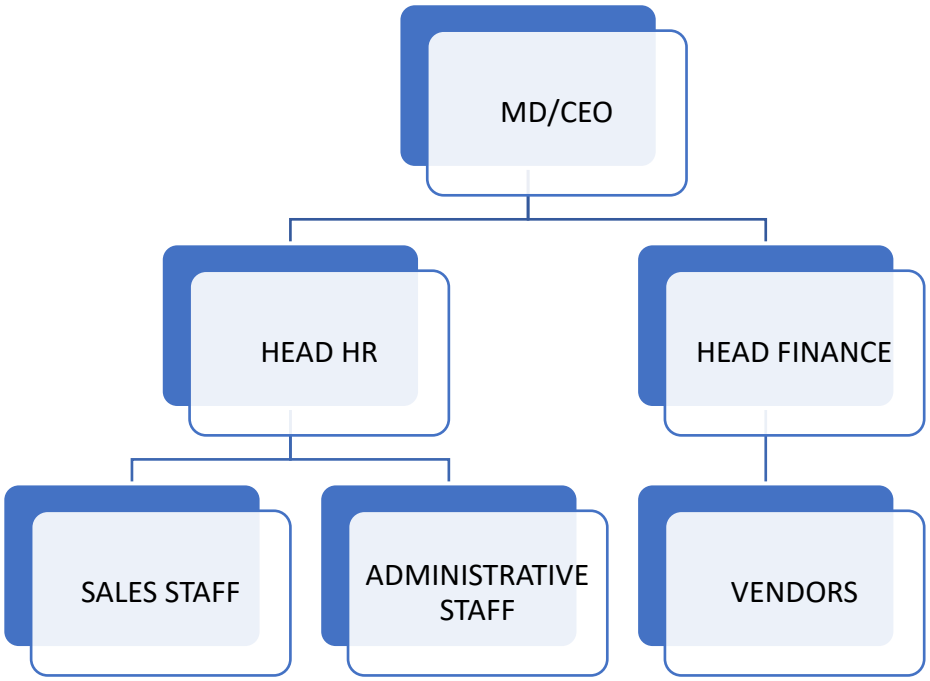
Name of Participant: N/A

Position: MD/CEO

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

1. What is the history of this firm?
   The company is a subsidiary of XYZ Nigeria Limited created in 2018 to publish learning materials for children between the ages of 0-8 years old because the company feels this is the bedrock of true learning
2. What is the current Organisational structure of your firm?
   The company structure is shown below



3. What products or services do you offer to your customers?
   - Educational materials (Reading materials-Books)
   - Training of teaching staff
   - Consulting

4. What are your firm's goals or objectives?
    - Assist in developing children both academically and emotionally through our educational materials
    - Assist with developing teachers equipped to handle the educational challenges faced by modern educators
5. How many employees do you have in your company?
   6 employees
6. Are they all on full time or part time?
   Both full time and part time
7. Please describe your target market?
    - Parents of children between the ages of 3-8 years old
    - Owners of day care centres, nursery and primary schools
8. Has your target market changed over the years?
   Not yet as the company is just 2 years old but we intend to grow, providing educational materials for high schools eventually.
9. How would you describe the Nigerian business environment?
   The environment is very challenging with several obstacles like high cost of printing materials, poor infrastructures to support businesses, etc.
10. Who are your competitors?
    Other publishing firms that produce materials for children between 3-8 years of age.
11. Do your employees abide by the company policies and objectives?
    Yes and those that are found wanting are reprimanded via query or relieved of their duties when deemed appropriate

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form if IT in your organisation? Yes,
   But currently in the process of creating an online learning experience for our clients but not engaged in any usage apart from internal organisation purposes
2. Who initiated the idea to adopt ICT in your firm?
   CEO/MD
3. Who are those involved in the decision-making process?
   CEO/MD, Head HR and Head Finance
4. What was the type(s) of ICT solution considered for adoption?
   Website design, where parents and children will have fun and learn together
5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm?
    - Cost- reducing overhead cost of company if properly implemented
    - Current trend of the world moving from analogue or traditional methods to ICTs.
    - Increases reach of company from local to global access which will increase productivity and revenue
6. What are the inhibitors to the adoption process?
    - Logistics and Initial implementation cost.
    - Training of staff to acquire new skills and proper implementation in the field
7. What are the impacts of ICT on your firm's performance?
   The projected impact will be immense, with the current covid19 pandemic ICT will be the only way to survive as a small business

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation?
   These are concepts developed to acquire skills through training and interaction between individuals leading to new ideas.
2. Do you think or consider ICT adoption as necessary for KC?
   Yes
3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing?
   Yes
4. Do you think the use and deployment of ICTs help to enhance SMEs performance?
   Yes
5. Do you think the use of ICT is positively associated with SMEs innovative performance?
   Yes
6. Do you think the higher the use of ICT, the better for skills acquisition and innovation?
   This is subjective to industry but generally Yes
7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage?
   Yes
8. Can you comment on the overall ICT strategy in your organisation?
   In developmental phase
9. Would you consider adopting more sophisticated ICT in the future?
   Yes
10. Is there any information you want to share with me personally or generally?
    The use of the knowledge creation process will aid my organization grow and this interview has made this even more obvious to me. Thank you

Section 4: Questions for IT Mangers/IT officers/Administrative Staff : N/A

1. What are your duties and responsibility in the company?
2. Is your position in the company related to ICT implementation?
3. Does your company have a functional IT department?
4. Please briefly describe the various ICT applications in your company?
5. How do you acquire ICT facilities in your firm?
6. Please describe the experiences you have gained over the years from adopting ICT?
7. Does ICT have any significant effect on Knowledge creation in your company?
8. Does ICT have any effect on your company's organisational performance?
   What are the benefits associated with the use of ICT in your company?
   Are there any factors affecting the effective utilisation and adoption of your company's ICTs?
   What are the drawbacks associated with the use of ICT in your firm?
   From your point of view, what are the factors that contribute to the success of ICT

APPENDIX:13

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20th April, 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

COMPANY NAME: AbK

ADDRESS: N/A

Phone; N/A

NAME OF PARTICIPANT: N/A

POSITION: M/D CEO

Questions for Owners/Managers:

Section 1: General Background Questions about the Company.

1. How many Employees do you have in your company?
   We have 6 Employees on our Payroll as of April 2020.
2. Are they all on full time or part time?
   No: We have 5 part-time staff and one on full time.
3. Please describe your target market.
   Answer: Middle to high income earner in Port Harcourt and its environs
4. Has your target market changed over the years?
   Not yet really.
5. How would you describe the Nigerian business environment?
   Answer: Unpredictable, very challenging and ever changing.
6. Who are your competitors?
   Answer: Our competitors are other confectionary outfits providing similar services in our environment.
7. Do your employees abide by the company policies and objectives?
   Answer: Yes, they do. We have in place corrective measures to focus behaviours divergent conducts.

Section 2: Questions on ICT Adoption / Use:

8. Do you use or engage in any form of IT in your Organisation?
   Yes, I do sparingly for now.

9. Who initiated the idea to adopt ICT in your firm?
   Answer: The CEO.

10. Who are those involved in the Decision-making process?
    Answer: The CEO and staff.

11. What is the type of ICT Solutions considered for adoption?
    Answer: Internet and online services, Customer management and ordering solutions. Social media platforms.

12. What are the major reasons/drivers/motivators for ICT adoption and use in your firm?
    Answer: Better customer service and experience, easy reach to market and improved productivity and feedback.

13. What are the inhibitors to the adoption process?
    Answer: High Cost, unstable operating environment

14. What is the impact of ICT on your firm's performance?
    Answer: Will helps reduce cost, improve customer experience delivery

Section 3: Questions on Knowledge Creation

15. What do you understand by Knowledge Creation?
    Answer: Knowledge creation is the formation of new notions and concepts; this can happen within and outside the business environment.

16. Do you think or consider ICT adoption as necessary for KC?
    Answer: ICT is necessary in knowledge creation in modern times because it makes for efficient planning; organizing their work and for information storage.

17. Do you think there's any impact of ICT adoption on knowledge creation or sharing?
    Answer: YES I think so though it has both positive and negative impacts

18. Do you think the use and deployment of ICTs help to enhance SMEs performance?
    Answer: Yes, SMEs can leverage ICT to better deliver service and compete favorably, SME can easily take appropriate decisions that will enhance profitability.

19. Do you think the use of ICT is positively associated with SMEs innovative Performance?
    Yes, I believe so. SMEs for instance seeks information from internet on how they can improve their businesses.

20. Do you Think, the higher the use of ICT, the better for skills acquisition and innovation.
    Answer: Yes. This largely depends on the nature of the business.

21. Do you think ICT adoption on knowledge creation will lead to competitive advantage?
    Answer: I think ICT will greatly aid competitive advantage. ICT plays a major role in supporting tactical and strategic objectives. For instance, in development of products, customer services and after sales support, the role of ICT cannot be over emphasized thus giving a firm ***competitive advantage*** in the market.

22. Can you comment on the overall ICT Strategy in your Organization?

    Answer: Overall ICT strategy is low for now, as we increase, we will progress and the business demands.

23. Would you consider adopting more sophisticated ICT in the future?
    Yes: We are looking at progressing towards e-order bookings etc.

24. Personal or general Information.
    Operating environment is largely hostile in River's state with lots of multiple taxation issues and lack of basic infrastructure that will aid business development.

SECTION 4:

25. What are your duties and responsibility in the company?
    Answer: I am one of the CEO

26. Is your position related to IT implementation?
    Answer: No: Am not ICT Staff

27. Does your company have a functional ICT department:
    Answer: NO

28. Briefly describe the various ICT applications in your company.
    Answer: NIL.

29. How do you acquire ICT facilities in your firm?
    Answer: N/A

30. N/A

APPENDIX:14

Liverpool Business School
Redmond Building,
Brownlow Hill,
Liverpool,
L3 5UG

30th April 2020

INTERVIEW QUESTIONS FOR SMALL & MEDIUM SIZED ENTERPRISES/FIRMS

Company Name: **AbL**

Address: N/M

Phone Number: N/M

Name of Participant: N/M

Position: MANAGING DIRECTOR

Questions for Owners/Managers

Section 1: General Background Questions about the Company.

What is the history of this firm? Ab Limited was registered as a Nigerian company in 1997 with the sole aim to provide Printing, Promotional and Branding services to our clients.

1. What is the current Organisational structure of your firm? The Managing Director, Brand Executive, Production Executive and Technical Staff.
2. What products or services do you offer to your customers? Printing/Promotional and Branding services.
3. What are your firm's goals or objectives? To be a branding company of ultimate resort.
4. How many employees do you have in your company? 8
5. Are they all on full time or part time? Full Time
6. Please describe your target market? Our target market is mainly the Corporate World/ High Net worth Individuals, Breweries etc.
7. Has your target market changed over the years? No
8. How would you describe the Nigerian business environment? Lacking in government support and financial aid.
9. Who are your competitors? Oxford Blue Ltd, Deyo Jem Ltd, Virgin Organization Ltd.
10. Do your employees abide by the company policies and objectives? Yes

Section 2: Questions on ICT Adoption/Use

1. Do you use or engage in any form of IT in your organisation? YES
2. Who initiated the idea to adopt ICT in your firm? THE MANAGING DIRECTOR
3. Who are those involved in the decision-making process? THE MANAGING DIRECTOR/EXECUTIVE STAFF.
4. What was the type(s) of ICT solution considered for adoption? INTERNET SERVICES, EMAIL SERVICES, DIGITAL MARKETING SERVICE, INTERNET BANKING, ONLINE SERVICES etc
5. What were the major reasons/drivers/motivators for ICT adoption and use in your firm? TO AID EASY/QUICK ACCESS TO SERVICES PROVIDED, TO BE ABREAST WITH COMPETITION and TO MEET UP WITH CLIENTS' DEMANDS & EXPECTATIONS.
6. What are the inhibitors to the adoption process? Inadequacy of Network Service providers.
7. What are the impacts of ICT on your firm's performance? Easy access to services provided by reputable clients.

Section 3: Questions on Knowledge Creation

1. What do you understand by Knowledge creation? Knowledge Creation is the process of creating new concepts and ideas to aid the continuous growth/development of the Organization.
2. Do you think or consider ICT adoption as necessary for KC? YES
3. Do you think there is any impact of ICT Adoption on knowledge creation or sharing? YES
4. Do you think the use and deployment of ICTs help to enhance SMEs performance? YES
5. Do you think the use of ICT is positively associated with SMEs innovative performance? YES
6. Do you think the higher the use of ICT, the better for skills acquisition and innovation? YES
7. Do you think ICT adoption on Knowledge creation will lead to competitive advantage? YES
8. Can you comment on the overall ICT strategy in your organisation? Our ICT overall strategy is aimed at ensuring that our services are easily accessible, and jobs are concluded on possibly without the physical presence of the client.
9. Would you consider adopting more sophisticated ICT in the future? YES, IF NEED BE.
10. Is there any information you want to share with me personally or generally? None

Section 4: Questions for IT Mangers/IT officers/Administrative Staff

1. What are your duties and responsibility in the company? We ensure that new concepts, ideas, and jobs done are uploaded to keep our clients abreast of new developments. We ensure perfect finishing of jobs done and ensure proper documentation for organizational monthly evaluation.

2. Is your position in the company related to ICT implementation? YES
3. Does your company have a functional IT department? YES
4. Please briefly describe the various ICT applications in your company. INTERNET SERVICES, DIGITAL MARKETING, GRAPHICS DESIGN SOFTWARE. EMAIL SERVICES. INTERNET BANKING.
5. How do you acquire ICT facilities in your firm? From SERVICE PROVIDERS
6. Please describe the experiences you have gained over the years from adopting ICT. Simply put; creativity has become our driving force.
7. Does ICT have any significant effect on Knowledge creation in your company? YES
8. Does ICT have any effect on your company's organisational performance? YES
9. What are the benefits associated with the use of ICT in your company? Staying abreast with business competitive measures.
10. Are there any factors' affecting the effective utilisation and adoption of your company's ICTs? POWER SUPPLY, USAGE BY MEMBERS OF STAFF and COST OF IT'S PROVISION
11. What are the drawbacks associated with the use of ICT in your firm? Inability for clients to take time to go through all ideas, concepts and designs created for their consumption .
12. From your point of view, what are the factors that contribute to the success of ICT adoption?
    A. Competitiveness
    B. Clients' satisfaction
    C. Creativity
    D. Knowledge acquisition.

ABBREVATIONS AND ACRONYMS

ADB – Agricultural Development Bank

AGSMEIS – Agri-business Small and Medium Enterprises Investment Scheme

ABP – Anchor Borrowers Programme

AFS – Agrifood System

BERR – Department of Business, Enterprise, and Regulatory Reform

BOA – Bank of Agriculture

BOI – Bank of Industry

CAC – Corporate Affairs Commission

CBN – Central Bank of Nigeria

CEO – Chief Executive Officer

CGS – Conditional Grant Scheme

CPRCN – Computer Professional Registration Council of Nigeria

CRM - Customer Relationship Management

ERP – Enterprise Resource Planning

GDP – Gross Domestic Product

GSM – Global System for Mobile Communication

ICT - Information and Communication Technology

IDCs – Industrial Development Centres

IMF – International Monetary Fund

IPPs – Independent Power Plants

IS – Information Systems

ISPs – Internet Service Providers

ITU – International Telecommunication Unit

NACRDB – Nigerian Agricultural Co-operative and Rural Development Bank

NBCI – Nigerian Bank for Commerce and Industry

NAFDAC – National Agency for Food, Drugs Administration and Control

NCC – Nigerian Communications Commission

NDE – National Directorate of Employment

NERFUND – National Economic Reconstruction Fund

NEXIM – Nigerian Bank for Commerce and Industry

NIDB – Nigerian Industrial Development Bank

NITDA- National Information Technology Development Agency

NRI – Network Readiness Index

OECD – Organisation for Economic co-operation and Development

PC – Personal Computer

ROI – Return on Investment

SCM – Supply Chain Management

SME - Small and Medium Sized Enterprises

SMEDAN – Small and Medium Sized Agency of Nigeria

SMEIS – Small and Medium Equity Investment Scheme

SSA – Sub-Saharan Africa

SSICS – Small Scale Industries Credit Scheme

UNCTAD – United Nations Conference on Trade and Development

UNESCO – United Nations Educational, Scientific and Cultural Organisation