SMEs Challenges: A Study of Technology Companies in Nigeria.

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DECLARATION FORM

The work I have submitted is my own effort. I certify that all the material in this Research project, which is not my own work, has been identified and acknowledged. No materials are included for which a degree has been previously conferred upon me.

Signed: Date: March 30, 2016

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The Abstract

The importance of small and medium-sized enterprises (SMEs) in the economies of nations cannot be overemphasized. This is because countries that have a thriving economic environment for SMEs to operate have seen a significant contribution to their GDPs from this often overlooked sector. Consequently, policy makers have recently started focusing more attention on the SMEs. This study's objective is to explore the challenges that ICT/Technology companies face in Nigeria. An exploratory research approach was adopted. Primary qualitative data were collected through the administration of semi-structured interviews to key stakeholders of 10 ICT/Technology companies in Nigeria. The questions included questions on the micro and macro environmental factors that pose challenges to the technology SMEs, the role of Government, and technology SME survival strategies. The findings show that the most important challenge to technology SMEs is the deficiency of skilled IT experts. It is followed by erratic power supply. Other challenges that follow are government policies, macro-environmental challenges, manufacturing infrastructure, and finance.

This study's results have implications for managers that will aid in the effective resolution and management of most of the challenges that they face. The implications for managers are two-fold: The solution to challenges and survival strategies.

For managing challenges effectively, it is recommended that managers close skill gaps through formal or informal training. Electricity challenges can be addressed through a backup system consisting of generating sets, inverters, and solar panels. Further, managers should create or join interest groups or associations that protect their business' interests. The economic environment should frequently be scanned to mitigate risks and maximize opportunities. Also, managers should begin to build manufacturing capability for the future, and ensure tight financial controls and an organic growth model.

For survival strategies, managers should have thoroughly validated business models before venturing. They should embrace organic growth and networking. Further, managers should utilize advertising, seek strategic partnerships wherever necessary, and diversify as needed.

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Author

Chikelue Moses Oji

Chapter 1: Introduction, Context and Research Objectives

This purpose of this study is to enquire into the challenges that impede the survival and growth of small and medium-sized technology companies in Nigeria.

This study is justified for several reasons. The first reason is that since the beginning of enquiries into small and medium enterprises (SMEs), there have not been any studies aimed at determining the challenges that impede the survival and growth of technology SMEs in Nigeria. The second reason is that technology SMEs are a high growth organisational category in the United States and India. The statistic that 80% of the companies involved in software development in India are SMEs proves the untapped potentials that technology SMEs in Nigeria have, further making a case for this study (Nirjar, 2008). Besides, India is the world's information technology outsource destination of choice (Carmel & Agarwal, 2006). Apple, the most valuable company in the United States of America and in the world, which was once an SME, is a technology company (Kraemer et al., 2011). If Nigeria's technology SMEs can be developed, and most challenges facing them removed, Nigeria can also become a destination of choice for information technology outsourcing. The third reason for justifying this study is the significant amount of money that is spent in the Nigerian economy on the importation of technology products, especially computer software technology. These expenses could be avoided, and the financial resources retained within the country for the creation of employment and the alleviation of poverty, if both private and public enterprises within Nigeria opted to patronise the local technology SMEs.

An interpretive or qualitative approach was employed in the execution of this study. This is because this research approach is very effective in getting to the cause of issues that cannot be done using a quantitative or positivist approach.

This paper is structured as follows: Chapter 2 contains the review of the extant literature. Chapter 3 presents the interview guide and the research methods utilised in conducting this study. The primary data collected in the field are analysed and interpreted in Chapter 4. Chapter 5 discusses the study's results and concludes the paper.

Definition of Terms

Before proceeding, this author will define what a small and medium-sized enterprise (SME) is. Additionally, he will also establish what a technology company is in the context of this study.

An SME is an organisation that is limited in its annual turnover or its total employee strength (Muritala et al., 2012).

There are varied definitions of what should constitute an SME. According to Muritala et al. (2012:48), "Some common indicators employed in the various definitions include total assets, the size of labour employed, values of annual turnover and capital investment" (Baenol 1994 cited in Muritala et al., 2012:48).These definitions differ from one regional, national, and world economic organisation to another (Costicä, 2013; OECD, 2004).

Currently, there is no consensus on the definition of an SME. As a result, for this study, this author will base his definition of an SME on the number of employees, due to its simplicity and the fact that it is a factor that can be easily disclosed by SMEs (Costicä, 2013). This approach to defining an SME has its weaknesses and has attracted opposing viewpoints (Costicä, 2013), but its merits of easy disclosure far outweigh its demerits for this author's purposes.

Consequently, for this study, this author will adopt the definition of a small and medium enterprise (SME) as a business having 1 to 500 employees, and categorised into micro-entities (1-19 employees), small enterprises (20-99 employees), and medium-sized enterprises (100-500 employees) (Costicä, 2013:106).

On the other hand, technology companies, are organisations that transform "research and development investments into economic value" (Adamauskas & Krusinskas, 2013:209). Another definition that this author will provide is that for Information and Communications Technology (ICT). There is no consensus among scholars, on a singular, universally accepted definition of ICT. It is widely accepted that the acronym ICT means Information and Communications Technology. Zuppo (2012) in his attempt to define ICT, applied a hierarchical system because ICT means different things in different contexts. The top-level constructs of this hierarchy that resulted from his review of the literature are economic development, economic sector, business/IT, and education. Although economic development and economic sector are interrelated, economic development refers to the infrastructure that could facilitate positive socioeconomic impact e.g. the use of SMS to locate the survivors of a natural disaster. The Economic sector, on the other hand, refers to the ICT products of a country. The business-application definition of

ICT refers to its capability to provide the medium for employees and business partners to communicate. The educational view of ICT refers to the technological tools and skills required to facilitate learning (Zuppo 2012).

Status of Small and Medium Enterprises in Nigeria

According to Osagie (2012), a national survey that was carried out by the National Bureau of Statistics at the author's time of going to press indicated that there were 17.28 million SMEs in Nigeria. It was also discovered that 17.26 million of this population were micro enterprises that were worth less than 5 million Naira (Osagie, 2012).Further, it was also gathered that SMEs in Nigeria employ about 32.4 million people. Regardless of the above statistics, the performance of Nigerian SMEs is still below expectations due to an avalanche of challenges. These challenges, which will be discussed later, include those of infrastructure, lack of access to affordable credit, and poor management skills.

Technology SMEs

Although this author did not find reliable data on the total number of technology or ICT SMEs in Nigeria, technology SMEs play a critical role in the economy. One of the roles they play includes providing ICT business support services to other non-technology businesses. These ICT business support services include website design, development, and hosting; email hosting; intercom installation and maintenance; mobile phone repair, computer hardware cloning, maintenance, and repair; networking equipment installation, configuration, and administration; and software development. Further, technology SMEs also aid in poverty eradication through the provision of well-paying jobs.

If we focus again on the success of India and attempt to compare the socioeconomic characteristics of India and Nigeria, we will find that there is a lot in common between both countries. These parallels include a large population, knowledge of the English language, lower wage rate compared to the developed countries of North America and Europe. Based on these similarities, it can be argued that Nigeria is well placed to be a base for technology SMEs.

Research Questions and Objectives

The statistic that 80% of software companies in India are SMEs imply that technology SMEs can no longer be overlooked (Nirjar,2008). This information, among others, has prompted this author to formulate three research questions.

1. What are the micro and macro environmental factors that pose a challenge to the Nigerian technology SME?
    a. What micro and macro environmental factors pose the most challenge to Nigerian technology SMEs?
    b. What micro and macro environmental factors pose the least challenge to Nigerian technology SMEs?

2. What is the role of the Nigerian Government in addressing the challenges of Nigerian technology SMEs?

3. Can small and medium technology companies survive without government policy support, but rather, through the development of intrinsic SME survival strategies such as innovative strategies and collaborative networks/interest groups' formulation?
    a. If yes, how can they survive?

Conclusion

In summary, SMEs in Nigeria are faced with numerous challenges. These challenges range from a lack of access to affordable credit to infrastructural challenges. Technology SMEs are also faced with the same challenges but may have some variations in the challenges they encounter due to their more specialized nature. In the next chapter, this author will perform a review of the literature to establish if there are gaps in the literature relating to technology SMEs. Additionally, he will attempt to identify the common themes in the literature on SMEs.

Chapter 2: Literature Review

The Salience of Small and Medium Firms

The subject of SME businesses is a topic of interest for many reasons. These reasons include the fact that small and medium companies have started receiving policy attention recently, because it is argued that SMEs in developing countries have the potential to contribute to the economic growth and development of a nation, compared with their floundering larger counterparts (Muritala et al., 2012). Secondly, it is argued that SMEs constitute the major employment generators in most economies. Thirdly, it is argued that SME development can speed up poverty eradication through the creation of jobs for the unemployed in the society.

A review of the literature on SMEs, and the challenges of small and medium businesses in Nigeria reveal two major themes. These subjects consist of sub-themes. The two major themes in the literature on SMEs are the challenges to the survival and growth of SMEs, and the potential remedies to those challenges. The potential solutions to these challenges, discussed later on in the text, have been recommended by researchers since the commencement of studies on small and medium enterprises (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Karadag, 2015; Adisa et al., 2014; Rogerson, 2001; Tagoe et al., 2005; Schermerhorn Jr & John, 1980).

Challenges for SMEs

This author identified eleven challenges in the literature, of which there was a consensus on eight by multiple researchers (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Karadag, 2015; Adisa et al., 2014; Rogerson, 2001; Tagoe et al., 2005). This author's approach is to accept as a significant challenge, any challenge that has the consensus of at least three of the articles that were reviewed. The eight key challenges of SMEs in Nigeria are as follows:

1. **Lack of financing**: Lack of financing is perceived to be the most common problem of SMEs in Nigeria (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Karadag, 2015; Adisa et al., 2014; Rogerson, 2001; Tagoe et al., 2005). Although Onugu (2005:23) cited finance issues as one of the challenges to small business growth

and development in Nigeria, he took a different stance on the ranking of financial issues among the other SME challenges. His stance is from the results of his study, which revealed that a lack of managerial skills ranked higher than a lack of finance, as the most important inhibition to small business survival and growth (Onugu, 2005:79).

2. **Poor infrastructure**: Apart from a lack of finance or credit, the challenge of poor infrastructure has always been another major challenge for small and medium businesses in Nigeria (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Adisa et al., 2014). The challenge of infrastructure is age-long in Nigeria. Infrastructural challenges for Nigerian SMEs include a lack of electricity supply, a lack of clean water supply, a lack of good transport and road networks, and a lack of security (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Adisa et al., 2014).

3. **Difficulty getting raw materials**: Difficulty getting raw materials is another challenge for SMEs in Nigeria (Mambula, 2002; Mambula, 2004; Onugu, 2005). A series of factors lend credence to this issue. Nigeria is significantly a consumer country and therefore, most products, product components and raw materials are imported. The imported materials are purchased using foreign currencies, most especially, the US Dollars. Since the Structural Adjustment Programme (SAP) intervention of the Federal Government of Nigeria in 1986, the Nigerian Naira has remained significantly devalued on the US Dollars, thus making it expensive for SMEs to procure and utilise (Mambula, 2002:59). For industries that source raw materials locally, the menace of bad roads or the lack of accessible transportation networks pose logistical challenges to the SMEs and their businesses.

4. **Personnel**: It is not always easy for SMEs in Nigeria to get quality employees at SME budgets. This issue has always been a challenge (Mambula, 2004; Vrgovic et al., 2012; Karadag, 2015). Getting skilled employees costs more than getting unqualified personnel. This issue is a challenge for SMEs because they do not have the financial resources to hire skilled personnel. Consequently, this factor leads the SME to compromise on the quality of the personnel they hire, which in turn may adversely impact their operations.

5. **Economic environment**: The micro and macro environment may pose a challenge to the survival and growth of SMEs (Mambula, 2004; OECD, 2004; Onugu, 2005). The micro environment refers to how activities in the same industry such as competition can affect the survival and growth of SMEs (Pitt & Koufopoulos, 2012). The macro environment, on the other hand, refers to events external to the market or industry in which an SME is situated. It most often is synonymous with external economic forces, most especially those events that are the outcome of government policies. Foreign exchange rates also impact the macro environment (Pitt & Koufopoulos, 2012). An example of a government policy that resulted in an unfavourable macro environment for a significant number of SMEs in 1986 was the Structural Adjustment Programme (SAP) (Mambula, 2002:59).

   A recent example of a macro environment that can adversely affect SMEs is the current economic state of Nigeria in 2015, after the oil price crash since mid-2014. This oil price crash has resulted in a depleting foreign exchange reserve for Nigeria, which has consequently led to the devaluation of the Nigerian Naira against the US Dollar. The Central Bank of Nigeria has made and adjusted various policies geared at stabilising the value of the Naira through a reduction of the demand for the US Dollar (Agbugah, 2015).

6. **Government policies**: Government policies can be both detrimental and beneficial to Nigerian SMEs (Mambula, 2004; OECD, 2004; Onugu, 2005). For example, a policy by the Central Bank of Nigeria (CBN) to devalue the Nigerian Naira against the US Dollar can negatively affect SMEs that source raw materials and production inputs from abroad. As a result, they will source their inputs at an increased cost, thereby making their finished products or services uncompetitive against imported products. Conversely, a government policy geared at preventing the importation of certain products, with the aim to stimulate local production of those products, will benefit Nigerian SMEs. Further, this import prevention policy will also stimulate exports, thereby increasing the Gross Domestic Product (GDP) of Nigeria.

7. **Poor management**: The poor management of resources such as financial resources is also among the challenges that most SMEs face (Muritala et al., 2012; Onugu, 2005; Karadag, 2015). Poor financial management controls can be the bane of business, and this does not differ from

the small business case. According to Karadag (2015), "poor management" (Zimmerer and Scarborough, 2005 cited in Karadag, 2015:27) was cited as a key cause of small business failures.

8. **Lack of training and experience**: A lack of managerial skills and experience is one of the challenges confronting Nigerian SMEs (Muritala et al., 2012; Karadag, 2015; Adisa et al., 2014). According to Onugu (2005), this particular issue ranked higher than financial challenges for the Nigerian SME owner.

This study is related and relevant to the theme of challenges for SMEs because it is only logical to begin a study on the challenges of technology SMEs by first reviewing the literature for the challenges of generic SMEs. As macro-environmental factors can affect most companies regardless of size, industry type, and age, it therefore follows that ICT/Technology SMEs will share some of the challenges facing generic SMEs.

Potential Solutions

The solutions offered by some of the researchers in the literature are as follows:

1. **Technology Transfer**: In developed countries, innovation drives productivity in some SMEs while in developing countries like Nigeria, technology transfer from more developed countries is the way to improve productivity (Muritala et al., 2012; Onugu, 2005; Rogerson, 2001).

2. **Initiative**: SMEs can gain traction through taking initiative and being able to take advantage of opportunities independently (Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Rogerson, 2001). In his 2004 comparative case study of three Nigerian plastic manufacturing small and medium firms, Mambula (2004:101) discovered that although a lack of financial and market security could threaten the very existence of firms, "too much security" Mambula (2004:101) could, in turn, limit entrepreneurial initiative. This discovery implies that entrepreneurs are more poised to solve problems creatively, drawing upon the significant initiative they have available to them during challenging business seasons.

3. **Innovation**: Innovation is a major solution to the survival and growth challenges of SMEs. This innovation could be in the form of the application of absorptive capacity, through the acquisition and application of external knowledge to the strategic benefit of the firm (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Karadag, 2015; Rogerson, 2001).

   Citing the OECD (2006), Karadag (2015) argued that SMEs and entrepreneurs were a major source of innovation in both developed and developing economies alike (OECD, 2006 cited in Karadag, 2015:27). He implied that SMEs by definition were innovative, compared to any other classification of the firm.

4. **Networking and SME Clusters**: Networking and SME clusters have been recommended as a solution to some of the challenges that SMEs face. It has been argued that a major challenge of SMEs is their inability or unwillingness to network, collaborate and form meaningful mutually-beneficial communities. One recommended intervention is for SMEs to form product development clusters where each firm within the cluster takes up one role in the product development process (OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Rogerson, 2001; Schermerhorn Jr & John, 1980; Porter, 1990). Further, SMEs within a cluster could gain economies of scale advantages while sourcing production inputs as a network rather than individually (OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Rogerson, 2001; Schermerhorn Jr & John, 1980; Porter, 1990).
   Although the terms network and SME clusters are used interchangeably in some quarters, Rogerson (2001) explained the distinction between SME networks and clusters. He explained that SME networks could exist autonomously of physical clusters of firms (Rogerson, 2001:122).

   Another importance of networking and SME clusters is its association with innovation. According to Vrgovic et al. (2012), some researchers have established that SMEs networking with other dissimilar groups is positively associated with innovation (Vrgovic et al., 2012).

   To further support the significance of clusters, Porter (1990) argues that "the diamond creates an environment that promotes clusters of competitive industries"(Porter, 1990:86). This factor was further buttressed by the fact that "Related and Supporting Industries"(Porter, 1990:82),

constitutes the third factor of Porter's "Diamond of National Advantage" (Porter, 1990) that determines national advantage.

5. **Globalisation**: Globalisation poses both a challenge and an opportunity for SMEs. Globalisation could pose serious challenges for SMEs due to global competition while also providing access to a global market to the SME (OECD, 2004; Onugu, 2005; Rogerson, 2001). The challenges of globalisation occur by the way of competition from foreign companies. A sample scenario is when these foreign companies, having access to cheaper labour in their home countries, offer products or services at a cheaper rate to customers in an SME's local market. This factor can put the local SMEs out of business due to the inability of the SME to compete in such a situation.

   Apart from its challenges, globalisation also offers opportunities by the way of increasing the scope of the SMEs market from a local or regional one to an international one.

Just like a review of the literature on the challenges of generic SMEs is important in a study of technology SMEs, the potential solutions to the challenges of generic SMEs in Nigeria is also relevant to a study of technology SMEs in Nigeria. As technology SMEs are a specialized form of SMEs, it, therefore, follows that technology SMEs will benefit from some of the solutions to the challenges of generic SMEs. It is for this reason that the theme of the potential solutions to the challenges of SMEs in Nigeria will be relevant to this study.

Challenges Facing ICT/Technology SMEs in Nigeria

The challenges facing ICT/Technology SMEs in Nigeria are myriad. They range from the most general issues that affect all Nigerian SMEs to more specific ones that impact ICT and technology SMEs the most. The challenges that characterize all Nigerian SMEs (including the ICT/Technology ones) in general have been discussed previously. They are lack of financing; poor infrastructure, for example inadequate electricity supply; challenges that impede access to needed raw materials; difficulty in accessing quality personnel; economic environment; government policies; poor management; and a lack of training, skills

and experience (Mambula, 2002; Mambula, 2004; Muritala et al., 2012; OECD, 2004; Onugu, 2005; Vrgovic et al., 2012; Karadag, 2015; Adisa et al., 2014; Rogerson, 2001; Tagoe et al., 2005).

Apart from the general challenges that impede the progress of all SMEs regardless of sector, the sector-specific challenges that plague the ICT/Technology sector are as follows:

1. **A high cost of Internet bandwidth**: The cost of internet bandwidth in Nigeria is still too expensive for most SMEs in Nigeria, compared with their counterparts in developed nations. This challenge is regardless of the availability of significant amount of submarine bandwidth available to Nigerian telecoms operators. Additionally, although there has been an increase in the availability of provisioned fiber optics cables, the inlands are still far off from this expansion due to limitations of cost and right-of-way issues. These impediments have resulted in no significant drop in the price of bandwidth in the nation (Odufuwa, 2012).

2. **Lack of a converged National ICT framework governing ICT business in Nigeria**: There are still no approved policies on how ICT should be carried out in Nigeria. The Nigerian Information Technology Development Agency (NITDA) has already assembled academics and experts from industry to work on this. The various working committees have released draft policy documents which have not yet taken force as of yet.

3. **Competition, especially from foreign companies that do business in Nigeria**: Nigerian ICT/Technology SMEs continuously face severe competition from foreign technology companies. Nigeria's usual preference for foreign or imported products and services has only worsened the matter.

These challenges that are more specific to technology SMEs have been presented here after a review of the literature and a reflection on the author's personal experience. These challenges will later be compared with the findings of this study.

Research Gap Summary and Questions

Having reviewed the extant literature on SMEs, it is evident that this category of business entity is of relevance to economic development and social progress. What is missing from the literature are studies about small and medium technology companies. With the impact that technology SMEs are making in the economy of India, it is evident that more studies should be conducted into learning more about technology SMEs in Nigeria to discover what gaps exist and how these may be addressed (Nirjar, 2008). As a result, interventions can be recommended that will enable Nigerian small technology firms to compete effectively in the local and global technology market. To achieve this purpose, this author has formulated three research questions.

1. What are the micro and macro environmental factors that pose a challenge to the Nigerian technology SME?
    a. What micro and macro environmental factors pose the most challenge to Nigerian technology SMEs?
    b. What micro and macro environmental factors pose the least challenge to Nigerian technology SMEs?

2. What is the role of the Nigerian Government in addressing the challenges of Nigerian technology SMEs?

3. Can small and medium technology companies survive without government policy support, but rather, through the development of intrinsic SME survival strategies such as innovative strategies and collaborative networks/interest groups' formulation?

    a. If yes, how can they survive?

Chapter 3: Interview Guide and Draft Research Methods

Research Design, Methodology and Rationale

To answer his research questions, this author adopted the philosophical viewpoint of strong constructionism. This variant of the constructivist worldview directly derives from the nominalist ontology (Easterby-Smith et al., 2012). The strong constructionist perspective "assumes there is no pre-existing reality, and the aim of the researcher should be to understand how people invent structures to help them make sense of what is going on around them. Consequently, much attention is given to the use of language and conversations between people as they create their own meanings" (Easterby-Smith et al., 2012:26).

The methodology that has been adopted for this study is the Qualitative methodology. A qualitative methodology is an approach to research in which non-ordinal (e.g. textual) values are collected and analysed (Anon, n.d.).

The unit of research, in this case, is the SME.

Research Methods, Critical analyses of Strengths and Weaknesses

In line with the epistemology of strong constructionism, this author's research methods will be wholly qualitative (Easterby-Smith et al., 2012). The advantage of qualitative data over quantitative data is that the qualitative method considers the data holistically while the quantitative approach reduces data in whatever form to its quantitative form. This reduction of data into quantitative form results in the loss of data about its context. The Qualitative approach also aids in not only investigating the phenomenon but also in inquiring about what causes the phenomenon in the first place.

A key weakness of the Qualitative approach is that it allows for ambiguity, which the quantitative approach strives to eliminate (Easterby-Smith et al., 2012:129). This weakness is buttressed by the words of (Easterby-Smith et al., 2012:129) that "From a positivistic standpoint, the fact that there is ambiguity about the meaning of [...] invalidates the research, but for the in-depth interviewer who probes, questions and checks, this is important data." (Easterby-Smith et al., 2012:129)

Constraints and Limitations of Selected Methodology and Methods

The constraints and limitations of this author's chosen methodology, methods and techniques are that it is very time consuming to perform. The Inductive Content Analysis technique mainly aids the researcher in identifying themes or data that can be grouped together into the same category. This technique has significant limitations when compared side by side with the Grounded theory approach, where the relationship between themes is also an objective of the technique. Consequently, the Content Analysis technique does not treat the data holistically as compared with the Grounded theory approach (Easterby-Smith et al., 2012; Cho & Lee, 2014). However, it is noteworthy that regardless of the limitations of the inductive content analysis approach, it is usually convenient when performing exploratory studies.

Data Collection

Due to the significant constraints of time and resources required to conduct this study across the whole of Nigeria, this author chose two cities – Lagos and Abuja. Lagos, for its convenience as the state of residence of this author. Moreover, Lagos state is both a significantly populated metropolis, and the financial capital of Nigeria, and thus has a significant amount of SMEs compared with the rest of Nigeria. Abuja, on the other hand, is commonly regarded as the administrative capital of Nigeria after the capital was moved from Lagos to Abuja during the military era.

This author contacted the Lagos Chamber of Commerce and Industry (LCCI) and the Abuja Chamber of Commerce and Industry (ACCI) with the view to gaining access to their database of SMEs for this study. The LCCI requested that he should apply formally to the Director of the Organisation before the request could be processed while the contact person for the ACCI declined free access. The ACCI contact person insisted that this author must register his company with them to gain access to the directory of members of the chamber. Consequently, a position was taken to commence with collecting the primary data for Lagos, and address Abuja's access issues afterwards.

Upon the fulfilment of the access request process for the LCCI, this author received a spreadsheet of 32 ICT/Technology SMEs from them, and subsequently commenced data collection.

Sampling Methods

The sampling of both cities was treated separately, starting first with Lagos State. A combination of quota sampling (a non-probability sampling approach/design) and the simple random sampling (a probability sampling approach/design) was initially employed as the sampling approach (Easterby-Smith et al., 2012). A total sample of 10 was the target for this qualitative study. This total sample was split into a quota of 5 samples from each city or state.

In sampling for Lagos state using the list of 32 companies that the LCCI sent to this author, the sampling frame of 32 was further filtered to 30 companies through the elimination of a duplicate entry for a courier company and the elimination of the Courier company from the list altogether. This Courier Company was filtered from the original sampling frame because it did not meet the criteria for a Technology SME required to participate in the study. Consequently, the sampling frame for Lagos was reduced to 30 companies.

The sampling commenced with the assignment of a number between 1 and 30 inclusive to each company on the list. The numbers were separated and placed in a nylon bag and shuffled for some time. It was decided that ten samples instead of 5 be drawn from the sampling frame, to cater for invalid or stale contact details and prospective participants that will decline to participate in the study. Afterwards, ten numbers were selected from the bag without looking into the bag. Each time a number was selected, the remaining numbers were reshuffled again before drawing the next number.

Upon drawing the ten samples, this author commenced contacting them one after the other. He was able to successful schedule interviews with some of the selected SMEs while some were unreachable through their contact telephone numbers. Additionally, one prospective participant turned out not to be an SME, as they had sales revenue or turnover of about 500 million Naira daily. This first round of the selection of prospective participants did not provide this author with his quota of 5 Lagos participants. Two follow-on random draws of 5 numbers each was done with minimal success in reaching the quota. At this point, the simple random sampling technique was dropped in favour of the convenience

sampling technique, while the quota sampling component of the sampling design remained. This action evolved the design from a combination of both probabilistic and non-probabilistic sampling design constituents to a combination of two non-probabilistic sampling design techniques.

Most of the SMEs that were engaged through convenience sampling were either SMEs that were either service providers to this author; SMEs sourced through a search on a local search engine – www.vconnect.com; or an ICT company that was discovered during a casual walk through a major road at Abuja. One of the Lagos participants was a service provider of this author.

In the sampling for Abuja, most of the respondents were sourced from a search of ICT/Technology SMEs on the local business search engine – www.vconnect.com.

Qualitative Data Collection

The collection of qualitative data was done using the in-depth face-to-face interviews qualitative data collection approach. The interviews were conducted with 12 key respondents of ICT/Technology SMEs in Lagos and Abuja. From these 12 interviews, 10 were selected to satisfy the total target of 10 interviews and a quota of 5 interviews from each state or city. Additionally, the two eliminated Lagos interviews were eliminated in a way that will ensure that the remaining selected interviews are varied based on the company type. For example, this implied that one mobile technology company where the participant did not provide his annual sales revenue was eliminated in favour of the same type of company where the respondent did. The second interview that was eliminated was as a result of the fact that the SME did not meet the criteria for an ICT/Technology SME.

An interview guide (see Appendix A – Interview Guide for interviewing SMEs) containing open-ended questions to comprise the opening questions for the semi-structured interviews with target respondents, was prepared. The questions prepared as part of the interview guide include structured data that aimed to identify the sample that the interview would be administered to while the core research questions were open-ended questions that did not impose any pre-defined constructs on the respondents.

Data Analysis

The qualitative data analysis technique that was adopted for analysing the primary data collected was the Content Analysis technique (Easterby-Smith et al., 2012; Ratcliff, n.d.; Cho & Lee, 2014). According to Cho & Lee (2014:3), "Content analysis is described as a method to classify written or oral materials into identified categories of similar meanings (Moretti et al., 2011). These categories represent either explicit or inferred communication (Hsieh & Shannon, 2005). Abrahamson (1983) asserted that content analysis can be fruitfully used to examine virtually any kind of communication materials, including "narrative responses, open-end survey questions, interviews, focus groups, observations, printed media such as articles, books, or manuals" (as cited in Hsieh & Shannon, 2005:1278)". The Content Analysis technique was utilised with a strong preference for a significant inductive content. The aim of this author for applying the Inductive Content Analysis technique is the generation of new theory and the gaining of new insights that can lead to action (Easterby-Smith et al., 2012; Cho & Lee, 2014). This concept or approach holds true even for subject areas where there is little extant knowledge before the study (Easterby-Smith et al., 2012).

The enquiry into the challenges of ICT or Technology SMEs in Nigeria has not been undertaken before although there have been a series of studies on the challenges facing generic SMEs. The fact that the research into the challenges facing SMEs is being applied in a new area – ICT/Technology SMEs, makes it a candidate enquiry for Inductive Content Analysis.

This author utilized Computer Assisted Qualitative Data AnalysiS (CAQDAS), an approach that utilized computers in the analysis of qualitative data (Easterby-Smith et al. 2012). The CAQDAS software of choice utilized for the analysis of the collected primary data was NVivo because it met this author's requirements for central data management. Additionally, licensing was not an issue because this author utilized the institutional license of the university at which he was currently enrolled.

CAQDAS Approach

The CAQDAS process started with the importation of interview transcripts, field notes, and audio recordings into NVivo. Upon successful importation of the sources, case nodes were created out of the

sources using the appropriate NVivo features for creating case nodes. The rationale for creating the sources as case nodes was to allow for easy text search querying of the sources. This activity was followed by the creation of classifications to represent the person of the participant. The purpose of the classification was to capture the demographic of the participants for later analysis through queries. The attributes of this classification were Name, Gender, Designation, and Location. The Name attribute represents the name of the participant; the Gender attribute represents the gender of the participant; the Designation attribute represents the designation, position or job title of the participant; while the Location attribute represents the state or city of the participant.

After importing the sources and setting up classifications, the coding process was initiated using the open coding approach. The interview transcripts and field notes were read and reflected upon, to identify themes that were relevant to the study. The themes were arranged in various orders: first order, second order, and third order, as depicted below:

First Order themes	Second Order themes	Third Order themes
Challenges and Solutions for Technology SMEs	Challenges facing ICT or Technology SMEs	
	Most Important Challenges	
	Solutions to the Most Important Challenges	
Macro- and Micro-environmental factors that pose Challenges	Macro environmental challenges	Ecological or Physical environment
		Economic
		Political or Legal
		Socioeconomic
		Technological
	Micro environmental challenges	Competitors
		Customers
		Distributors
		Market
		Suppliers
Possibility of survival of Tech SMEs without Government	No	

policy support		
	Sustainability Approach	
	Yes	
The role of Government in addressing SMEs Challenges		

Table 1: The themes and sub-themes.

Ethics

As much as is possible, all steps have been taken to ensure that ethical expectations were met before, during and after the study. The research participants were assured that their identities and their companies' identities would be protected. Additionally, a participant consent form was administered to them to seek their "informed consent" (Easterby-Smith et al., 2012:95) before interviewing them. No participant was forced into participation (Easterby-Smith et al., 2012:95). Rather, the aims and objectives of the study were communicated to the participants, and they were informed of the benefits of adding to limited literature in this area.

In ensuring the privacy and anonymity of the research participants and their organisations, and the confidentiality of the research data, identity data was separated from the data before its analysis. Further, the participants have only been identified by their first names while other identifying information has been consciously eliminated (Easterby-Smith et al., 2012:95).

On the side of the author, adequate care was taken to ensure an unbiased position all through the research process. As this author wholly funded this study, there was no element of pressure and influence from a sponsoring organisation to manipulate findings (Easterby-Smith et al., 2012:95).

Reliability and Validity of the Qualitative Research

Golafshani (2003:603), argued that "the quality of a research is related to generalizability of the result and thereby to the testing and increasing the validity or trustworthiness of the research". His argument implies that the quality of research is directly proportional to how generalizable the results are. Therefore the validity of the research varies directly with how generalizable the results are.

To ensure that the interview questions are valid, answerable, and accurate, this author adapted it from previous works. Further, during the study, the author improved the quality of the questions for subsequent sessions by modifying a question to enhance clarity. He also noted two questions that were a duplicate of earlier questions, and he stopped posing those questions to subsequent participants. Additionally, in consonance with Golafshani (2003:604), that "An open-ended perspective in constructivism adheres with the notion of data triangulation by allowing participants in a research to assist the researcher in the research question as well as with the data collection", some participants of this study read through the contents of the author's notes to ensure that it reflected their views before the conclusion of each interview session. This particular part of the process also helped in ensuring that the collected data was valid.

Conclusion

In summary, to enable this author to answer his research questions on the challenges facing ICT SMEs in Nigeria, he took the standpoint of the strong constructivist epistemological worldview. This particular methodology or philosophical stance only supports a wholly qualitative approach to the collection and analysis of data (Easterby-Smith et al., 2012).It, therefore, followed that this author's method became qualitative.

The in-depth interview approach was selected to collect primary data. It was implemented by the way of semi-structured interviews of the respondents. This stage culminated in the analysis of the collected data through the application of the Inductive Content Analysis technique.

Chapter 4: Analysis and Interpretation

Demographic statistics

The interview was conducted among Chief Executive Officers (CEOs), Database Administrators, Founders and Business strategists, Managing Directors, Directors, and Chief Engineers. Additionally, the gender of all the participants was male.

Designation	Gender	Location	Name
CEO	Male	Lagos	Adeniyi
Database Administrator	Male	Abuja	Ayotunde
Founder/Business Strategist	Male	Abuja	Benedict
Managing Director	Male	Lagos	Chinedum
Managing Director	Male	Abuja	Edwin
Director	Male	Abuja	Francis
Chief Engineer	Male	Lagos	Oluwaseun
Managing Director	Male	Lagos	Sylvanus
Managing Director	Male	Abuja	Tunde
Director	Male	Lagos	Yemi

Table 2: The demographics of the interview participants.

Results

	1 :Adeniyi	2 :Ayotunde	3 : Benedict Transcript	4 :Chinedum Transcript	5 : Edwin	6 : Francis	7 :Oluwaseun Transcript	8 :Sylvanus	9 :Tunde	10 :Yemi
A : Challenges and Solutions for Technology SMEs	3	3	3	3	3	3	3	3	3	3
B : Challenges facing ICT or Technology SMEs	1	1	1	1	1	1	1	1	1	1
C : Most Important Challenges	1	1	1	1	1	1	1	1	1	1
D : Solutions to the Most Important Challenges	1	1	1	1	1	1	1	1	1	1
E : Macro- and Micro-environmental factors that pose Challenges	9	2	6	8	8	3	5	6	10	9
F : Macroenvironmental	4	1	4	4	4	3	1	3	5	4

challenges										
G : Ecological or Physical environment	0	0	0	0	1	0	0	0	1	0
H : Economic	1	1	1	1	1	1	1	1	1	1
I : Political or Legal	1	0	1	1	1	1	0	0	1	1
J : Socioeconomic	1	0	1	1	0	1	0	1	1	1
K : Technological	1	0	1	1	1	0	0	1	1	1
L : Microenvironmental challenges	5	1	2	4	4	0	4	3	5	5
M : Competitors	1	1	0	1	1	0	1	0	1	1
N : Customers	1	0	1	1	1	0	1	1	1	1
O : Distributors	1	0	1	0	1	0	0	0	1	1
P : Market	1	0	0	1	1	0	1	1	1	1
Q : Suppliers	1	0	0	1	0	0	1	1	1	1
R : Possibility of survival of Tech SMEs without Government policy support	2	1	2	2	1	2	2	2	2	2
S : No	0	1	0	0	0	0	0	0	0	0
T : Sustainability Approach	1	0	1	1	0	1	1	1	1	1
U : Yes	1	0	1	1	1	1	1	1	1	1
V : Product and Service Sources	1	1	1	1	1	1	1	1	1	1
W : The role of Government in addressing SMEs Challenges	1	1	1	1	1	1	1	1	1	1

Table 3: The Data Matrix (Transposed to manage document space).

Challenges and Solutions for Technology SMEs

Upon analysis of the responses to the interview questions on the key challenges facing Nigerian ICT/Technology SMEs, and the questions soliciting the proposal of a solution to the challenge that the participant perceived as the most pressing, various themes and sub-themes emerged.

The inductive approach to Content Analysis was applied to discover new knowledge through allowing themes to emerge from the data rather than working with pre-existing themes from extant literature (Cho & Lee, n.d.).

Challenges Facing ICT or Technology SMEs

From the responses of the respondents, 19 challenges confronting SMEs were uncovered. These challenges include the following:

1. **Deficiency of skilled IT experts**.

Most participants cited the deficiency of skilled IT experts or quality skills as the most significant challenge facing ICT/Technology SMEs in Nigeria. They categorized the kinds of skills needed by the employees and principals of ICT/Technology SMEs into two – Technical and Business Capacity.

I. **Technical Capacity**: This refers to the technical skills such as the skills to design and develop software.

> *"Getting highly experienced and qualified software engineers. We try to resolve this by training but staff may leave after training."*

The owner of a software technology company provided the comment above. He made this comment to illustrate their approach to bridging the gap in the technical skills of potential employees. Moreover, this attempt at solving the skills gap challenge also presented another challenge – the possibility of an employee leaving for a higher offer elsewhere, after being trained.

Another participant expressed this views about quality skills being the most pressing challenge when he made the comment below.

> *"In my own view are quality skills in our human capital"*

II. **Business Capacity**: This refers to the business knowledge required to make a business viable and profitable. A participant commented that some entrepreneurs starting up ICT/Technology SMEs in Nigeria have the technical capacity or skills but do not have the business skill to make the business successful.

> *"But beyond the tech capacity is the business capacity. Being able to have a hand around people to, to talk those ideas into money-making machines in a sustainable manner. And one, because the cost of doing business is quite high, so at certain stages businesses can't hire the right kind of people. Hiring the right kind of people requires money. They are expensive to find and they try to make do with what they can and some of these guys who are starting those kind of businesses, yes, entrepreneurs that they are, yes my*

people but they have no clue as to how businesses should run and how businesses should

be organized in a very efficient manner in order to make money."

2. **Macro environmental challenges**: The Nigeria macroeconomic environment is currently unstable due to the decreasing oil revenues as a result of the decrease in global oil prices, and the lack of consensus among the members of the Organisation of Petroleum Exporting Countries (OPEC) on cutting down oil supplies. Consequently, Nigeria's foreign reserves have been significantly depleted, leading to the devaluation of the Naira, instability of the Naira in the parallel market, and the unavailability of the US Dollars to Nigerian importers. This has also resulted in the scarcity of imported products, increase in the prices of those products, and increased inflation (Agbugah, 2015).

3. **Monopoly**: The monopoly of Original Equipment Manufacturer (OEM) products by a particular company in Nigeria has also contributed to the challenges being experienced by some ICT/Technology hardware resellers.

4. **Lack of Government support**: Most times, the Nigerian Government outsources projects to foreign ICT/Technology service providers instead of the indigenous ones. This results in capital flight, lost revenue, lost taxes and unemployment. One participant put it like this:

"Another challenge is the support structure from the government. Government still don't give enough support for start-ups in technology industry. Even some Government works, they send it outside."

5. **Distrust and lack of credit from foreign suppliers**: Foreign suppliers do not trust Nigerian ICT/Technology SMEs, therefore, they do not extend credit to them.

6. **Multiple taxes**: The Nigerian tax system is highly complex, and people argue that it encourages multiple taxations.

7. **Government policies**: Government policies such as the policy on the Treasury Single Account (TSA), introduced to provide an easy, at-a-glance position of the Government's financial position and the blockage of revenue leakages that arise as a result of corruption. According to the (Central Bank of Nigeria, 2016:2), "The Treasury Single Account (TSA)

initiative is the operation of a unified structure of Government Bank Accounts, in a single account or a set of linked accounts for ALL Government payments and receipts."

As a result of allegations from the Nigerian Senate on a lack of transparency on the fees deducted by the platform provider, an inquiry into the matter was initiated, during which no outflow payments were mandated from the TSA to Government vendors, service providers, and suppliers. This situation led to delays in payments that the government owed service providers.

"With the Treasury Single Account (TSA), the Government did not put into consideration the private public partnership with the TSA. Payment to Government service providers is not as prompt as it used to be."

8. L**ack of Internship opportunities to those capable:** Most people that are hardworking and capable, do not have access to internship opportunities that will enable them to get into ICT/Technology SMEs to contribute to developing the organisation, as they also develop themselves.

9. **Funding/Financial issues**: Funding and Financial issues have always been a common issue that all SMEs face. ICT/Technology SMEs are not immune to it either.

10. **Infrastructure**

I. **Erratic Power supply**: The challenge of erratic or inadequate electrical power supply has been age-long in Nigeria. It has impacted the margins of SMEs through the money lost as a result of having to acquire and maintain generators. It has also led to lost sales, as a participant put it below:

"The reason is because mobile phones has to do with batteries. Without electricity, people can't charge. This results in poor sales. The smart phones consume power."

II. **Technological Infrastructure**: The lack of technological infrastructure such as affordable and fast internet access is a key challenge for ICT/Technology SMEs, as most ICT/Technology SMEs require fast and affordable Internet access to carry out their business.

III. **Manufacturing Infrastructure**: The lack of manufacturing infrastructure and capacity in Nigeria has confined Nigeria to a consuming nation that relies mostly on imports. The implication of this is what Nigeria is currently experiencing regarding its depleted foreign reserve due to its dwindling oil revenues. A participant advocated that Nigeria should engage foreign experts in setting up manufacturing infrastructure here so that Nigeria can start manufacturing common ICT accessories.

"There should be a manufacturing company producing it in Nigeria. They depend too much on importation of hardware e.g. computer screen"

11. **Contract enforcement issues/bullying by Larger Organisations**: Most times, small and medium ICT/Technology companies looking to do business with larger companies in Nigeria are subjected to unfair terms and conditions in their contract with their larger counterparts. In some cases, the larger organisations do not keep their part of the contract to these technology SMEs.

12. **The confidence of clients in Nigerian Technology SMEs**: Most times customers do not have enough faith in the ability of the Nigerian technology SMEs to deliver.

13. **Competition from Foreign Companies**: Foreign companies compete with indigenous ICT/Technology SMEs for business opportunities, thus resulting in capital flight.

One participant put it this way:

"There are numerous competitors, especially cheaper Indian Software."

14. **Research**

    I. **Lack of research on ICT**.
    II. **Unavailability of Research materials**.

15. **Ineffectiveness of the telecoms network**.

"Poor network quality that manifests in long call setup durations demoralizes network users, thus leading to low demand."

16. **Insecurity in Nigeria**: The security situation in Nigeria has affected small and medium ICT/Technology companies through a reduction of hours most companies can keep their offices open. As a result, most offices open late and close early. Companies that could have benefited from running their operations 24 hours a day have compulsorily adjusted to the limited working hours available during the day.

17. **Lack of enabling environment from the Legislature**: The lack of legislation or a National framework for ICT in Nigeria that favours local content, has opened up the local technology SMEs to fierce competition from their foreign counterparts. This development has culminated in an under-developed local ICT/Technology SMEs sector.

    "This implies that there is no law in Nigeria specifying where individuals, companies and Governments can or cannot procure Software from. For this reason, an Indian company can come in and wipe up the procurement contracts that would otherwise have gone to the local ICT/Technology companies."

18. **Lack of commitment by staff**.

19. **Poor purchasing power**: The instability of the Nigerian Naira has resulted in poor purchasing power for Nigerian ICT/Technology SMEs.

Most Important Challenges

Four participants responded that the deficiency of skilled IT experts was the most important problem. This response was the most frequent response, followed by erratic power supply. The table with a frequency of all the responses from all the respondents is shown below.

Most Important Challenges	Frequency
Deficiency of skilled IT experts	4
Government Policies	1
Macro Environmental Challenges	1
Erratic Power supply	2
Manufacturing Infrastructure	1
Finance	1
Total	**10**

Table 4: The frequency of the most important challenges perceived by participants.

Solutions to the Most Important Challenges

Most Important Challenges	Solutions to the Most Important Challenges
Deficiency of skilled IT experts	*"The Government should lay more emphasis on IT education right from the grassroots and access to the internet should be a citizen's right, not a privilege."* *"We need to encourage our youths to learn have these skills by establishing a subsidised learning structure for them to learn these technical skills."* *"We are resolving the challenge of staffing by training staff and accepting interns. Sometimes the interns stay or get retained after being trained.* *If the Government can come in. The previous Government ran the SURE-P program in which they provide us with staff and they pay them, although we also pay the staff something too."* *"There should be more education and an effective National Identity System. The National Identity System will make employees and entrepreneurs more careful."*
Government Policies	*"The Government should review the Partnership between the public and private service providers so that providers are paid promptly to avoid disruption in service."*

Macro Environmental Challenges	*"I mean, the Government should just fix it. Take a pragmatic approach to view the challenges"*
Erratic Power supply	*"Encourage the Government to get it fixed as soon as possible."* *"Government should decentralize electricity. Because electricity is centralized, that is why it is not working. The provision of electricity should be deregulated in such a way that more than one company is involved in providing the service. This way, there will be competition and better service quality."*
Manufacturing Infrastructure	*"Government should invite the ICT personnel in abroad to come to Nigeria to have the manufacturing product here in Nigeria."*
Finance	*"Loan facilities, because with finance you can do many things"*

Table 5: Solutions to the most important challenges, as recommended by participants.

Research Question 1: What are the micro and macro environmental factors that pose a challenge to the Nigerian technology SME?

a. What micro and macro environmental factors pose the most challenge to Nigerian technology SMEs?

b. What micro and macro environmental factors pose the least challenge to Nigerian technology SMEs?

Macro Environmental Challenges

Macro environmental factors are wider national, global and/or environmental influences that affect businesses (Jobber & Ellis-Chadwick, 2013). These factors are not usually within the control of the enterprises (Jobber & Ellis-Chadwick, 2013).

Based on the interview responses from participants, the Economic macro-environmental factor was the leading factor that posed various challenges to ICT/Technology SMEs. The Economic factor was followed by the Political/Legal, Socioeconomic, and Technological factors. Lastly, the Ecological/Physical Environment factor posed the least challenge to the SMEs under study.

Macro environmental factor	Frequency
Political/legal	7
Ecological/Physical environment	2
Socioeconomic	7
Technological	7
Economic	10
Total	**33**

Table 6: Macro environmental factors that pose challenges.

Micro Environmental Challenges

According to Jobber & Ellis-Chadwick (2013:66), "The microenvironment consists of the actors in the firm's immediate environment that affect its capabilities to operate effectively in its chosen markets. The key actors are customers, distributors, suppliers and competitors".

Just like for the macro environmental factors analysed earlier, an analysis of the microenvironmental factors revealed that the Customers factor was the most significant that posed a challenge to the ICT/Technology SMEs. It was followed by the Market and Competitors factors. Further, the Suppliers

factor followed, while the Distributors came last, being perceived as the least significant source of challenges.

Microenvironmental factor	Frequency
Market	7
Customers	8
Competitors	7
Distributors	5
Suppliers	6
Total	**33**

Table 7: Microenvironmental factors that pose challenges.

Research Question 2: What is the role of the Nigerian Government in addressing the challenges of Nigerian technology SMEs?

The following themes emerged with regards to the role of the Nigerian Government, during the study. Additionally, the participants had the following things to say about the role of government:

(1) **Import-friendly environment**: The importation policies of the Nigerian Government is a very key factor that may pose challenges to technology SMEs if it is not favourable to the SMEs (Mambula, 2002). This is because Nigeria is a consuming nation and most businesses rely on the importation of processed products for resale as their main business. A participant had the following to say about the import environment in Nigeria.

"Create a friendly import environment because all IT products are imported."

From the above comment, it is paramount that the Nigerian Government put in place a friendly import atmosphere for technology SMEs. This will ensure that the SMEs will be able to access their overseas suppliers, thereby proactively avoiding business disruption.

(2) **Tax reform to eliminate multiple taxations**: Multiple taxation is a challenge in the Nigerian tax system (Onugu, 2005). Taxation is very complex and may require that a business utilise the services of a chartered tax consultant. This can be very expensive for technology SMEs like it would also be for another type of SME. A participant made the following recommendation.

"Taxation should not be multiple."

Therefore, it is recommended that the Nigerian Government simplify and unify its tax system, specifying the jurisdiction of the local, state, and the federal governments as regards the collection of taxes.

(3) **Ensure strict quality checks on imported products**: A participant commented that some ICT/Technology SME distributors import grey products into the market to compete unfairly with distributors that source their products through the Original Equipment Manufacturers (OEMs) official channels. According to the participant, grey products are products that are sourced legally but are not authorized for intended destination country. Distributors that source their products this way do so to take advantage of cost and price variations worldwide. The participant had the following to say.

"Imported IT products should go through strict quality check by the SON."

Quality checks by the Standards Organisation of Nigeria (SON), can help in curbing the importation If grey products.

(4) **Create favourable policies**: The policies of the Nigerian Government should be favourable to the businesses of ICT/Technology SMEs. As a result, a respondent made the following comment.
"Government policies should be favourable first and foremost."

(5) **Regulation of ICT training centres**: The quality of ICT training centres in the country has waned due to a lack of regulatory oversight. This situation has led to the setup of ICT

training centres by anyone without regards to whether they are adequately qualified to do so. A respondent put the situation in these words:

"Mushroom ICT training centres are all over the place. It should be monitored such that they graduate potential ICT professional rather than mushroom professionals."

(6) **Provide support to start-up companies**: The Nigerian Government can do well by providing support to start-up technology SMEs by waiving incorporation cost, providing technical equipment and capital for excellent business ideas. The Government may also subsidize other resources that these start-ups will need.

"Provide more recognition to start-up companies in IT sector by waiving off lots of cost needed to start up an IT business, such as giving some companies equipment needed to start up, technical equipment to start ups, start-up capitals go through business ideas, give them equipment needed to start up, open them, expose them to resources at subsidised cost."

(7) **Create an enabling environment:** The Nigerian Government is expected to provide an enabling environment for ICT/Technology SMEs to thrive. The Government can do this through the provision of technology parks or incubation programmes, special and intervention funds, and capacity building initiatives. Speaking about this, a participant had this comment to make.

"Create parks. Ok, create parks that provide an enabling environment. Just provide enabling environment. Or it could be provide, it may not be them creating them it, but providing an enabling environment for parks to spring up maybe in terms of policies, in terms of policy frameworks, and in terms of financing, you know, ehm! It would be guarantees or things like that. Also, they can have a special fund for ICT companies at very reduced interest rates that young ICT companies can tap into. Or intervention fund in the technology space for ICT companies. Support capacity building initiatives."

(8) **Provision of help with staffing**: The Nigerian Government can aid with staffing through the provision of employees to ICT/Technology SMEs based on a symbioticrelationship between

the Government and the SMEs. The Government will subsidize staffing while the SMEs will provide on-the-job training and capacity building to the mobilized staff.

"Government can come in to help out with staffing."

(9) **Work on power supply**: It is the role of the Nigerian Government to ensure that infrastructural needs such as electrical power is made available and affordable. A participant puts it like this.

"*Make sure the power sector is functional and affordable"*

This finding agrees with the recommendations of Mambula (2002), who wrote that the provision of electrical power infrastructure is a responsibility of the Nigerian Government.

(10) **Security**: It is also the role of the Nigerian Government to protect its citizens. The lack of security in the country has hampered economic pursuits through a reduction of business operating time (Onugu, 2005). This was buttressed by a respondent as follows:
"*Make sure that security is improved so that people can come out early and late to do ICT business"*

(11) **The introduction of Microcredit schemes:** It is the role of Government to create policies that will encourage the creation of microcredit schemes to finance ICT/Technology SMEs. A participant commented on this in the following word:
"Introduce micro credit schemes that can fund start-ups and strengthen existing ones."

(12) **Initiate or facilitate R&D initiatives**: To encourage the creation of new knowledge and its application in practice, the Nigerian Government should encourage research and development initiatives. These views were supported by a participant in the following words:

"They should encourage researchers and they should create a company that will do the research, research unit or team"

(13) **Provision of Finance**: The Government has a role to play in the provision of finance to ICT/Technology SMEs. Affordable finance is critical to the growth and success of Technology SMEs. A respondent commented on finance as shown below.

"They should finance some of these things. If the Government helps with the provision of funds and accessibility of loans, the cost of the products will be lower. Once you have the cash or funds, then you have options and can get a better deal but without cash, the limited supplier options you have will keep inflating the cost of the products."

(14) **Patronize SMEs**: The Government should encourage Technology SMEs by patronizing them. This recommendation is in consonant with the recommendations of Mambula (2002), who suggested that "the government can encourage small businesses by becoming a customer for their products through procurements, contracts, and orders" (Mambula, 2002:63). The respondent made his recommendation like this.

"Government should encourage Technology SME's by patronizing them."

(15) **Grassroots Educational Reform**: There is a need for an urgent educational reform by the Government. The Government needs to ensure that functional, technical education is provided to the masses right from the most basic educational level. A participant commented thus:

"Education (Functional technical education from grassroots, primary level). They should engage the Indians to help with our educational system."

(16) **Provide technical infrastructure**: Technical infrastructure is very key. The simplest technical infrastructure needed by ICT/Technology SMEs is the internet.

One participant made a suggestion that the government should reduce the cost of accessing the internet. His comment goes thus:

"Reduce the cost of Internet."

Further, another participant made the following recommendations:

"Reduce the cost of acquisition of Technology."

Research Question 3: Can small and medium technology companies survive without government policy support, but rather, through the development of intrinsic SME survival strategies such as innovative strategies and collaborative networks/interest groups' formulation?

a.   If yes, how can they survive?

During the study, it emerged that ICT/Technology SMEs could survive through the development of intrinsic SME survival strategies. The following themes emerged with regards to how ICT/Technology companies can survive without government policy support. Additionally, the participants had the following things to say about this issue:

(1)   **Strict support services rendered to clients on all original products purchased, not only from us but on products purchased from other resellers**:
Technology SMEs can survive by tailoring their strategy to include offering support services to the customers of other OEM resellers.

(2)   **Minimal profit margin to encourage volume sales:** Another survival strategy is to charge lower prices to stimulate volume sales. This will inevitably lower profit margins but increase market share.

(3) **Credit from local and foreign suppliers:** Obtaining credit from local or foreign suppliers is another business leverage over competitors that do not have access to credit. This leverage can aid in the survival of a Technology SME.

"Some companies (local distributors and foreign suppliers) give us credit."

(4) **Offshore Outsourcing:** Offshore outsourcing is another strategy for survival but it has become unattractive due to the current scarcity of foreign exchange resulting from Nigeria's dwindling foreign reserves (Agbugah, 2015).

"Outsourcing of software jobs to foreign companies based on the per-hour billing model. This reduces the risk of local staff attrition, as the outsourcing engagement is a contract."

(5) **Funding from family:** Businesses can source funding from family and friends.

(6) **Business network referrals:** Networking is a great way of surviving in business. It allows people who trust one another to refer opportunities to one another.

"And also from BNI. BNI is Business Networking International organisation. Here we started a chapter whereby members refer businesses to each other."

(7) **Well-thought out business model:** A business model that has been carefully designed will ensure that the SME has considered the viability of their business before venturing (Baden-Fuller & Haefliger, 2013; DaSilva & Trkman, 2014).

"I think it is the business model. We have been able to create a business model that it serves us the test of time."

(8) **Government help through regulatory policies:** Help from regulatory agencies through policies and compliance monitoring can help the benefitting SME to thrive. The participant mentioned that the National Agency for Food and Drug Administration and Control (NAFDAC) played a role in growing their business.

"So, no doubt Government integration, the role of Government agency like NAFDAC has helped to get the business to grow and then we are now expanding this solution into other sectors."

(9) **Finance from parent company overseas:** A Technology SME with a successful overseas parent company can survive through funding from its parent company.

"Of course, we've had to find financing from the international level, not from here. Financing from our head office to support the business at various points."

(10) **Partnerships:** Forming alliances with thriving companies can aid in an SME's survival.

(11) **Advertisement:** Advertising is a key tool for creating awareness about an SME's products and services. A successful advertising campaign is usually followed by increased customer patronage.

"Embarking on aggressive marketing strategies both print, media, online adverts, posters, one on one contact, billboards and flyers."

(12) **Patronage from customers:** Patronage from customers can help a Technology SME thrive or stay afloat.

(13) **The synergy between colleagues:** Synergy between team members in an SME can lead to innovative outcomes. This will enable an SME to survive.

(14) **Keeping abreast of technology:** Keeping abreast of technological developments can provide an ICT/Technology SME with advantage over other similar SMEs.

"By taking initiatives, dwelling into tech exploits. With the trend in technology, you keep abreast of new development and transfer them into economical gains."

(15)**Self-development:** Continual self-development will cause an SME to improve the way it delivers value to customers and meets its obligations to all its stakeholders.

(16)**Organic growth:** The ability of an SME to adopt a growth model whereby it grows based on its internal resources will ensure its survival compared with if it employed external resources at a higher cost.

"We plough back whatever we've generated in the business"

(17)**Diversification into other services like consulting, training.**

Conclusion

In summary, the results of the analysis provided answers to this author's research questions. It was confirmed that all macro and micro economic factors posed challenges to the businesses of ICT/Technology SMEs, although some posed more challenges than others.

Both the economic and the customer factors posed the most challenges for the macro and micro environmental categories respectively.

The significant role that the Nigerian Government needs to play to address the challenges of ICT/Technology SMEs also emerged and was discussed.

Lastly, results from the study also confirmed that ICT/Technology SMEs can survive and thrive without government policy support. The various ways these businesses can thrive irrespective of government policy interventions was also presented.

Chapter 5: Discussion and Conclusion

The major themes or areas of interest under which this study seeks answers are as follows:

- Challenges facing ICT or Technology SMEs.
- Macro- and Microenvironmental factors that pose challenges to Nigerian ICT/Technology SMEs.
- The role of the Government in addressing Nigerian ICT/Technology SMEs challenges.
- The possibility of the survival of ICT/Technology SMEs without Government policy support.

While the first theme or area of interest addresses the objective of this study, the last three areas refer to the research questions that this study seeks to answer.

The key findings of this study are presented in the tables below, as categorized under the following themes and/or sections.

Challenges Facing ICT or Technology SMEs

Based on the results of this study, the data that emerged indicated that there are about 19 challenges that ICT/Technology companies experience in Nigeria. These challenges are: Deficiency of skilled IT experts, macro-environmental challenges, monopoly, lack of government support, distrust and lack of credit from foreign suppliers, multiple taxes, government policies, lack of internship opportunities to those capable, funding/financial issues, infrastructure, contract enforcement issues/bullying by larger organisations, confidence of clients in Nigerian Technology SMEs, competition from foreign companies, research, ineffectiveness of the telecoms network, insecurity in Nigeria, lack of enabling environment from the legislature, lack of commitment by staff, and poor purchasing power.

Some of these challenges are still further decomposed into sub-categories. For example, the 'deficiency of skilled IT experts' challenge is composed of constituents such as technical capacity and business capacity. This implies that the deficiency of skills includes both technical skills on the one hand and business skills on the other. More information about the challenges and their decomposition can be found in Table 8 below.

S/N	Challenges facing ICT or Technology SMEs	Sub-categorization of challenge
1	Deficiency of skilled IT experts.	I.Technical capacity. II.Business capacity.
2	Macro environmental challenges	
3	Monopoly	
4	Lack of Government support	
5	Distrust and lack of credit from foreign suppliers	
6	Multiple taxes	
7	Government policies	
8	Lack of Internship opportunities to those capable	
9	Funding/Financial issues	
10	Infrastructure	I.Erratic Power supply. II.Technological Infrastructure. III.Manufacturing Infrastructure.

11	Contract enforcement issues/bullying by Larger Organisations	
12	Confidence of clients in Nigerian Technology SMEs	
13	Competition from Foreign companies	
14	Research	I.Lack of research on ICT. II.Unavailability of Research materials.
15	Ineffectiveness of the telecoms network.	
16	Insecurity in Nigeria	
17	Lack of enabling environment from the Legislature	
18	Lack of commitment by staff.	
19	Poor purchasing power	

Table 8: Challenges facing ICT/Technology SMEs

Most Important Challenges

The most important challenges, as perceived by the respondents are as follows:

1. Deficiency of skilled IT experts
2. Government policies
3. Macro environmental challenges
4. Erratic Power supply
5. Manufacturing infrastructure
6. Finance

Taking the frequency of a challenge, the 'deficiency of skilled IT experts' emerged the most important challenge for our participants. It was followed by 'erratic power supply'. The other challenges followed

at the same rank, having an equal frequency. Please kindly refer to Table 4: The frequency of the most important challenges perceived by participants, for a table of the challenges and their frequencies.

Solutions to the Most Important Challenges

The solutions to the most important challenges that were recommended by the interview participants are as tabulated in Table 5: Solutions to the most important challenges, as recommended by participants.

Research Question 1: What are the micro and macro environmental factors that pose a challenge to the Nigerian technology SME?

All micro and macro environmental factor pose a challenge to the Nigerian technology SME. The macro environmental factors are Political/Legal, Ecological/Physical environment, Socioeconomic, Technological, and Economic. Further, the microenvironmental factors are Market, Customers, Competitors, Distributors, and Suppliers.

By frequency, the macro environmental factors that posed the most challenge to ICT/Technology SMEs in Nigeria is the Economic factor. All participants agreed that the economic environment posed various challenges to their operations. Following the Economic factor in a tie, were the Political/Legal, Socioeconomic, and Technological factors. The macro-environmental factor that most participants agreed posed the least challenge to their operations was the Ecological/Physical environment factor. The frequency of each macro-environmental factor is tabulated in Table 6: Macro environmental factors that pose challenges.

However, for the microenvironmental factors, participants agreed that the customers posed the greatest challenge to their operations. The market and customers followed in a tie, followed by suppliers and lastly, distributors. Hence, the distributor factor posed the least challenge to the operations of the technology SMEs.

Research Question 2: What is the role of the Nigerian Government in addressing the challenges of Nigerian technology SMEs?

Although this study's aim also includes enquiring into how ICT/Technology SMEs can execute innovative interventions to address their challenges without Government intervention, the Nigerian Government has some roles to play in addressing the challenges of technology SMEs and in creating an enabling environment for them to succeed. The roles of the Nigerian Government in this regard are as tabulated below.

S/N	The role of the Nigerian Government in addressing the challenges of ICT/Technology SMEs in Nigeria
1	Import-friendly environment
2	Tax reform to eliminate multiple taxations
3	Ensure strict quality checks on imported products
4	Create favourable policies
5	Regulation of ICT training centres
6	Provide support to start-up companies
7	Create an enabling environment
8	Provision of help with staffing
9	Work on power supply
10	Security

11	Introduction of Microcredit schemes
12	Initiate or facilitate R&D initiatives
13	Provision of finance
14	Patronize SMEs
15	Grassroots Educational Reform
16	Provide technical infrastructure

Research Question 3: Can small and medium technology companies survive without government policy support, but rather, through the development of intrinsic SME survival strategies such as innovative strategies and collaborative networks/interest groups' formulation?

The result of the study suggests that SMEs can indeed survive without government policy support but through intrinsic SME survival strategies. The various survival techniques that emerged in the course of the study are as narrated in section Research Question 3: Can small and medium technology companies survive without government policy support, but rather, through the development of intrinsic SME survival strategies such as innovative strategies and collaborative networks/interest groups' formulation?.

Managerial Implications

This study's results suggests various implications for the management of ICT/Technology SMEs. These implications include the danger to the business if interventions are not effected to the various issues that have emerged. Issues that are of key importance are the key challenges to the businesses of ICT/Technology SMEs, the key macro and micro environmental factors that pose those challenges, and how Technology SMEs can survive without external stakeholder support (i.e. government and financial institutions support). The key challenges to the business of Technology SMEs are as follows: Deficiency of skilled IT experts, Erratic Power supply, Government Policies, Macro-environmental Challenges, Manufacturing Infrastructure and Finance.

With regards to the key challenges, managers need to do the following. First, managers need to start urgently addressing both technical and business skill gaps. They can do this by ensuring they have a formal or informal learning and development plan for their employees and interns. The next step is that they should ensure that they follow this plan and provide employees with all the support and resources they need to benefit effectively from these programmes. Second, the challenge of erratic power supply can be overcome by putting in place an alternative electrical power supply backup system that constitutes the combination of an electrical generating set, an inverter, and a renewable energy system such as solar panels. This ensures that if there is no electrical power for prolonged periods, the inverter's battery can be charged using either the generating set or the solar panels. Third, managers should consider forming or joining interest groups to represent and protect their interests before government. This will ensure that government will formulate policies that will be favourable to them. Fourth, managers need to scan the macro environment and come up with interventions for threats on a case by case basis. Opportunities emanating from the macro environment need to be leveraged. Fifth, managers need to start creating plans for how their organisations can move from import-dependent distributors or resellers, to value-adding manufacturing concerns. Last, managers of ICT/Technology SMEs can overcome financial challenges intrinsically by relying on organic growth and the formulation of tight financial controls.

The most significant macro and micro environmental factors that pose challenges for Technology SMEs are the Economic and Customers factors respectively. Managers are advised always to be abreast of news about the economy. It is also recommended that managers study and understand their customers. Customer service gaps should be filled and the needs of customers should be given the utmost priority.

The research result implies that ICT/Technology SMEs can survive without government's or financial institution's support. CT/Technology SMEs can survive based on certain crucial factors. First, managers should have a thoroughly validated business model before commencing business. Preparing and thinking through the business model will cause managers to consider all the possibilities regarding the new venture, especially how the business will acquire customers and make revenue. Second, managers should adopt the model of stimulating growth through the organic growth model, where the firm grows

solely on its internal resources. Third, managers should embrace networking. They should interact with other individuals and organisations that may be of value to the firm. They should site offices in technology parks or incubation centres. Fourth, managers are advised to market or advertise their brands, products and services. Fifth, rather than attempting to execute major projects alone in situations where the Technology SME lacks some critical resources, it is recommended that managers form strategic partnerships or alliances whenever necessary. Last, it is strongly recommended that managers diversify whenever they do not get enough business in their niche of focus. They can diversify the business into the provision of consultancy services and training.

Ideas for Future Research

As with most studies, this study's methods has its weaknesses. Its convenience sampling component may lead to precision because a significant number of respondents considered adequate for a qualitative approach can be achieved quickly. One weakness is that this wholly naturalistic study was not further verified through triangulation (a combination of qualitative and quantitative methods) (Easterby-Smith et al., 2012:26; Mambula 2002:58). This could have either confirmed the reliability of the data or further improved it (Easterby-Smith et al., 2012:26; Mambula, 2002:58). It is therefore advised that generalizability of the findings of this study be treated with care.

A perspective of ICT/Technology SMEs that could also pose challenges that this study did not address are issues related to the behavior of the SME owners. An example of these behavioral issues includes financial indiscipline, lack of proper bookkeeping and accounting, the use of a single bank account for both personal and business purposes. It would be very beneficial to look into these issues in future studies.

Further, as this study is exploratory in nature, and utilized the qualitative content analysis approach for the analysis of collected data, it was only limited to the identification of themes. Analysis of the relationships between the themes and the causative factors responsible for the identified themes are opportunities for future study.

Conclusion

This study's findings go against the common belief that finance is the most significant challenge of SMEs. It emerged that deficiency in skilled IT experts was the most significant challenge of ICT/Technology SMEs. Although this study investigated a specialised type of SME – the ICT/Technology SME, the findings are in agreement with the findings of Onugu (2005), which put forward managerial capacity as the most significant challenge of generic SMEs. In both studies, capacity or skill was the most pressing challenge that emerged.

It is recommended that all stakeholders that have a role to play in addressing the issues of ICT/Technology SMEs come together to play their roles. The technology SMEs, the Government, Banks, and allied organisations should synergize to eliminate the challenges of technology SMEs, bearing in mind, the benefits of a flourishing technology SME ecosystem to an economy.

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Appendices

Appendix A – Interview Guide for interviewing SMEs

Instructions to the interviewer

- Accept all answers and remain non-judgmental.
- After the respondent gives you an answer, prompt for further information, using general prompts, such as "Can you add anything else?"

Opening of Interview

PARTICIPANT CONSENT FORM

Title of Research Project:

SMEs challenges: A study of technology companies in Nigeria.

Brief Description of Research Project, and What Participation Involves:

This research project aims to discover the challenges facing small and medium ICT/Technology companies in Nigeria. The interview will only take about 15 – 20 minutes to complete. The Researcher will write down the respondent's answers and will also record the interview with the respondent. The respondent will not be directly quoted in any report of this study unless the researcher first obtains explicit permission from him or her.

Investigator Contact Details:

Name: **Chikelue Moses Oji**

Department: **Master of Business Administration (MBA)**

University Address: **Roehampton Lane, London**

Postcode: **SW15 5PU**

Consent Statement:

I agree to take part in this research, and am aware that I am free to withdraw at any point without giving a reason, although if I do so I understand that my data might still be used in a collated form. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings, and that data will be collected and processed in accordance with the Data Protection Act 1998 and with the University's Data Protection Policy.

Name ………………………………….

Signature ………………………………

Date ………………………………………

Please note: if you have a concern about any aspect of your participation or any other queries please raise this with the investigator (or if the researcher is a student you can also contact the

Director of Studies.) However, if you would like to contact an independent party please contact the Head of Department.

Let us start with some information that will help me describe the sample.

1. What is your position in this Company/Enterprise?

   _____

2. How many years of experience do you have in the ICT/Technology Industry? (In years and months)

   _____

3. How many years of experience do you have in your current ICT/Technology company? (In years and months)

   _____   _____

4. What is your highest educational level?

   _____

5. What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?

   _____

6. What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?

   _____

7. For how long has your company been in operations?

   _____

8. What are the sources of your products or services, or the inputs needed in producing your products or services?

   If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

   _____

9. What is your company's annual sales in Naira?

   _____

10. What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

   _____

   _____

   _____

   _____

   _____

11. What solutions do you propose to the most important challenge (one only) listed in the question above?

   _____

   _____

   _____

   _____

   _____

12. Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

13. Are their impact positive or negative to your business? Positive or Negative?

   _____

14. If Negative, which of their policies are negative to your business?

   _____

   _____

_____

_____

_____

_____

15. Which are challenges the following macro environmental factors pose to your business?

      1. Political/legal_____

      2. Ecological/Physical environment_____

      3. Socioeconomic_____

      4. Technological_____

      5. Economic_____

16. Explain how they affect your

    business?_____

_____

_____

_____

_____

17. Which are challenges the following micro environmental factors pose to your business?

      6. Market_____

      7. Customers_____

      8. Competitors_____

      9. Distributors_____

      10. Suppliers_____

18. Explain how they affect your

    business?_____

_____

_____

_____

_____

19. What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises

(SMEs)?_____

_____

_____

_____

_____

20. Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?

_____

21. Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions'

support?_____

_____

_____

_____

_____

Thank the respondent for his/her time.

Interview 1- Lagos

Interview with Yemi on January19th, 2016, in Obalende, Lagos State, Nigeria. Yemi is a Director in an Accounting Practice and Accounting Software Reseller.

Let us start with some information that will help me describe the sample.

1. What is your position in this Company/Enterprise?

    _____Director_____

2. How many years of experience do you have in the ICT/Technology Industry? (In years and months)

    _____Over 20 years_____

3. How many years of experience do you have in your current ICT/Technology company? (In years and months)

    _____Over 10 years_____

4. What is your highest educational level?

    ____Chartered Accountant (FCA)_____

5. What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?

    ____Private Limited Liability (Ltd) Company_____

6. What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?

    ___Software Reseller_____

7. For how long has your company been in operations?

    ____Five years (5)_____

8. What are the sources of your products or services, or the inputs needed in producing your products or services?

If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

_____Imported_____

9. What is your company's annual sales in Naira?

___1.5 Million Naira approximately_____

10. What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

1. Skills Gap.
2. Lack of Commitment by Staff and the Government.
3. Poor Purchasing Power.
4. Competition from various foreign companies.
5. Lack of enabling environment from the Legislature. This implies that there is no law in Nigeria specifying where individuals, companies and Governments can or cannot procure Software from. For this reason, an Indian company can come in and wipe up the procurement contracts that would otherwise have gone to the local ICT/Technology companies.

   We are looking for very young sharp graduates to put together, to develop our own local application for Accounting, Payroll and for Mobile Apps. This is because we have discovered that working in Partnership with the Foreign-based Software Suppliers or ISVs are not profitable.

   There is a policy that the Government has in place to help us pay staff. I employed about 2-3 staff from it but stopped due to its lack of transparency. The Government should provide access to finance for us to be able to buy Software from abroad (e.g. from India).

11. What solutions do you propose to the most important challenge (one only) listed in the question above?

There should be more education and an effective National Identity System. The National Identity System will make employees and entrepreneurs more careful.

12. Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

Corporate Affairs Commission (CAC).

13. Are their impact positive or negative to your business? Positive or Negative?

Nil (Their policies are regulatory in nature).

14. If Negative, which of their policies are negative to your business?

Not Applicable.

15. Which are challenges the following macro environmental factors pose to your business?
    a. Political/legal_____We are in an unstable country. The Government banned the deposit of foreign currency into domiciliary accounts.
    There is no enabling environment to protect the local technology companies. Foreign Software Suppliers can charge the local ICT companies anything. The Government should make laws to ban the procurement of foreign software, so that the local ICT firms can develop._____
    b. Ecological/Physical environment_Does not affect us. We are not in Oil and Gas_____
    c. Socioeconomic_____People do not value our Accounting Software and Solutions. In South Africa, it is mandatory to procure Software for Accounting whenever a company is incorporated. It is only foreign companies that value the use of accounting softwares._____

d. Technological_____Software is expensive. Hardware is expensive. The current devaluation of the Naira has further worsened things._____

e. Economic_____Companies do not have purchasing power. They have challenges accessing the funds to purchase raw materials._____

16. Explain how they affect your business?____The political environment has changed, so has affected ability to pay foreign suppliers. Socio-economic variable has caused customers to de-prioritize the need for accounting software packages._____

_____

_____

_____

_____

17. Which are challenges the following micro environmental factors pose to your business?

a. Market_____Purchase power issues and competition from foreign companies._____

b. Customers__They don't value Software._____

c. Competitors_There are numerous competitors, especially cheaper Indian Software._____

d. Distributors__There is issue with distributing to Northern Nigeria due to political issues, flight costs, etc._____

e. Suppliers_____No issues with the Suppliers except exchange rate._____

18. Explain how they affect your business?_____

_____

_____

_____

_____

19. What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

    1. Education (Functional technical education from grassroots, primary level). They should engage the Indians to help with our educational system.
    2. Reduce the cost of Internet.
    3. Reduce the cost of acquisition of Technology.

20. Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?

    ___Yes_____

21. Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?
    1. Organic growth.
    2. Diversification into other services like consulting, training.
    3. Outsourcing of software jobs to foreign companies based on the per-hour billing model. This reduces the risk of local staff attrition, as the outsourcing engagement is a contract.

Thank the respondent for his/her time.

Interview with Chinedumon January20th, 2016, in Yaba, Lagos State, Nigeria. Chinedumis theManaging Director in company that provides brand protection and customer engagement. The Company constantly applies technology in fighting counterfeiting.

1)   **Researcher**: So, what is your position in this Company/Enterprise?

Respondent: I am the Managing Director.

2)   **Researcher**: Ok, how many years of experience do you have in the ICT/Technology industry?

Respondent: ICT, personally?

Researcher: Personally, that is, generally in the ICT, not just, not in this company.

Respondent: I haven't really worked in the ICT space. I have done things in the ICT space as a consultant, so I wouldn't really say I am an ICT consultant; so this is the first company that I am working in that has an ICT component in it. What I did before now about, this is 2016, I exited the company 2012 has a little bit of ICT component but it wasn't so major, so this is the one that has a lot of ICT around it so in terms of saying experience in the ICT space, I will say almost next to nothing. Let me say 2 years. Based on what I have done in xxxxxxx.

3)   **Researcher**: How many years of experience do you have in your current role? I guess 2 years.

Respondent: 2 years 2 months. Let's say 2 years.

4)   **Researcher**: What is your highest educational level, qualification?

Respondent: MBA

5)   **Researcher**: What is the legal status or nature of your business? Is it a private limited liability company, is it a public?

Respondent: Private Limited Liability.

6)   **Researcher**: Ok, what is the nature of your business? Is it hardware sales, hardware reseller, software reseller, or even if it is not in what I have mentioned, what do you classify?

Respondent: How do I classify what we do? Ok, let me describe it for you and then you can place it where you want to place it. What we do in a nut shell is brand protection and customer engagement. What I mean by brand protection is that we provide platforms to fight counterfeiting. So, we have developed software that enables brand owners or manufacturers to fight counterfeiting, and also provide a platform to deeply engage the customers. Of course there are also types of bespoke solutions we've developed. For instance, we have developed trunk call track and trace which enables you to manage the supply chain to be able to track goods through the supply chain.

Researcher: Through Satellite?

Respondent: Through the supply chain.

Researcher: Through the supply chain.

Respondent: So at the core of, of course, at the core of what we do is technology so we provide a platform for people to manage counterfeiting, so, sorry, to fight counterfeiting, protect their brands, and engage their customers and also provide solutions around things that could help improve processes in the business like something like supply chain. For people to be able to track their goods through the supply chain, to manage challenges around diversion, around illegal diversion, around fraud and what have you. That is in a nutshell of what we do exactly. This is what is situated in terms of the various captions that you mentioned around technology.

7)   **Researcher**: So for how long has your company been in operation?

I will say about 6 years

8)   **Researcher**: What are the sources of your products or services or the inputs needed in producing your products or services, more like your raw materials?

Respondent: There are 2 key aspects.

Researcher: Are they developed, imported or purchased online?

Respondent: One is that the application we use are developed in-house by the company. We have technical people who develop them. Number 2, the, we also deliver labels, security scratch labels to manufacturers or brand owners. Those labels are printed by the ordinary printers, or those who have the ability to do security printing. So, in terms of raw materials will be the applications we use, and of course the, eh!! I won't call it the raw material but part of the things we deliver or what we deliver as part of our service. As in, labels we deliver to manufacturers or brand owners.

Researcher: And that is within Nigeria?

Respondent: That is both within and outside Nigeria. I say security printing because the labels are not just ordinary labels. They are labels done with security printing principles which are supposed to help protect the brands. So, if they are like ordinary labels, then anyone can tear it out and put it somewhere else but ehm if it is a different kind of label that, we call it keys scort, that you can't easily pull it off and put somewhere else.

Researcher: It can't be tampered with.

Respondent: If you try to, the label, it self-destructs.

9) **Researcher**: What is your company's annual sales in Naira?

Respondent: That is tough.

Research: That is a sensitive question. But mind you, it will not be shared, you will not be identified.

Respondent: I will ask them. I will need to get a clearance. It is a little bit tough. I will need to get approval. Being the subsidiary of a US company, we are bit touchy about things. I will ask them and get back to you. In our space, there is a lot of competition.

10) **Researcher**: What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

Respondent: Let's just talk generally, later we can rank. First, there is challenge in our environment. The macroeconomic environment is not so friendly as it is today, so doing business in Nigeria can be very tough. If have gone to make input from outside the country, then you have to make payments for those kind of inputs, finding dollars for that can be difficult, and that also skyrockets the cost of your business. There is also the infrastructure bit. You have to provide your power for yourself. That has implications for your costs of doing business and eventually the cost that you are gonna ask the consumer to pay depending on what your service is all about, so there is a general business environment and macroeconomic challenge. Now also what I think is not so much of a challenge for ICT companies is funding. If you have a bright idea, you will find the funding. But the question is what kind of funds you find. In terms of working capital, the cost of funds here can be very high. You can find incremental funds if someone invests in your business you know to run the business, at some point you may have to go to the bank just to get working capital. So if it is finding money just to develop your business, you will find depending on how bright your idea is. There are all types of Tech funds all over the place looking for where to invest, so if you have got a very good business, nice business model, compelling idea, definitely you are going to find money to fund them but finding money locally to fund your working capital on day to day can be a challenge because the cost of fund is high. So let's update about business environment.

The other thing is social capacity. What I have come to see across many ICT companies is social capacity. You find very smart tech people, young people who can do anything but they seem not to have knowledge around the business end of things, so sometimes you find nice idea but the business model is not well thought out. So how the business is going to make money and remain sustainable becomes a problem. They are very good in developing solutions but putting the structure around that solution to be a proper business that will be sustainable sometimes will be a challenge. So capacity is an issue. From the point of view. There is still some gap in terms of development. Some development are even done outside the country meaning most development are done outside the country. So we can say today that

we have the tech capacity. But beyond the tech capacity is the business capacity. Being able to have a hand around people to, to talk those ideas into money-making machines in a sustainable manner. And one, because the cost of doing business is quite high, so at certain stages businesses can't hire the right kind of people. Hiring the right kind of people requires money. They are expensive to find and they try to make do with what they can and some of these guys who are starting those kind of businesses, yes, entrepreneurs that they are, yes my people but they have no clue as to how businesses should run and how businesses should be organized in a very efficient manner in order to make money. The other thing is also, the nature of, the way people expect, or the way of enforcing contract in Nigeria. Many times you are a small tech company providing a service to a big company and they say take it or leave it. Sometimes the terms of engagement is not that adhered to. Then because you don't have the capacity, you can't go to court to enforce it or you just want the business because you want to survive. So business people will tell you that

Researcher: Legal issues now...

Respondent: small tech people feel so

Researcher: Regulatory.

Respondent: Yes. You deal with a big company and they seem to shovel a lot down your throat because you can't really fight. If I take the company you work for, for instance, xxxxxxx, they can bluff any company and say, come on, take it or leave it, because they are big. You know, this are our terms and conditions, either you take it or you move on. And you will also compare the cost at which xxxxxxx will find funding with a small tech company. The gap will be too much because it has a lot more negotiating ability as a very big company. So that's it. Small tech companies face that challenge or small companies generally, not just even the tech space. Small companies generally face that challenge. Another thing I can think off in terms of challenges hmmm. I think I have said pretty much. I am not sure I can remember anything else.

Researcher: Ok, so we have now mentioned the macro environmental challenges, infrastructure, financial issues, capacity issues, enforcing contract or being bullied by big companies. Contract enforcement issues.

Researcher: Ok, which you would rank as the most pressing one between all these: macro economical or macroeconomic environmental issues, infrastructure, financial issues, capacity issues, then contract enforcement issues.

Respondent: As the most pressing?

Researcher: As the most pressing, in decreasing order of importance.

Respondent: I will say macroeconomic. Of course in the tech space, I know bandwidth has increased in terms of having accesses to you know unlike outside economies where you have clusters, I know that there are a few in Yaba.

Researcher: Yaba

Respondent: But we also still have, if you look at access to the internet and bandwidth, it is still high here. So that is also still part of the challenge. If you are doing development and then of course also

facilities to be able to test, I don't know how many software testing facilities we have in Nigeria. I don't know if you guys have at xxxxxxx. In terms of the tech would be the resources required in the right environment. Outside there you have clusters, you have, you have locations, you have parks where you know you have access to infrastructure for doing software development and testing tests, all that still developing in Nigeria.

Researcher: In Nigeria.

Respondent: So most development are done out of Nigeria.

Researcher: So after macro economical environment, would we say access to bandwidth is the next most important thing.

Respondent: Hmmm! I would say, not just access to bandwidth. I would say emmmh! the development of the tech space in Nigeria. I know that...there is still a gap in terms of tech infrastructure and tech capacity in addition to the business capacity I talked about. So even with the smart tech guys, not having business capacity, there is still a lot of gap in the tech capacity space.

Researcher: Ok. Ok. Ok, so do we now say emmh! After macroeconomic, if we are to now rank all these, so after macroeconomic, which will be most pressing for you. Is it infrastructure, is it financial issues, is it the capacity issue? That is business capacity issue now.

Respondent: Business and tech capacity issues.

Researcher: Business and tech capacity at the same level?

Researcher: Together or should tech?

Respondents: Yes, together. Business and Tech capacity, then followed by financial issues.

Researcher: Then, financial issues.

Researcher: So, the fourth one, should it be? There is still contract enforcement issues, access to bandwidth and internet?

Respondent: Access to bandwidth and internet is still under tech capacity.

Researcher: So do we say? emmm! What is now left is contract enforcement issues or being bullied by big companies, so, would that be the next thing? I think that is the only thing left.

Respondent: I think that is the only thing left.

Researcher: So, number 11. What solutions do you propose to the most important challenge listed in the questions above? Just the most important, which is macro environmental issues.

Respondent: I mean, the Government should just fix it. Take a pragmatic approach to view the challenges

Researcher: Which Federal Government...

Researcher: That affect your business.

Respondent: The one whose policies that I will say has affected us is NAFDAC because we were first licensed by NAFDAC to provide our services for pharmaceutical companies.

Researcher: You were first licensed by NAFDAC to provide your services for?

Respondent: for pharmaceutical companies.

Researcher: for pharmaceutical companies.

So, but there is no relationship with SON for now.

Respondent: There is no relationship with SON for now. Though we have products that are under SON's purview of responsibilities in our portfolio but we don't have a formalised relationship with SON.

Researcher: Ok.

Ok

Researcher: Are their impact positive or negative to your business?

Respondent: You mean the Regulators?

Researcher: The regulators.

Respondent: Positive.

Researcher: Which of their policies? I believe we are referring to NAFDAC here. Which of their policies are negative? Ok, Ok, as you said yes, then there is no need to answer this question. There is no need to answer because it says which of their, is negative. So, no need, Nil.   Not applicable.

Researcher: Ok, which are the challenges the following macro environmental factors pose to your business? Political/Legal, Ecological/Physical environment, Socioeconomic, Technological, Economic. You know, one by one.

Respondent: Political I mean, Political I think is general. If there is political instability, you can't do business. It is in the interest of everyone that there is stability around the polity otherwise we can't do business. So, that is about politics.

Ecological and Physical environment: I don't see any, emmh!, the only thing there is that if there is something wrong with the environment, for instance, if there is flood, people won't patronize or want to buy goods and services. People are displaced, purchasing   power could reduce. This would impact our customers and eventually would impact us. So, if people who buy some of the products we protect are for some reasons displaced, or for some reason they have a challenge or the ecological environment impacts them,   invariably, it will impact our business.

Socioeconomic: Socioeconomic, peoples disposable income determine what they can buy. When they buy more, our customers will buy more. When our customers buy more, means they can patronize us more. So socioeconomic sits in there. Of course, also social awareness. People being aware, being socially aware of, of our solution also impacts what we do because the more that they emh! They look out for the solution and talk about how it has impacted them positively, the more we will be in business.

Researcher: Ok.

Then eh! Technological.

Respondent: ohhh! I think the point there is that technology changes at the speed of light.The challenge is that we have to keep up with the pace, in finding new solutions to the problems of your customers or a way you can better serve them. You just have to be on your toes, and leverage new developments in technology to serve your customers better. And also the rate at which people adopt technology determines how fast your business can grow. This is also related to the last part of socioeconomic.

Researcher: Ok, Economic.

Respondent: Economic, we have talked about it pretty much. Business is not done in isolation. It is done in the economic environment itself. How strong the economic environment can be determines how strong your business can be. The economy just sits in the middle of everything.

Researcher: Ok. Explain how generally, how these macro environmental factors affect your business?

Respondent: I think it is simple. If the economy is in dire strait. It impacts the general fluctuating environment and impacts businesses in a certain way. I will give you an instance. If the economy is distressed and people are not, productivity is low. People are not, either producing or importing, as it is today, now that Dollar- Naira rate is hitting the roof, people don't find Dollars to import. If they find Dollars in the black market, the cost of what they will be importing will be hitting the roof which will make them to import less. So, this has direct implication because as people import or produce and sell, the more they patronize us. The less supply they do, the less they patronize us. So there is that bid, also even for us, even our dollar denominated payments. I will say it shouldn't be around finding dollars to make payments. It should be about the world of your customers. If you don't have power, then you have to put on your generator, and that impacts the costs around your business. So, you can look at it from any angle you want to look at it. The state of the economy has very great implications for the business environment. And ours is not an exception. In fact, here, we have a major challenge.

Researcher: Ok. Ok.

Which challenges the following micro-environmental factors pose to your business? The Market, customers, competitors, distributors, suppliers.

Respondent: The market; it depends on how the market responds to your solutions that you are developing, and the price they are willing to pay. Sometimes, you spend money developing a solution but they are not willing to pay a very good price for it. They love it, they see the value but they feel, we are dealing with other pressing needs that is a matter of life and death. We love this solution; it will help us but let's survive first. It more like flight to safety. Let's survive first and then we can deal with this. It's like you are asking a man who is hungry to add coleslaw to his rice. He says, even give me the rice without stew. Let me eat it and survive. Then, I like the coleslaw. It will be nice to my body but I will think about it when I am alive and I can afford to add coleslaw to my rice, you know. He is passing a man, this can help me yes, I am actually in a mode where I need to survive. So when businesses are in

that mode of survival mode, it is difficult to speak to. Yes, they appreciate the value but I love this but I cannot afford it now because I am in survival mode. Next one is?

Researcher: Customers.

Respondent: Customers, I mean it's, customer, how the environment affects their business also impacts you. Customers want the cheapest solution at the best price. So, our market is a customers' market. So it is not the sellers' market, it is a customer's market. They have a very strong buying power, so that of course impacts our margins which is commonly directly tied to competition. Because competition is intense, it is a buyer's market. The margins are eroded because we usually sell at rock-bottom prices.

Researcher: Ok, competitors, I think you just mentioned it.

Respondent: The competition is very intense. It's dog-eat-dog.

Researcher: The lower the margins. Ok, Distributors now.

Respondent: Distributors. How they impact our business? Hmmm! from a very striking point of view, I think we need or should also have a very high negotiating power. We don't have, for the worst part being dictating the price which is the suppliers but we seem to be sandwiched between distributors and customers who are squeezing us from every side. Also the speed at which they deliver the service determines the speed at which you deliver to your customers. The implication is that sometimes you miss deadlines because the distributor failed to deliver when he was supposed to deliver, yes.

Researcher: You said they determine the price.

Respondent: I mean they have, they influence the price or the ....is not very strong. Eh! when it comes to the suppliers as well, so they determine the prices or the, they weren't able to negotiate the price as well as we want to, so sometimes they miss deadlines and they also impact; sometimes they deliver low quality beyond what you promise your customer.

Researcher: Suppliers now.

Respondent: Ok, for distributors? I was referring to suppliers. We don't really have distributors.

Researcher: So this is for suppliers? Ok.

Researcher: Ok. So, how do they affect your business generally, all these ehmm!!!

Respondent: I believe I have pretty much explained that.

Researcher: Whilst going through.

Respondent: Which one are you referring to now?

Researcher: that's the micro environmental factors.

Respondent: I thought I have explained that.

Researcher: In summary.

Respondent: In summary, the stronger the economy, the better the business environment, the better business. The weaker the economy, the weaker the business environment, the weaker the business of our customers.

Researcher: This is in relation tomicro environmental now.

Respondent: Yes, because if, if the micro economic environment is weak, businesses are going to be struggling. And when businesses struggle, it will also impact because if the person that who is your customer is struggling, then they can't buy more from you, you understand. But if the business is good, they can buy more from you and they are willing to pay some premium and are willing to subscribe to new solutions but if the business is weak and they are in survival mode, they can't buy more from you. They are not willing to pay any premium for any service. They just want the basic, cheapest service they can get because they want to survive.

Researcher: We are almost through with the questions.

Respondent: Yah, we need to hurry.

Researcher: We have gone through the longer, lengthier questions, so we are almost through.

Respondent: Ah, you still have another page.

Researcher: No, just three questions. They are very, actually a breeze through.

Researcher: What do you think the Government can do to address the challenges of ICT/Technology small and medium enterprises (SMEs)?

Respondent: Create parks. Ok, create parks that provide an enabling environment. Just provide enabling environment. Or it could be provide, it may not be them creating them it, but providing an enabling environment for parks to spring up maybe in terms of policies, in terms of policy frameworks, and in terms of financing, you know, ehm! It would be guarantees or things like that. Also, they can have a special fund for ICT companies at very reduced interest rates that young ICT companies can tap into. Or intervention fund in the technology space for ICT companies. Support capacity building initiatives. All that, that is what the Government can do.

Researcher: Are there innovative ways that your business has been able to survive and thrive without Government and Financial institutions' support? Yes or No?

Respondent: Yes

Researcher: Please kindly list those approaches that have helped your company sustain itself without Government or Financial institutions' support?

Respondent: I think it is the business model. We have been able to create a business model that it serves us the test of time. With the initial success, we have been able to expand our business to other locations and also able to expand our product portfolio, leveraging the core technology. So we have added new features to the solution, we have developed more products and then our business model is such that has helped to keep the business running.

Researcher: Ok, so but within the business model, are there no key generic approaches that has helped you survive without the influence of Government, help of financial institutions?

Respondent: Government has helped as some medications were made compulsory. Because of that, that is the way Government has helped. Beyond that, is the kind of business model we've put in place and how we price our solution and the features we put into it to demonstrate value. So, that explains why we have we have people from other sectors that are not under the purview of NAFDACs responsibility subscribing to our solution. So, no doubt Government integration, the role of Government agency like NAFDAC has helped to get the business to grow and then we are now expanding this solution into other sectors. But apart from that, in terms of Government giving us money or some waivers, well we haven't had any of that. We have been able to sustain the business through the business and revenue model, and then we plough back whatever we've generated in the business. Of course, we've had to find financing from the international level, not from here. Financing from our head office to support the business at various points. The details of the financing, I don't know but it has nothing to do with ...

Researcher: Ok. Ok. Thank you very much. It has been a pleasure to, if you can help me sign to confirm that I spoke to someone, it's to prove to the school that I actually did...

So, I will like to thank you so much for your time. I know it is very very precious. A busy MD and Executive like you, I really appreciate your commitment to helping out with this study. And on completion of the work, if you wish, I can share the final work with you, so that you can. I will share the electronic copy. Thank you very much. It is a pleasure. Thank you.

Interview with Adeniyi on January21st, 2016, in Ikeja, Lagos State, Nigeria. Adeniyi is theCEO in an Information Technology (IT) company engaged in the business of Hardware sales and Software solutions.

Let us start with some information that will help me describe the sample.

1. What is your position in this Company/Enterprise?

   _____CEO_____

2. How many years of experience do you have in the ICT/Technology Industry? (In years and months)

   _____17 years_____

3. How many years of experience do you have in your current ICT/Technology company? (In years and months)

   _____9 years_____

4. What is your highest educational level?

   _____MBA_____

5. What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?

   _____Private Limited Liability (Ltd) Company_____

6. What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?

   ___Hardware Sales and Solutions; hardware and software solutions._____

7. For how long has your company been in operations?

   _____9 years (2007 till date)_____

8. What are the sources of your products or services, or the inputs needed in producing your products or services?

   If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

   ____Import some; get some locally (All products are manufactured abroad)._____

9. What is your company's annual sales in Naira?

   ___Because of the economic crunch, we have slowed down a bit to 3 million US Dollars which is equal to 600 million Naira._____

10. What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)
    1. Deficiency of IT experts.
    2. Fluctuation or instability in the Nigerian business environment.
    3. Monopoly of OEM products by a particular company in Nigeria.
    4. Lack of Government support.
    5. Distrust and lack of credit from foreign suppliers.
    6. Multiple taxes.

11. What solutions do you propose to the most important challenge (one only) listed in the question above?
    The Government should lay more emphasis on IT education right from the grassroots and access to the internet should be a citizen's right, not a privilege.

12. Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission,

National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

Nigerian Customs and Excise duties (Nigerian Customs Service), Central Bank of Nigeria (CBN), Federal Inland Revenue Service (FIRS), and Lagos state Inland Revenue Service (LIRS).

13. Are their impact positive or negative to your business? Positive or Negative?

Negative.

14. If Negative, which of their policies are negative to your business?

1. CBN Forex policies that are unfavorable.

2. Import duties are much on IT products. The duties on IT products should be zero.

3. Multiple taxation.

15. Which are challenges the following macro environmental factors pose to your business?

a. Political/legal_____Government's change of policies will affect business forecast._____

b. Ecological/Physical environment_ _____

c. Socioeconomic_____Staff attitude is negative.

    _____

d. Technological_____Frequent changes in technology affect goods in stock. In other words, it renders stock obsolete._____

e. Economic_____Lack of support from banks and Nigeria's bad credit attitude._____

16. Explain how they affect your business?____Government policies that keep changing, will not allow you to plan towards Government requirements._____

_____

_____

_____

_____

17. Which are challenges the following micro environmental factors pose to your business?

    a. Market____The non-certified OEM partners bringing in gray products. Gray products means buying products made for Lebanon into Nigeria. E.g. HP supply chain or other OEMs._____

    b. Customers__Lack of creditworthiness in Government and private customers._____

    c. Competitors_Lack of business integrity._____

    d. Distributors__Reducing credit sales and indirect competition._____

    e. Suppliers_____Zero credit by foreign suppliers to Nigerian businesses or partners._____

18. Explain how they affect your business?_____

    1. Majority of new IT OEM resellers frequently flood Nigeria with gray products thereby making Channel products non-competitive in pricing.

    2. Clients, Governments, and foreign suppliers should have a symbiotic business objective with us resellers by giving us credit when required, and paying for goods supplied.

19. What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

    1. Create a friendly import environment because all IT products are imported.

    2. Taxation should not be multiple.

    3. Imported IT products should go through strict quality check by the SON.

20. Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?
___Yes_____

21. Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?

1. Strict support services rendered to client on all original products purchased, not only from us, but on products purchased from other resellers.
2. Minimal profit margin to encourage volume sales.
3. Some companies (local distributors and foreign suppliers).

Thank the respondent for his/her time.

Interview with Oluwaseunon January22nd, 2016, in Ikeja, Lagos State, Nigeria. Oluwaseunis a Chief Engineer in an Information Technology enterprise engaged in the business of Hardware Engineering, Hardware Sales, and Software Installation.

Let us start with some information that will help me describe the sample.

1. What is your position in this Company/Enterprise?

_____Chief Engineer_____

2. How many years of experience do you have in the ICT/Technology Industry? (In years and months)

_____9 years_____

3. How many years of experience do you have in your current ICT/Technology company? (In years and months)

_____7 years_____

4. What is your highest educational level?

_____BSc. Student, West African Examinations Council
(WAEC)_____

5. What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?

_____Currently under incorporation as Private Limited Liability Company (Ltd)

_____

6. What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?

___Hardware Engineering, Hardware Sales, Software
Installation._____

7. For how long has your company been in operations?
____7 years_____

8. What are the sources of your products or services, or the inputs needed in producing your products or services?

   If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).
   ____Imported._____

9. What is your company's annual sales in Naira?
____1 million Naira per annum._____

10. What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)
   1. Too much dependence on importation of hardware e.g., Computer screen etc.
   2. Lack of Electricity.
   3. Lack of Government support.
   4. Lack of Research in ICT.

11. What solutions do you propose to the most important challenge (one only) listed in the question above?
   Government should invite overseas IT experts' help in the setting up of local manufacturing of hardware and ICT products or accessories.

12. Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).
   None.

13. Are their impact positive or negative to your business? Positive or Negative?

    Neutral.

14. If Negative, which of their policies are negative to your business?

    Not applicable

15. Which are challenges the following macro environmental factors pose to your business?
    a. Political/legal_____Nil_____
    b. Ecological/Physical environment_Nil_____
    c. Socioeconomic_____There is demand for our services and people are aware Positive.

       _____
    d. Technological_____does not pose a challenge, rather is advantageous to

       us._____
    e. Economic_____The Nigerian economy is affecting

       us._____

16. Explain how they affect your business?___The economy of the Country, for example, in the area

    of the Naira/USD exchange rate is impacting our business. We buy everything in

    USD._____

    _____

    _____

    _____

    _____

17. Which are challenges the following micro environmental factors pose to your business?
    a. Market_____There is competition in the

       market._____
    b. Customers__Customers are price-sensitive and want good service

       cheaply._____
    c. Competitors_Some competitor sell lower quality products at cheaper prices, which

       customers opt for._____

d. Distributors__We distribute and we face competition from other distributors._____

e. Suppliers_____Suppliers (i.e. Cargo suppliers) supply products that end up damaged by the time they get to us. We the distributor and the Nigerian supplier/importer share the risk and cost of the damaged products._____

18. Explain how they affect your business?_____

19. What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

    1. What they can do is to encourage Researchers and create Research centres.
    2. Government should improve electricity. We need good electricity.
    3. Government should make policies that are favorable to the ICT/Technology industry.

20. Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?
    ___Yes_____

21. Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?
    1. Customers have helped a lot by patronizing me.
    2. Other colleagues in the ICT industry have helped a lot through the synergy of learning together.
    3. The foreign companies that produce ICT accessories have helped a lot through the continuous production of these accessories.

Thank the respondent for his/her time.

Interview with Sylvanuson January25th,2016, in Agege, Lagos State, Nigeria. Sylvanusis theManaging Director in a Mobile Sales technology company.

Let us start with some information that will help me describe the sample.

1. What is your position in this Company/Enterprise?

   _____Managing Director_____

2. How many years of experience do you have in the ICT/Technology Industry? (In years and months)

   _____5 years_____

3. How many years of experience do you have in your current ICT/Technology company? (In years and months)

   _____5 years_____

4. What is your highest educational level?

   _____HND Business Administration_____

5. What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?

   _____Partnership_____

6. What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?

   ___Mobile Sales_____

7. For how long has your company been in operations?

   _____20 years_____

8. What are the sources of your products or services, or the inputs needed in producing your products or services?

    If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

    ____Imported._____

9. What is your company's annual sales in Naira?

    ___Thirty million (30 million)._____

10. What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)
    1. **Lack of Electricity**: The reason is because mobile phones has to do with batteries. Without electricity, people can't charge. This results in poor sales. The smart phones consume power.
    2. **Ineffectiveness of the telecoms network itself**: Poor network quality that manifests in long call setup durations demoralizes network users, thus leading to low demand.
    3. **Insecurity in Nigeria**: brings about poor sales in our business simply because our business moves more in the North than in the East and West. Those in the North now have low demand because of the insecurity, as they even find it difficult to eat.
    4. **Economic situation of Nigeria**: This has resulted in people finding it difficult to spend money on anything other than what they will consume.

11. What solutions do you propose to the most important challenge (one only) listed in the question above?
    Government should decentralize electricity. Because electricity is centralized, that is why it is not working. The provision of electricity should be deregulated in such a way that more than one company is involved in providing the service. This way, there will be competition and better service quality.

12. Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

1. Standards Organization of Nigeria (SON)
2. Nigeria Communications Commission (NCC)

13. Are their impact positive or negative to your business? Positive or Negative?

Partially Positive, Partially Negative.

14. If Negative, which of their policies are negative to your business?

1. Their policies that are negative are double registrations on a particular product. After registering a product, the SON comes back to require the registration of the same product, thereby making the process cumbersome.
2. The SON go as far as intercepting the goods prior to its arrival at people's warehouses. The processes required by SON on interception of the goods are the same already required and verified at the airport or ports. These interceptions causes delays in the smooth transaction of the business, as the goods are time-sensitive or go out of fashion quickly.

15. Which are challenges the following macro environmental factors pose to your business?

a. Political/legal_____There is no challenge, as our business is duly registered and follows the rules and regulations of the country._____

b. Ecological/Physical environment_No Challenges._____

c. Socioeconomic_____Once you are not a person that moves with time and fashion, your business will not function properly, or there will be downturn in sales.

_____

d. Technological_____It impacts the business negatively or positively. New technology impacts the sales of old technology negatively._____

e. Economic_____This is a serious issue to importers in Nigeria. Most things we consume in Nigeria are imported, even the raw materials of local producers. Nigeria policies are too rigid to us that it has affected the business negatively._____

16. Explain how they affect your business?___

_____
_____
_____
_____
_____

17. Which are challenges the following micro environmental factors pose to your business?
    a. Market_____The market itself is negatively affecting me because the economic situation is negative and is making business not to thrive._____
    b. Customers__Unsatisfied customers are a huge problem to a business. Once a customer is not satisfied with a product, they will not buy it again, thus adversely affecting the business._____
    c. Competitors_There is no business without competition. You must make your price attractive to customers. You must ensure the product is up to standard, or quality products. Competition is not a challenge to business but rather, a positive force that spurs business improvement._____
    d. Distributors__They affect my business positively because it will be those distributors that will set a price that will favor both themselves and ourselves._____
    e. Suppliers_____These are the foreign manufacturers. They affect my business partially positively and partially negatively. Positively, because I have a good relationship with them that make them offer me credit. Negatively, because the credit they extend to me is free in advance, it comes at a higher price. The consequence of this is that you part with a part of your profit to them._____

18. Explain how they affect your business?_____

19. What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)? Government has a very big role to play in this problem.

    1. They should finance some of these things. If the Government helps with the provision of funds and accessibility of loans, the cost of the products will be lower. Once you have the cash or funds, then you have options and can get a better deal but without cash, the limited supplier options you have will keep inflating the cost of the products.

20. Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?
    ___Yes_____

21. Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?
    1. For example, the foreign suppliers/manufacturers that give us credit facility.

    Thank the respondent for his/her time.

Interview with Edwin on January27th, 2016, in Garki II, Federal Capital Territory (FCT), Abuja, Nigeria. Edwin is a Managing Director in a custom software and hardware (i.e. CCTV) solutions provider company.

Let us start with some information that will help me describe the sample.

1. Researcher: What is your position in this Company/Enterprise?
    Respondent: MD

2. Researcher: How many years of experience do you have in the ICT/Technology Industry? (In years and months)
    Respondent: 8 Years

3. Researcher: How many years of experience do you have in your current ICT/Technology company? (In years and months)
    Respondent: 6 years

4. Researcher: What is your highest educational level?
    Respondent: BEng

5. Researcher: What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?
    Respondent: Private Limited Liability

6. Researcher: What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?
    Respondent: Customs Software solutions; and Hardware(i.e. CCTV installation with remote access to the CCTV installation; Open source implementations.

7. Researcher: For how long has your company been in operations?

Respondent: 6 Years

8. Researcher: What are the sources of your products or services, or the inputs needed in producing your products or services?

If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

Respondent: For the software aspect which is Intellectual Property (IP), it is imported. Most of the hardware that we use is also imported.

9. Researcher: What is your company's annual sales in Naira?

Respondent: 16 Million Naira, for this subsidiary of the group.

10. Researcher: What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

Respondent:

(1) **Staffing challenges**: getting highly experienced and qualified software engineers. We try to resolve this by training but staff may leave after training.

(2) **Clients' confidence on our competence**: Clients most times want to outsource to Chinese or Indian companies.

(3) **Competition from foreign companies**.

11. Researcher: What solutions do you propose to the most important challenge (one only) listed in the question above?

Respondent:

(1) We are resolving the challenge of staffing by training staff and accepting interns. Sometimes the interns stay or get retained after being trained.

(2) If the Government can come in. The previous Government ran the SURE-P program in which they provide us with staff and they pay them, although we also pay the staff something too.

12. Researcher: Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

    Respondent: National Information Technology Development Agency (NITDA).

13. Researcher: Are their impact positive or negative to your business? Positive or Negative?

    Respondent: Negative

14. Researcher: If Negative, which of their policies are negative to your business?

    NITDA regulates domains in Nigeria and there are domains that they mark as premium that would require payment of a million naira is obtain._____

    _____

    _____

    _____

    _____

    _____

15. Researcher: Which are challenges the following macro environmental factors pose to your business?

    Respondent:

    a. Political/legal: Abuja is a political city. Most people depend on Government budget not until the budget is passed, you might not get paid.

    b. Ecological/Physical environment: We have serves abroad, flooding or natural disasters may affect those data centers. However, we don't have control over it.

    c. Socioeconomic: It does affect our business. The literacy level is there and the people know what they want. If you can provide what they want, they are willing to pay. This is positive.

    d. Technological: You have to always be abreast of technical changes. I am a member of IEEE and BCS. It is a challenge but it is also a positive or opportunity.

e. Economic: It does pose challenges, especially the devaluation of the naira. We rent server and we pay for them monthly in USD. The Forex fluctuation has caused us to increase our prices.

16. Researcher: Explain how they affect your business?_____
_____
_____
_____
_____

17. Researcher: Which are challenges the following micro environmental factors pose to your business?

Respondent:

a. Market: The market is very competitive. There are a lot of roadside ICT professionals. These ones are the ones spoiling the reputation of the industry.

b. Customers: The challenge we have is that customers do not want to pay maintenance fees but want it for free. They are too demanding at times. Most customers in Abuja are willing to pay if the quality of service is right, compared with in other cities.

c. Competitors: Have posed a challenge of pricing to us, as we have had to adjust our prices based on what they are charging too.

d. Distributors: We have distributors but we buy from the supplies most times and compete with the distributors.

e. Suppliers: do not really pose any challenge because we give them our specification and they design to our spec.

18. Researcher: Explain how they affect your business?_____
_____
_____
_____
_____

19. Researcher: What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

    Respondent: Government can come in to help out with staffing. ICT is not a capital intensive venture, so if the Government can provide an enabling environment, provide or orchestrate loans and grants, that will help.

20. Researcher: Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?

    Respondent: Yes

21. Researcher: Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?

    Respondent: We tend to invest back more into the company for sustainability in terms of facilities, staff salaries, monthly subscriptions to our service providers abroad, but we know that it can be done better if there is adequate financing.

Thank the respondent for his/her time.

Interview with Benedicton January27th, 2016, in Central Area, Federal Capital Territory (FCT), Abuja, Nigeria. Benedictis theFounder and Business Strategist in a general software and web solutions provider company.

1. **Researcher**: What is your position in this company/enterprise?

Respondent: I am the founder. The business strategist.

2. **Researcher**: How many years of experience do you have in the ICT/ Technology industry; that is in total, not just in this company, inclusive of working for other companies?

Respondent: 7 years

3. **Researcher**: How many years of experience do you have in your current ICT company; This Company?

Respondent: Started operations in 2014 May, that is roughly 2 years.

4. **Researcher**: What is your highest educational qualification level?

Respondent: In terms of degree?

Researcher: Yes in terms of degree or qualification.

Respondent: In terms of highest qualification, I think it is Microsoft Certified Enterprise Administrator, IT professional.

Researcher: OK, but this is a professional qualification. What about the traditional qualification?

Respondent: The current one I have is Bachelor of Business from Edith Cowan University (ECU), Australia.

5. **Researcher**: What is the legal status of your company? Is it private limited liability etc?

Respondent: It is private limited liability.

6. **Researcher**: What is the nature of your business? Is it hardware sales, hardware reseller etc?

Respondent: We are mostly into software, general software, websites and software.

Researcher: Is it software development?

Respondent: Yes, basically anything that is not hardware. Website is a software, E-Commerce.

7. **Researcher**: For how long has your company been in operations?

Respondent: Since May 2014.

Researcher: Are you saying approximately 2 years now?

Respondent: Yes, we have been ....

Researcher: What are the sources of your products or services, or the inputs needed in producing your products or services? Are they locally produced or developed?

Respondent: Basically human capital, I thought you were asking the resources needed, human skills, not physical raw materials

Researcher: not just skills ,inclusive of components, raw material in the manufacturing parlance they call it raw materials, but you are into technology so you can say components, components you need in creating your software, website apart from the human resources which other items do you use?

Respondent:

8. **Researcher**: What are the sources are they locally developed or imported or purchased on line

Respondent: Partly locally developed, partly out sourced to foreign companies. I have a partner company in India.

9. **Researcher**: What is your company's annual sales in naira, that is sales revenue, turnover, not profit, but the whole total sale?

Respondent: Because we are less than 2 years old we don't have a fixed figure to that because that should be approximately when you have gone for 5 years or 3 years, then you can average it, but because we are less than 2 years, the first year is a trial run, we are still in the second year tenure we don't have the record for that.

Researcher: but if you want to estimate with whatever happened in the 1st year with whatever you have based on the 1st year?

Respondent: Maybe 4 million.

10. **Researcher**: What do you consider as the major challenges facing ICT/Technology companies, i.e challenges facing your company) in Nigeria? Please kindly rank them giving rank 1 to the most important challenges, 2 to the next one then to the least challenge.)

So the 1st challenge you should mention should be the most pressing challenge in your own view that is facing your own company or ICT companies in Nigeria.

Respondent: In my own view are quality skills in our human capital. Hiring quality skills and then as a start up also funds, funds to hire those skills, because the ones that are available with those skills are expensive and to hire them for a start up fee cost a lot, but then to hire people that are willing to work with start up at an adequate salary and then grow with this start-up, then they don't have adequate skills, the cost of training them then after training them they go to another company again you get somebody else that is the major problem, like I had somebody last week one of my staffs got another job that pays higher, so she went for the job she actually left officially this Monday, so I had to get somebody else because usually when you get as a start up, if you don't have enough start up capital, you have to get people that you will pay a little bit lesser than what other big company are paying. You can pay them lesser but what motivates them is knowing that they could learn, but then after they learn and they go to these other companies, that is the challenge for start ups.

Researcher: so after these quality skills which is the most pressing, you said something about capital is it the second most pressing...

Respondent: Funding....

Researcher: Yes, funding. Is that the next most pressing need in your view?

Respondent: Funding is going to influence the other one, so the first one is start up funding because that influences the second one. If you have adequate start up funding, then you probably can hire, but somehow, I think both of them are together because if you have enough money to hire it might still be difficult to find some people that are well smart and trained in terms of IT languages and skills

Researcher: Are you saying quality skills comes first then funding second?

Respondent: Put quality skills first, then funding second.

Researcher: Are there any other challenges after these two?

Respondent: Another challenge is the support structure from the government. Government still don't give enough support for start ups in technology industry. Even some Government works, they send it outside. If they recognise and support and promote, most individuals are doing it like Tony, some other individuals are helping start ups, but govt should recognisestart ups. For example in India now, my partner in India as of last week was telling me that in India now this year , any company that register they wave off the registration cost, any new company that register and then free tax for three years, and then a lot of things to support entrepreneurship and local. For example in India this is what might happen in Nigeria a lot of India are in US opening up start ups hiring people, but the rate of unemployment in India is still very high but they hire US people also a lot, but if we can do it in Nigeria whereby we can capitalize our local skills and then encourage people to start up. for me, we start ups are on their own basically because we just start up, you hustle and do everything on your own there is

no support, there is no guarantee you get clients, you have to hustle very hard and then there is no encouragement to start it is only people that are very good in taking risk or really have too much passion. There are a lot of skills that people have but they are not encouraged to utilize them. That is another challenge we have. Government, so when we have taken that step to start up the organisation, we need regulation and support from Government. to … a credensive. We have good ideas in the organisation but we need funding and govt support to encourage us to keep going and help us grow big.

Researcher: You said that when in India when you register a company the government helps by providing incentives such as three years tax free, 3 years tax break.

Respondent: and all the cost required for patenting ,trade marking the government cover 60% of the cost for all those, making it easily affordable for you to reach the company and registration of a company, they reduce it as low as N15,000 to have a private limited company and a lot of encouraging thing to help start ups. and then start ups are linked to opportunities that will help for example, a start up now needs this, that , that. The Government has identified all of these through the state bank of India. If you go there they have a start up hub just like a Google centre where you can just walk up as a start up even though it doesn't look like a bank anything you need for a start up, even if you need basic designs, trade mark and everything you synchronize them you apply there and they scrutinise you, you are availed all those opportunities like percentage off from this or that. They help you to keep going.

Researcher: Ok, are these the three major challenges you have or is there any other one?

Respondent: Those are the major challenges we have.

11. **Researcher**: What solution do you propose for the most important one which is the human quality skills in our human capital?

Respondent: hiring quality skills, quality skills are expensive for a start-up and they are hard to find also we need to encourage our youths to learn these skills. In India, they carry almost everybody out, one or two skills. We need to encourage our youths to learn have these skills by establishing a subsidised learning structure for them to learn these technical skills.

Researcher: by subsidising?

Respondent: yes, subsidise it for the youths, empower them to learn all these technical skills.

Researcher: by providing a subsidised learning structure?

Respondent: Yes, that is the IT field. Language, programming languages and development. by doing these you will have a lot of skilled set, quality skills in the market so giving employers bargaining power. You are looking for a Java professional and you can find only 5, then they have their own bargaining power now because they will be hot cakes. and also govt can help people because someone like me I am interested in, I registered in Diamond BET Awards for in an idea f creating a school where we can train our youths at a subsidised rate in basic languages and programming skills, The Government can also help by recognisingorganisation that are willing to take these steps and give them sponsorship. If they give me like a big office with equipped for training and all at least I can train some people, have class

govtpays for their....., and then they pay a part of it. You can train them and give them hands on experience on some programming language and I will bring my partner from India that is my intention.

12. **Researcher**: Which Federal govt Regulators and/ ministries polices affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology etc).

Respondent: Those one that have technology. Nigeria Communications Commission somehow affects my business through, because through bulk SMS........ Services and all. Anything bulk SMS and there are some software that you might develop that use messaging, in other countries like Philippines there is always a fees you pay for unlimited SMS and all that can help in your own development if you need to develop, like there is this school management solution I developed that requires sending daily SMS to parents, so I was looking for that unlimited SMS package, there was nowhere, no place for that. So that is like reserved for only big companies without considering start ups. So start up that have ideas that can solve something that requires those services cannot avail. so that is one of the things the other one is National information Technology Development Agency, they are meant to be doing, but they have never affected me in anyway because they have not been working popularly somehow but they are meant to be doing these things, you see them on the news but you don't see the participant. All those ministries that have technology they should be asking what have influenced my business, none of them.

13. **Researcher**: Are their impact positive or negative to your business?

Respondent: I have not experienced any of their impact.

Researcher: So you will say nil? Neither positive, nor negative?

Respondent: Yes

14. _____Nil.

15. **Researcher**: Which challenges do the following macro environmental factors pose to your business?

(1) Political and legal factors in Nigeria.

Respondent: Legal factor because as an IT company sometimes you need to do a patent, if you ask 5 lawyers , 4 of them don't know how to get a patent, so patent in Nigeria, they don't think that Nigeria is developing anything new. If you have some new idea they don't understand they will be asking you to trademark it. Trademark and patent are two different things. What is the next one?

Researcher: Ecological and physical environment. So will you say that the legal and political factor has affected you negatively?

Respondent: Yes. This kind of question should have 1-5, if 1 been the least and 5 been the most, because this 1 has not affected me completely negatively, but somehow it must have hindered me negatively, somewhat negatively.

Researcher: Why it is not authored that way is because the methodology I am using is qualitative by purpose. It is the quantitative methodology that put that scale of... but this one is for a reason too. Ok, ecology and physical environment like the green movement, green house all these things are they affecting you, not really electricity as in the global warming, the things that pertain to the ecology, physical environment are they affecting you in any way in your business?

Respondent: Ecology, no no.

Researcher: Do they pose any challenges to your business?

Respondent: No.

Researcher: Social Economic factors. By social economic factors I mean the way people relate to each other, their level of education, their class in terms of self consciousness and all that

Respondent: literacy?

Researcher: Yeah, literacy and exposure. So which are the challenges

Respondent: In terms of literacy, people you are pushed to propose a service don't feel that they need it or they put it on the least of their priority.

Researcher: What of technology, how does that affect you?

Respondent: Technology, it also affects me because there are no much, in terms of internet services, we don't have any good strong internet. It is one of the things I need for my work and some by- products needed most of them are just out-sourced from abroad.

Researcher: Are you saying that there is lack of internet or that they are just expensive? Are you saying that there is a lack of it?

Respondent: Yes

Researcher: Low internet penetration?

Respondent: Yes the one that is there is not good enough.

Researcher: Economic issues that affect you, I mean which are the challenges the economy pose to you?

Respondent: Funding, Government funding. It is not flowing

16. _____

17. **Researcher**: The micro environmental factors now. What has the market, what are the challenges the micro environmental factors, which are the challenges the following micro environmental factors pose to your business? Market, customers, distributors, suppliers.

So the market, what challenges has it posed to your business?

Respondent: The market is, there is no challenge in the market. The market is opening up the mind of the consumers to understand the benefits.

Researcher: but no challenges to you?

Respondent: No

Researcher: The customers, what challenges have they posed to you?

Respondent: The customers is just awareness

Researcher: Are you saying that their lack of awareness affects your business?

Respondent: lack of awareness........

Researcher: Competitors

Respondent: Nothing

Researchers: so you don't have competition from competitors?

Respondent: For now, nothing much

Researcher: What of distributors? Do you have distributors in your line of business?

Respondent: Instead of distributors, what we have is technical partners. We used to also have distributors when we are selling software equipment it is a liability I guess. But when it comes to technical partners, some of them are outside the country so the ability to coordinate with them from different time zone is a challenge that is why I need locally sourced talent.

Researcher: Suppliers, what are the challenges?

Respondent: I apparently don't have suppliers, just technical.....

18. _____

19. Researcher: What do you think that the government can do to address the ICT technology small and medium enterprises? So what do you think the Government can do?

Respondent: Provide more recognition to start up companies in IT SECTOR by waiving off lots of cost needed to start up an IT business, such as giving some companies equipments needed to start up, technical equipment to start ups, start up capitals go through business ideas, give them equipment needed to start up, open them, expose them to resources at subsidised cost.

Researcher: to provide equipments, etc. what other things

Respondent: Equipments, subsidised resources in terms of maybe legal expenses and other at subsidised cost of operating a start up

Researcher: Is there any other thing you think the Government should do?

20. **Researcher**: Are there innovative ways that your business has been able to succeed or thrive without government or financial institution support?

Respondent: innovative ways how our business has thrived or survived....

Researcher: So will you say yes or no?

Respondent: Yes

21. **Researcher**: Please kindly list those approaches that have helped your company sustain itself without Government or financial institution support?

Respondent: No 1 is not a very good solution but the solution is that it is very difficult to hire people here at a reduced cost so I outsource to company abroad that will do the work at a reduced cost so which is not a solution benefitting the economy of the country, so that has been the only way I have been surviving so minimising the tax, the staffs I need to hire, making it that I don't have to pay fixed salary until there is a work only two people salary.

Researcher: So is there any other one? So this is the main way you have been able to sustain your business without Government or financial institution support? The funding you are talking about now is it from a financial institution?

Respondent: No it is from family but it is innovative

Researcher: but it is still an approach you have been able to sustain yourself, am I right?

Respondent: Yes.

Researcher: Funding from family?

Respondent: And also from BNI. BNI is business networking international organisation. Here we started a chapter whereby members refer businesses to each other.

Researcher: OK, it is not funding? Just referrals

Respondent: Just business referrals. BNI, Business Networking International through business referrals.

Researcher: Business referrals as a member from BNI?

Respondent: Yes

Researcher: Thank you very much Mr. xxxxxxx. That was the last question that we just had there. I thank you for taking your time to participate in this study........

Interview 8 – Abuja

Interview with Ayotundeon January28[th], 2016, in Maitama, Abuja, Nigeria. Ayotundeis theDatabase Administrator in an Information and Communications Technology company.

Let us start with some information that will help me describe the sample.

1. Researcher: What is your position in this Company/Enterprise?
   Respondent: Database Administrator

2. Researcher: How many years of experience do you have in the ICT/Technology Industry? (In years and months)
   Respondent: 8 Years

3. Researcher: How many years of experience do you have in your current ICT/Technology company? (In years and months)
   Respondent: 4 years, 5 Months

4. Researcher: What is your highest educational level?
   Respondent: BSc, Post Graduate Diploma

5. Researcher: What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?
   Respondent: Private Limited Liability

6. Researcher: What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?
   Respondent: Software Solution Provider

7. Researcher: For how long has your company been in operations?
   Respondent: over 20 Years

8. Researcher: What are the sources of your products or services, or the inputs needed in producing your products or services?

If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

Respondent: Both locally produced andimported

9. Researcher: What is your company's annual sales in Naira?

Respondent: That I don't have

10. Researcher: What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

Respondent:

(1) Government policies e.g with the Treasury Single Account (TSA), the Government did not put into consideration the private public partnership with the TSA. Payment to Government service providers is not as prompt as it used to be.

(2) Manpower: People are not adequately trained for the job.

(3) Lack of Internship opportunities to those capable

(4) Expatriates V. Local remuneration gap

11. Researcher: What solutions do you propose to the most important challenge (one only) listed in the question above?

Respondent:

(1) The Government should review the Partnership between the public and private service providers so that providers are paid promptly to avoid disruption in service.

12. Researcher: Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

Respondent:

1. Federal Government of Nigeria (FGN)
2. Central Bank of Nigeria (CBN)

13. Researcher: Are their impact positive or negative to your business? Positive or Negative?

    Respondent: Negative

14. Researcher: If Negative, which of their policies are negative to your business?

    Respondent:

    (1). The TSA policy of the Federal Government of Nigeria, leading to delayed or nonpayment.

    (2). Exchange rate challenges e.g. Naira devaluation has affected the cost of things procured from foreign countries.

15. Researcher: Which are challenges the following macro environmental factors pose to your business?

    Respondent:

    a. Political/legal:
    b. Ecological/Physical environment:
    c. Socioeconomic:
    d. Technological: does not affect our business because we have to stay abreast with technology.
    e. Economic: Government TSA policy has brought everything to a standstill.

16. Researcher: Explain how they affect your business?_____

    _____

    _____

    _____

    _____

17. Researcher: Which are challenges the following micro environmental factors pose to your business?

Respondent:

    a. Market: We deliver services so the market is readily available.

    b. Customers: Customers don't pose any challenges. They use our services.

    c. Competitors: Competitors are political because the projects are won when you identify with a political party.

    d. Distributors: No distributor.

    e. Suppliers: I cannot answer this, as I don't deal with the suppliers.

18. Researcher: Explain how they affect your business?

    Respondent:_____

19. Researcher: What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

    Respondent:

    1. Government policies should be favourable first and foremost.

    2. ICT professionals are highly paid in foreign countries. If that can be replicated here. The National Information Technology Development Agency (NITDA) should ensure every ICT company is registered and the wages of ICT employees benchmarked with foreign countries in favour of the ICT employees.

    3. Mushroom ICT training centers are all over the place. It should be monitored such that they graduate potential ICT professional rather than mushroom professionals.

20. Researcher: Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?

    Respondent: No

21. Researcher: Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?

    Respondent:

Thank the respondent for his/her time.

Interview with Tunde on January 28th, 2016, in Wuse II, Abuja, Nigeria. Tunde is the Managing Director in a Hardware Maintenance /Services company.

Let us start with some information that will help me describe the sample.

1. Researcher: What is your position in this Company/Enterprise?
   Respondent: Managing Director

2. Researcher: How many years of experience do you have in the ICT/Technology Industry? (In years and months)
   Respondent: 15 Years

3. Researcher: How many years of experience do you have in your current ICT/Technology company? (In years and months)
   Respondent: 12 years

4. Researcher: What is your highest educational level?
   Respondent: BEng

5. Researcher: What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?
   Respondent: Private Limited Liability

6. Researcher: What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?
   Respondent: Hardware Maintenance /Services

7. Researcher: For how long has your company been in operations?
   Respondent: 12 Years

8. Researcher: What are the sources of your products or services, or the inputs needed in producing your products or services?

If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

Respondent: Imported

9. Researcher: What is your company's annual sales in Naira?

   Respondent: 9 Million Naira

10. Researcher: What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

    Respondent:

    (1) Finance

    (2) Infrastructure e.g Power

    (3) Research materials, for instance you want to start producing the things we import. To get the necessary materials on how those things locally.

11. Researcher: What solutions do you propose to the most important challenge (one only) listed in the question above?

    Respondent:

    (1) Loan facilities, because with finance you can do many things

12. Researcher: Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

    Respondent:

    1. National Information Technology Development Agency (NITDA)

    2. NASSENI: can't remember the acronym

13. Researcher: Are their impact positive or negative to your business? Positive or Negative?

    Respondent: Positive, but there is room for improvement. They spend resources in the wrong direction, e.g. the construction of ICT centers in Institutions that are not being utilized.

14. Researcher: If Negative, which of their policies are negative to your business?

    _____

    _____

    _____

    _____

    _____

    _____

15. Researcher: Which are challenges the following macro environmental factors pose to your business?

    Respondent:

    a. **Political/legal**: Most contracts for indigenous companies get awarded to foreigners, resulting in capital flight.

    b. **Ecological/Physical environment**: It does affect our business as the devices are meant for temperate environment.

    c. **Socioeconomic**: This affects us because people's mentality is annoying. You have to balance between low cost and functionality. People like cheap things, which do not do the work.

    d. **Technological**: All things are produced abroad and it affects us as even some accessories should be produced locally.

    e. **Economic:** This affects. If the economic environment is robust, foreign investors would have come in to invest.

16. Researcher: Explain how they affect your business?_____

    _____

    _____

_____

_____

17. Researcher: Which are challenges the following micro environmental factors pose to your business?

    Respondent:

    a. **Market**: It poses a challenge because for you to have a good market, your products should be readily available.

    b. **Customers**: Want good quality but don't want to pay so much.

    c. **Competitors**: Bring in cheap products and they spoil business.

    d. **Distributors**: Previously, they give their products on credit but recently don't do so anymore.

    e. **Suppliers**: Previously, they give their products on credit but recently don't do so anymore.

18. Researcher: Explain how they affect your business?

    Respondent:_____

19. Researcher: What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

    Respondent: Government should encourage Technology SME's by patronizing them.

20. Researcher: Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?

    Respondent: Yes

21. Researcher: Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?

    Respondent:

    1. By taking initiatives, dwelling into tech exploits. With the trend in technology, you keep abreast of new development and transfer them into economical gains.

    2. Self-development

    3. Foreign partnerships

Thank the respondent for his/her time.

Interview 10 – Abuja

Interview with Francis on January29th, 2016, in Garki II, Abuja, Nigeria. Francis is aDirector in a Hardware Sales and general ICT solutions provider partnership.

Let us start with some information that will help me describe the sample.

1. Researcher: What is your position in this Company/Enterprise?

    Respondent: Director

2. Researcher: How many years of experience do you have in the ICT/Technology Industry? (In years and months)

    Respondent: over 10 Years

3. Researcher: How many years of experience do you have in your current ICT/Technology company? (In years and months)

    Respondent: 5 years

4. Researcher: What is your highest educational level?

    Respondent: BA

5. Researcher: What is the legal status or the nature of your organization (e.g. Private Limited Liability, etc.)?

    Respondent: Partnership

6. Researcher: What is the nature of your business (e.g. Hardware Sales, Hardware Reseller, etc.)?

    Respondent: Hardware sales, Reseller, ICT generally.

7. Researcher: For how long has your company been in operations?

    Respondent: 5 Years

8. Researcher: What are the sources of your products or services, or the inputs needed in producing your products or services?

   If the respondent does not understand this question, aid him/her by asking if the products/services/inputs are locally produced or developed, imported, or purchased online (e.g. server hosting, images, templates, etc.).

   Respondent: Bought from local importers.

9. Researcher: What is your company's annual sales in Naira?

   Respondent: -----------------

10. Researcher: What do you consider as the major challenges facing ICT/Technology companies (i.e. challenges facing your company) in Nigeria? (Please kindly Rank them, giving Rank 1 to the most important challenge, 2 to the next important and so on till rank…..)

    Respondent:

    (1) Erratic power supply.

    (2) Inaccessibility of funds from financial institutions

11. Researcher: What solutions do you propose to the most important challenge (one only) listed in the question above?

    Respondent:

    (1) Encourage the Government to get it fixed as soon as possible.

12. Researcher: Which Federal Government Regulators and/or Ministries policies affect your business? Please kindly list all the regulatory agencies and ministries (e.g. Nigerian Communications Commission, National Broadcasting Commission, National Information Technology Development Agency, and Federal Ministry of Communications Technology, etc.).

    Respondent: All examples above affect

13. Researcher: Are their impact positive or negative to your business? Positive or Negative?

    Respondent: Some are positive, some are negative

14. Researcher: If Negative, which of their policies are negative to your business?

    Respondent: I cannot comment on that right now

15. Researcher: Which are challenges the following macro environmental factors pose to your business?

    Respondent:

    a. **Political/legal**: Politically, if the party in power, if they formulate policies that benefit the masses, that improves the lives of the people, it will also improve businesses, as people have more disposable income to spend on acquiring ICT education.

    b. **Ecological/Physical environment**: None

    c. **Socioeconomic**: Definitely, when you have more enlightened clients, it is easier to deal, but when you have unenlightened clients, they are suspicious and usually feel cheated.

    d. **Technological**: When you talk of ICT generally, as technology grows, the opportunities in ICT services increases. This is positive.

    e. **Economic**: If politically, the policies are not favourable to the people, it affects business. If there are security challenges, businesses start late and close early reducing working time negatively. Before, when there was better security, Cybercafé can run all-night service but now you can't do that.

16. Researcher: Explain how they affect your business?_____

    _____

    _____

    _____

    _____

17. Researcher: Which are challenges the following micro environmental factors pose to your business?

    Respondent:

    a. **Market**: Positive. Society is a fast-changing world. You need to be dynamic in your approach, diversify and explore new avenues. The Cybercafé business has been

impacted by the fact that people now do things they previously did in cybercafés, from their phones and IPads.

b. **Customers**: Positive. Customers are not challenges. If you give them good service, they will pay for it.

c. **Competitors**: Should be a source of motivation to be creative and dynamic. So, they motivate me to think bigger and expand more.

d. **Distributors**: There are none in our line of business.

e. **Suppliers**: Whatever materials we need we buy, so suppliers do not pose any challenge to us. We do not have permanent suppliers, as we buy things only when we need them.

18. Researcher: Explain how they affect your business?_____

_____

_____

_____

_____

19. Researcher: What do you think the Government can do to address the challenges of ICT/Technology Small and Medium Enterprises (SMEs)?

Respondent:

1. Work on power supply. Make sure the power sector is functional and affordable

2. Security. Make sure that security is improved so that people can come out early and late to do ICT business

3. Introduce micro credit schemes that can fund start-ups and strength existing ones.

20. Researcher: Are there innovative ways that your business has been able to survive and thrive without Government and Financial Institutions support? Yes or No?

Respondent: Yes

21. Researcher: Please kindly list those approaches that have helped your company sustain itself without Government's and Financial Institutions' support?

Respondent:

(1) Partnership in some instances as at when needed.

(2) Adverts: embarking on aggressive marketing strategies both print, media, online adverts, posters, one on one contact, billboards and flyers.

Thank the respondent for his/her time.