

Information and Communication Technology Adoption: Challenges for Nigerian SMEs

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Abstract

Although Information and Communication Technology (ICT) provides enormous opportunities such as storing, processing, retrieving, disseminating and sharing of information, its use within SMEs in developing countries is still plagued with many problems that hinder effective and efficient management. Researchers (Berisha-Namani, 2009; Golding, Donaldson, Tennant & Black, 2008; Eunni, Brush & Kasuganti 2007; Braun, 2003a) argue that in national and regional economies, Small and Medium Sized Enterprises (SMEs) play an important role by sustaining domestic and regional economic growth and that they are a driving force for poverty alleviation in developing countries. In the knowledge based global economy, and especially in developing countries, the SME sector contributes largely to job creation, poverty alleviation, growth and social inclusion. The economic contribution of SMEs in Nigeria is significant; hence, SMEs are regarded as a source of economic development (Ariyo, 1999). Research has shown that SMEs can increase their market reach, enhance customer service, and reduce both marketing and distribution cost with the use of ICT (Alam, Khatibi, Ahmad & Ishmail, 2007). However, there is a digital divide which shows that ICT adoptions vary between developed and developing countries, with developing countries adopting ICT at a slower rate (Golding et al., 2008). This paper is drawn from on-going PhD research and provides a review of the factors that impede the adoption of ICT in SMEs in developing countries with particular reference to Nigeria. The paper builds upon previous research and suggests some approaches that could be applied in order to help bridge the existing digital divide in Nigerian SMEs. Findings of this research would be of value to policy makers, SME owner-managers and academic researchers.

Keywords: Adoption, Developing countries, Nigeria

INTRODUCTION

Information and Communication Technology (ICT) offers enormous opportunities such as storing, processing, retrieving, disseminating and sharing of information. However, its use within Small and Medium Sized Enterprises (SMEs) in both developing and developed countries is plagued with many problems. The adoption of ICT has shown to improve SMEs' performance since ICT is known as a tool that improves business competitiveness (Sheppard & Hooton, 2006; Alam *et al.*, 2007). This paper focuses on a review of the factors that impede the adoption of ICT in SMEs in developing countries,

with particular reference to Nigeria. In order to do this, it draws upon current research from developed countries. It further suggests some approaches that could be applied in order to help bridge the digital divide that exists in Nigerian SMEs.

LITERATURE REVIEW

Small and Medium Sized Enterprises (SMEs)

It is widely recognised that SMEs are very important for economic growth and job creation in both developed and developing countries (Aris, 2006; Mutula & Brakel, 2006; Tan & Macaulay, 2007; Hazbo, Arnela & Chun-yan, 2008). Researchers argue that SMEs play a major role in poverty alleviation in developing countries and also stimulate domestic and regional economic growth in national and regional economies (Golding *et al.*, 2008; Berisha-Namani, 2009). They help to diversify economic activity and are flexible to changing market demands (Ongori, 2009).

There have been many discussions over the importance of this sector to the economy although there is evidence to 'suggest that small firms do play a major role in the world economy' (Timmons, 1994) and that they constitute the bulk of enterprises in all world economies (Storey, 1994). In Nigeria, SMEs also play a significant role in terms of economic development as they provide the cornerstones on which Nigeria's economic growth and stability rests (Ojukwu, 2006). The Federal Office of Statistics reveals that about 97% of the entire enterprises in Nigeria are SMEs and they employ an average of 50% of the working population as well as contributing up to 50% to the country's industrial output (Ihua, 2009).

SMEs have been defined against various criteria such as the value of assets employed and the use of energy (Jutla, Bodorick & Dhaliwal, 2002). However, there is no universally acceptable definition of SMEs in Nigeria as it has varied over time and from organisation to organisation (Lal, 2007). The National Association of Small and Medium Scale Enterprises (NASME) defines a small scale enterprise as a business with less than 50 people employed by the enterprise and with an annual turnover of ₦100,000,000 (100 million Naira). NASME further defines a medium scale enterprise as a business with less than 100 employees and with an annual turnover of ₦500,000,000 (500 million Naira). Also, the Central Bank of Nigeria (CBN) and the Small and Medium Enterprises Equity Investment Scheme (SMEEIS) define SMEs as any enterprise with a maximum asset base of ₦200,000,000 (200 million Naira) excluding land and working capital with the number of staff employed by the enterprise expected to be not less than 10 and not more than 300 (Lal, 2007). Nevertheless, in this paper, SMEs have been defined not only based upon the number of employees and their maximum asset base, but also based on their ability to comply with the relevant regulations of the Companies and Allied Matters Act (1990) such as filing annual returns. Furthermore, the SME must be registered as a limited liability company with the Corporate Affairs Commission of Nigeria.

Information and Communication Technology (ICT)

ICT is defined as any technology that facilitates communication and assists in capturing, processing and transmitting information electronically. Some commonly used ICTs in many developing countries include Radio, television and print media (Parliamentary Office of Science and Technology, 2006). Modern ICTs such as software, mobile phones

and associated applications such as 'VOIP' (transmitting telephone calls over the internet) have become available to many countries worldwide in recent years. However, the most rapid growth is in mobile phone usage (Parliamentary Office of Science and Technology, 2006).

The adoption of ICT is crucial to SMEs as ICT has become a major catalyst and enabler of organisational change (Hazbo *et al.*, 2008). ICT increases richness and reach (Evans & Wurster, 1997). This refers to the way companies communicate, collaborate, and conduct transactions with their customers, suppliers and distributors via the internet and the ability for local SMEs to participate in the digital economy (Golding, *et al.*, 2008). Pavic, Koh & Simpson (2007) argue that SMEs have the opportunity to achieve a competitive advantage from advances in ICT through innovation, marketing, efficiency gains, better quality and customer responsiveness. Also, Levy, Powell and Yetton (2002) found some evidence to indicate that SMEs can act proactively in relation to ICT use. Other researchers (Hagmann & McCahon, 1993; Yetton, Johnson & Craig, 1994) have discovered that SMEs tend to deploy ICT in a reactive, cost reducing manner.

Ongori (2009) states that the adoption of ICT would change the way businesses operate in this era of globalisation by changing business structures and increasing competition, creating competitive advantage for businesses and by changing business operations. Hence, for SMEs to grow and become successful, they must have the ability to compete and dynamically respond to rapidly changing markets. This implies that SMEs need to be connected to the digital marketplace.

Unfortunately, there are a number of factors that hinder SMEs from adopting ICT in developing countries and Nigeria is no exception. According to Golding *et al.* (2008), there is a digital divide which shows that ICT adoptions vary between developed and developing countries with developing countries adopting ICT at a slower rate. Ihua (2009) states that there exists a wide technological gap between developed and developing countries, using the United Kingdom and Nigeria as examples. Developing countries are far less advanced than developed countries in the areas of technological environment and infrastructure, probably because the technology is produced in developed nations, while the developing nations import it (Ihua, 2009). Beekhuyzen, von Hellens and Siedle (2005) state that in developing countries, access to ICT continues to be a major problem. Countries are digitally divided due to lack of access and availability of ICT.

Digital Divide

Cayla, Cohen and Guigon (2005) define digital divide as the unequal access to ICT. This divide examines the disparity in the diffusion of ICT between developing and developed countries, well educated and poorly educated populations or between poor and rich citizens. Peters (2003) explains that the digital divide between countries is usually measured in terms of the number of telephones, computers and internet users. Apart from the digital divides that exist between countries, analysts also describe the unequal access of ICT within countries as the domestic digital divide between the have and have not (Sciadas, 2002 as cited in Golding *et al.*, 2008).

Braun (2003b) argues that the geographic location of a country has an impact on the adoption of ICT. For example, a study conducted by Hung (2003) shows that the regional distribution of internet users in China was found to directly correspond with the

disparity of different geographical areas. This implies that being located in peripheral regions where ICT infrastructure, especially broadband, is scarce or very expensive, can affect the adoption of ICT. In addition, Peters (2003) presents both practical and policy challenges, and states that the solutions that work in developed countries cannot work in developing countries, since digital divide is a complex problem. Therefore, solutions must be based on an understanding of local needs and conditions. Khan (2000) highlights the importance of understanding local needs in addressing internal digital divide and states that Africa and other parts of the world must understand and recognise the value of local knowledge while implementing ICT development projects. Andrade and Urquhart (2009) argue that the efforts to close the digital divide are not enough. Wade (2002) further states that the digital divide represents other long-term and pre-existing forms of economic and social divisions and that it is not a completely new phenomenon. Therefore, it is important to be aware of mechanisms and consequences that might be creating, perpetuating or exacerbating already existing differences between the 'haves' and 'have nots' (Rooksby and Weckert, 2004 as cited in Andrade and Urquhart, 2009; Walsham, 2001). In other words, some necessary reflection on the digital divide needs to take place at this point.

The Parliamentary Office of Science and Technology (2006) reports that OECD countries have the highest access to ICT, followed by South Asian and some African countries. Sub-Saharan African countries fare worst (excepting South Africa) and Nigeria is no exception. Despite the fact that SMEs play an important role in developing countries' economies, ICT adoption is still relatively low when compared to developed countries (Kuteyi, 2009).

Problems of ICT Adoption in Developing Countries

In developed countries, ICT has been used to change the way businesses are conducted in order to have a strategic advantage in their various operations. However, the investment returns of ICT in developing countries have fallen short of the potential. Researchers have attributed this problem to organisational factors, environmental factors and lack of technical skills, among others. Okot-uma (1992, as cited in Kunda & Brooks, 2000) argues that the problems in introducing ICT in developing countries can be classified into three generic categories, namely: contextual, strategic and operational.

Contextual problems are due to poor match of models of developed countries' design and applications to the developing countries context, semantic discrepancies in the wording and understanding of phenomena as well as references to different value systems and different concepts of rationality (Kunda & Brooks, 2000). Strategic problems relate to local, national and regional policy initiatives, as reflected in the institutional intervention mechanisms of influence, regulation and implementation (Kunda & Brooks, 2000), whilst technical and economic constraints and lack of skilled personnel are operational problems faced by developing countries.

Some other problems that affect developing countries from adopting ICT are lack of skilled human resources, economic constraints, lack of systems infrastructure and application problems. Lack of skilled human resources has been described as a principal barrier blocking the diffusion and effective exploitation of ICT in developing countries (Woherem, 1993). Kunda and Brooks (2000) state that a deficiency such as evolution of lack of counterpart training under technical assistance has not been identified as a major cause of these problems.

Economic constraints such as the non-existence of reliable background statistical information and inadequate capital to finance ICT have been identified as another set of factors (Okot-uma, 1992 as cited in Kunda & Brooks, 2000). Several developing countries suffer from both lack of resources and limited domestic market. Some developing countries import ICT due to lack of an indigenous ICT industry. Kunda and Brooks (2000) state that scarcity of foreign currency makes developing countries depend on donor agencies for much of their ICT imports. Furthermore, developing countries often lack adequate telecommunication infrastructures. There is also the issue of systems infrastructure deficiency and application problem (Kunda & Brooks, 2000), and in most developing countries, there is still the problem of irregular electrical power supply.

Tarafdar and Vaidya (2006) state that many firms in developing countries, including SMEs, are in the early stage of ICT adoption. The transition of SMEs in developing countries to more sophisticated levels of ICT use depends partly on the extent to which they are inclined to use these new technologies for their businesses. According to Iacovou, Benbasat and Dexter (1995) and Mehrtens, Cragg and Mills (2001), not all organisations are strongly inclined towards adopting ICT. Premkumar, Ramamurthy and Nilakanta (1994), Iacovou *et al.* (1995), Crook and Kumar (1998), Payton (2000) and Beatty, Shim and Jones (2001) have suggested that the extent of ICT adoption depends on the attitude of the organisation towards ICT technologies and the inclination or the propensity to deploy and use them. Hence, Tarafdar and Vaidya (2006) recommend that it is important for organisations to understand the fundamental factors behind technology adoption and the differences in organisational inclination as this would enable organisations to assess the extent to which they are inclined to develop, deploy and use technologies. Ginsberg and Venkatraman (1992) have suggested that different managers and organisations adopt different attitudes towards ICT, depending on its perceived usefulness in the context of their work. In this paper, four broad aspects that influence organisations to adopt ICT are discussed. They include the role of top management in organisational leadership, the effect of organisational culture, availability of resources and level of internet penetration.

The Role of Top Management in Organisational Leadership

Top management attitudes play a vital role towards the adoption of ICT in organisations. According to Grover (1993), Premkumar and Ramamurthy (1995), Crook and Kumar (1998), Beatty *et al.*, (2001) and Tarafdar and Vaidya (2006), an enthusiastic approach on the part of top managers can lead to the adoption of ICT. Yap, Soh and Raman (1992) found that management involvement is crucial to ICT success in SMEs.

The support from top management is the precondition for successful ICT in SMEs (Sarkar, 2008). In small businesses, the top manager in most cases is the owner of the business. Matlay and Addis (2003) state that the decision to adopt ICT by SMEs is likely to be made by the owner and Thong (1999) argues that the support from the Chief Executive Officer (CEO) would positively influence the likelihood of technology adoption. The characteristics of leaders help create a positive organisational attitude towards the adoption of ICT in an SME. According to Payton (2000), top management often provides the forward motion for the initiation of technology projects.

The Effect of Organisational Culture

Studies suggest that the core values of a firm can influence the firm towards a particular strategic alternative or technology (Tarafdar & Vaidya, 2006). In particular, their technical expertise and their attitude towards ICT can affect their company's ability and willingness to engage with ICT matters (Harindranath, Dyerson & Barnes, 2008). There are two aspects of organisational culture that can influence the tendency to adopt ICT. Firstly, managers' experience with ICT, interactions with vendors and professional associations increases their awareness and understanding and are aspects of organisational culture which can influence the tendency to adopt ICT.

Chibelushi and Costello (2009) also state that lack of awareness could hinder in SMEs from understanding the potential benefits associated with new technologies that could enhance their efficiency and increase productivity. Awareness has a positive influence on organisation inclination to consider new ICT (Tarafdar & Vaidya, 2006).

Secondly, some organisations have cultures that support discussion of new and innovative ideas related to ICT. This has a positive influence on managers as it increases the tendency for them to develop and adopt applications with new technology (Apulu & Latham, 2009). Hoffman and Klepper (2000) state that the organisational inclination towards new ICT adoption can be strengthened, if there is a culture where ideas and innovations related to ICT are freely shared. Thus, a positive organisational attitude regarding systems innovation would increase the adoption of ICT technologies.

Hofstede (1996) provides empirical support for the proposition that there is a fundamental difference between different business cultures, suggesting that culture can be scaled or ranked by dimensions, and the scores can be used to predict cultural differences. The classification of cultural dimensions presents a theoretical foundation that has been frequently used for exploring the impact of cultural differences on the adoption and use of information and communication technology.

Availability of Resources

The availability of resources enhances the adoption of ICT within SMEs. Factors that include the cost of ICT equipment and networks, software and re-organisation are barriers to ICT adoption in most SMEs (Arendt, 2008). In many SMEs, capital resources, in addition to intangible assets such as knowledge, expertise and time, are scarce. SME managers spend a great deal of their time trying to stretch a firm's limited resources as far as possible. Therefore, allocating scarce resources to a new initiative, such as ICT adoption, requires a serious commitment (Pool, Parnell, Spillan & Carraher, 2006). For firms, including SMEs, to have competitive advantage, there needs to be a combination of resources and capabilities (Priem & Butler, 2001). Furthermore, Andrade and Urquhart (2009) state that SMEs which are prepared to integrate ICT technology and applications must overcome resource and scale economy challenges.

Internet Penetration

During the last few years, computer access and internet penetration has increasingly grown around the world, especially in developing countries. Different reasons may explain this notable growth such as government-led computer technology initiatives, information and communication technology projects supported by international agencies and private efforts, either at the organisational level or at the individual level (Andrade & Urquhart, 2009).

Table 1: Distribution of Internet Users in the World

Region	Percentage of World Population	Percentage of World Internet Users
Africa	14.3%	3.5%
Asia	56.6%	39.5%
Europe	14.3%	26.3%
Latin America/ Caribbean	8.6%	9.5%
Middle East	2.9%	2.9%
North America	5.1%	17.5%
Oceania	0.05%	1.4%

Source: Miniwatts Marketing Group (2008) *Internet World Stats: Usage and Population Statistics*. [WWW document]. URL <http://www.internetworldstats.com/stats.htm> (accessed on 5 June 2009).

Indeed, the growth of internet access in the world was 305.5% on average between 2000 and the first quarter of 2008 (Andrade & Urquhart, 2009). North America was the lowest with 129.6%, and Middle East the highest with 1176.8% (Miniwatts Marketing Group, 2008). However, a closer examination of the distribution of Internet users around the globe reveals some persistent disparities as shown in the table above.

Hence, the low level of internet penetration in Africa has been a major impediment to the adoption of ICT. It is a known fact that the adoption of ICT increases market reach, enhances customer service, and reduces both marketing and distribution cost (Golding *et al.*, 2008). However, its adoption within Nigerian SMEs has been slow due to some factors that affect ICT adoption.

Problems of ICT Adoption in Nigerian SMES

Considering the enormous potentials and immense contribution of the SME sector to sustainable economic development, Nigerian SMEs still fall below expectation (Ihua, 2009). There are many factors affecting the performance of Nigerian SMEs and these factors increase their rate of failure. Costello and Sloane (2003) also state that SMEs are hindered in adopting technologies as a result of the barriers that arise in the organisation. The factors affecting Nigerian SMEs include lack of infrastructural facilities, corruption, cost of implementation, lack of funds, lack of awareness among owners-managers, lack of skills and training, cultural factors, lack of government policies that support ICT adoption in SMEs, electricity constraints among others (Adenikinju, 2005; Akpan-Obong, 2007; Ihua, 2009). Details of these will be discussed below.

Issues of the SME sector in Nigeria and its development have been handled with levity by the government (Adenikinju, 2005). Infrastructural inadequacy has been identified as a key constraint to private sector development. The state of infrastructures, especially telecommunications infrastructure, poses a major hindrance to the use of ICT in Nigeria, with Nigeria having one of the lowest tele-density in sub-Saharan Africa even though the rate increased exponentially between 2002 and 2006 (Akpan-Obong, 2007). In addition, Dike (2005) stresses that while the issue of corruption is a global phenomenon and not peculiar to Nigeria alone; nevertheless, the case of corruption in Nigeria is "pandemic". Another factor that has been identified to be influencing adoption decisions is the cost of implementation. This can be defined as the total amount that it will cost business

organisations to implement a new technology (Folorunsho, Gabriel, Sushil & Jeff, 2006). Many Nigerian SMEs struggle with the high cost of ICT implementation hence they sometimes ignore the adoption of ICT and rather use their resources for other purposes that would bring about fast profits (Folorunsho *et al.*, 2006). SMEs owner-managers also try to determine the investment rate of return, as these types of investments are carried out over relatively long periods of time.

Kuteyi (2009) identified lack of funding and non-utilisation of ICT as another factor that affects the development of Nigerian SMEs. He stated that there was a need for SMEs to embrace change and utilise ICT to aid the growth of their businesses. According to Kuteyi (2009), access to funding, proper utilisation of information technology and ability to embrace change in the business environment would stimulate the growth of SMEs in the country. He further stated that there was a need for a centralised agency like Small and Medium Enterprise Development Agency to coordinate the collation of information, whereby SMEs could obtain relevant information on the sector.

Many SME owner-managers in Nigeria are not familiar with the conceptual basis and potential benefits of adopting ICT. According to Costello, Chibelushi and Sloane (2007), owner-manager's personal characteristics are very important in technology adoption. An owner's enthusiasm for technology is a major motivator in the adoption of ICT (Apulu & Latham, 2009). Therefore, owner-managers of SMEs should be willing to adopt ICT as it can serve as a motivator for employees. The lack of knowledge on how to use technology and low computer literacy are factors that affect the adoption of ICT (Costello *et al.*, 2007). In summary, there is a need for computer education. Owner-managers need to attend training programmes that will enlighten them on the benefits associated with the use of ICT.

In addition, there is the general issue of skills and training. The skill deficiencies appearing in SMEs include not only technical abilities but also management skills (Arendt, 2008). Generally, SMEs do not develop training plans. In most Nigerian SMEs, there is reluctance among owner-managers to invest on training their employees because these owner-managers are afraid that following the completion of such training and having improved their qualifications, these employees will leave and find employment in large companies that offer better salaries (Arendt, 2008). Notwithstanding, owner-managers need to conduct training sessions for staff that will assist in creating awareness on the benefits of adopting technology in organisations (Apulu and Latham, 2009).

Cultural barriers are a challenge in Nigerian SMEs (Apulu and Latham, 2009). Cultures which do not nurture openness and knowledge sharing cannot provide the appropriate human inputs needed by the organisation for their ICT initiatives. Malik and Malik (2008) state that lack of supportive organisational culture and structure may hamper technology initiatives in any organisation.

Lack of Policy/Institutional Framework also affects Nigerian SMEs. Although a policy on information technology was formulated in 2002 by the Nigeria Information Technology Development Agency (NITDA), it has not been properly implemented. Also, there has not been a purposeful policy on ICTs for SMEs in Nigeria (Akpan-Obong, 2007). SMEs, unlike larger organisations, will require government support in order to gain a competitive edge.

Electricity constraint has been a major factor that affects the adoption of ICT in Nigerian SMEs. Many rural areas lack electricity supply whilst in the towns and cities where there is electricity, it is limited. Therefore, the generation and distribution of electricity in Nigeria, negatively affect the diffusion levels of ICT adoption (Akpan-Obong, 2007). Except there is stable electricity supply that also, has to be extended to the rural areas, electricity is likely to remain a major factor hampering the development and diffusion of ICT in Nigeria.

RESEARCH METHOD

Case studies are the most common qualitative method used in information systems research (Orlikowski & Baroudi, 1991). Sauer (1993) is of the opinion that research in information systems is best done by case study. A case study research is useful when a phenomenon and context are not clearly evident (Yin, 2003). It also allows us to study a phenomenon within its natural context (Yin, 2009). Therefore, given the exploratory nature of this study, the qualitative case study approach is adopted. According to Yin (1994), case study methodology offers a means of testing existing theories while providing a probable analytic generalisation. Three strengths of case study research were identified by Benbasat, Goldstein and Mead (1987) as (1) the natural setting offers an opportunity to learn about the state of the art technology and the ability to derive general theories from practice; (2) it allows an understanding of the nature and complexity of the process, and (3) it allows valuable learning about emerging topics.

This study is based on primary research from interviews and secondary research including internal documents and academic sources. Initially two SMEs were selected based on their size, in accordance with the definition of SMEs in Nigeria and based upon their post ICT adoption experience. The two SME owner-managers were contacted and asked for their willingness to participate in the study. However, just one SME volunteered to participate in the study. The case study is a representative of the population. Semi-structured telephone interviews were used to gather details of the SME. Questions related to the business aspects of the company, drivers for ICT adoption, barriers to ICT adoption, ICT infrastructure, use of internet, website, competition and benefits of ICT were asked at some point in the interview. In terms of the analysis of the interviews, notes were compiled during each interview which gave an accurate reflection of the information gathered. In addition, some company documents were reviewed online. Furthermore, extensive amount of secondary data was collected and reviewed from various sources which included books and academic journals. A general introduction to the organisation involved is provided below, followed by a discussion of the ICT initiatives within the organisation. The company in this paper has been given pseudonyms and some details of the company have been shrouded to maintain company confidentiality.

CASE STUDY

GRUP Ltd is a limited liability company and a successful grocery retailer that was established six years ago. It is located in Abuja, Nigeria's Federal Capital Territory and has five branches. The majority of the company's turnover is generated from its mail based catalogue sales market. Initially, the owner-manager of the company was reluctant to adopt ICT because he was not aware of the benefits associated with ICT technology. In the past, the company had poor turnover as a result of its lack of knowledge on some crucial issues such as the use of ICT in the company's business

processes. However, some years later, the owner-manager decided to embrace ICT in the business after attending an ICT for development seminar. Afterwards, GRUP Ltd identified the need to adopt the Internet in order to enlarge their customer's base access to information on the company's range of products. The company later developed a website in order to create awareness of their existence. Customers frequently use the website to obtain details of the company's products before using any of its physical stores to make purchase. The presence of the Internet and the development of the company's website has increased the company's sales and also reduced support requirements in terms of customers being able to access information on the website. In addition, the presence of the website has assisted GRUP Ltd to create more sales channels. Due to an increase in the number of people accessing the company's website, the company decided to build a new online system to assist in handling more orders from a variety of channels. The system provided better search response, current stock availability and the ability for customers to purchase products online. However, the company had two major challenges. Funds for the maintenance of their technological infrastructures were not available and most of its staff had no knowledge about the use of the Internet. Notwithstanding, the company's owner, who is also the managing director, decided to embark on a major project that involved the training of staff on how to use the Internet and also the new online system, in order for the company to run effectively and also meet customer's demands. Having online presence has enabled GRUP Ltd to effectively and efficiently manage its organisational processes and has increased the company's turnover. This has given the company a competitive edge over several of its competitors in the retail grocery market.

DISCUSSION

SMEs have been recognised for playing very important roles towards the economic growth, development and stability of several economies. SMEs play a vital role in employment generation and immensely contribute to the Gross Domestic Products (GDPs) of several countries (OECD, 2000). With reference to the case study presented above, it can be said that ICT offers SMEs a competitive edge over its competitors (for example increase in sales); hence, it is vital for Nigerian SMEs to adopt ICT.

Based on the literature review, a major factor that affects SMEs is the issue of scarce resources. SMEs are known for having limited resources and it was mentioned in the case study as a factor that affected GRUP from maintaining its technological infrastructures. It has been observed that most Nigerian SMEs under invest in technology adoption due to financial constraints (Kuteyi, 2009). On one hand, for a successful ICT deployment, Nigerian SMEs are advised to seek assistance from the government especially in the area of funding. On the other hand, it is recommended that the government should provide a variety of incentives and financial support for SMEs, which would assist Nigerian SMEs to adopt ICT.

Lack of awareness was identified in the case study and literature review as another factor that affects SMEs. With reference to the literature review, it is clear that many SME owner-managers in Nigeria are not familiar with the conceptual basis and potential benefits of adopting ICT. Therefore, the government should introduce training programmes for owner-managers of SMEs where they can be trained on how to use technology and the benefits of adopting ICT in their business processes. This should be done regularly at different times, allowing flexibility for SME managers to attend. In addition, the government should create awareness through the media, develop basic

infrastructures and organise seminars that will encourage SMEs to adopt ICT. Kuteyi (2009) states that there is a need for proper dissemination of information to SMEs that will enable them identify the various requirements for managing the sector and how to access information. By so doing, SMEs will also have proper access to information related to ICT.

Furthermore, there are other issues that were not identified by the business owner of the studied company, but have been identified by other researchers in previous Nigerian studies; for instance, the need for Policy makers to create an environment for ICT growth (Awe, 2005). There is a need for SMEs to have an environment that support affordability, availability and reliability of ICT. There is a need for the development and availability of ICT facilities nationwide. The adoption of ICT among SMEs in Nigeria would not only increase SMEs turnovers but would also help to attract foreign investors. Hence, the Nigerian government should introduce and promote various initiatives that will help to speed-up ICT adoption in SMEs.

The Nigerian government needs to set up different agencies to consider the various problems associated with SMEs and provide an enabling environment in which ICT can realise its full potential. The government can also help to address the challenges of awareness and infrastructure underdevelopment (Payne, 2001). In developed countries, governments have been able to prioritise the improvement of infrastructures and the upgrading of skills necessary to participate effectively in the restructuring of technology adoption (UNCTAD, 2006). Therefore, the technological capability of SMEs in Nigeria needs to be further strengthened.

Furthermore, lack of policy/institutional framework is a problem that affects Nigerian SMEs. Hence, it is important for policy makers to have a proper understanding of ICT adoption and how it enhances economic development. ICT should be used as a strategic resource to help SMEs compete both locally and internationally (Imran, 2006). According to Awe (2005) Nigeria needs to have leaders with the mindset for a digital revolution in order to leap-frog into the knowledge economy. ICT adoption in Nigerian SMEs can yield significant benefits in improving the economy as it has the potential to solve many of the deep-rooted problems such as corruption (Imran, 2006). Legal infrastructure and administrative reform also need to be put in place for proper implementation of ICT oriented business processes.

The development of the SME sector requires urgent attention since ICT has become more and more important in the economic development of SMEs in many countries (Ochefu, 2008). The Nigerian government should develop an ICT action plan for SMEs. Taking into consideration Nigeria's size and potential, the rate of ICT adoption amongst SMEs is relatively low. Hence, in this digital age, Nigeria needs to focus on increased computer literacy and ICT professionalism. According to Utomi (2008, as cited in Ochefu, 2008), 'the future of Nigeria lies in the development of the SMEs, which also include its key players. No economy can grow if it does not build up SMEs. If Nigeria's dream of becoming one of the top 20 economies in the world must be realised, then adequate attention must be given to SMEs as the growth driver to that destination' (para. 6).

CONCLUSION

The adoption of ICT in Nigerian SMEs is relatively low; hence there are still many factors that need to be considered. Based on the literature review and case study, it is certain that the adoption of ICT would bring about enormous opportunities for Nigerian SMEs. Thus for an SME to set itself apart from its competitors and also have a sustainable competitive advantage, there is a need to invest in ICT. It is necessary for the Nigerian government to develop a generic ICT plan that will assist Nigerian SMEs to successfully adopt ICT, and technological infrastructures should be put in place by the government to support ICT adoption. For Nigerian SMEs to remain competitive or to become successful, it is important for owner-managers to understand the critical success factors related to ICT adoption. This involves the Nigerian government making more funds available to SMEs and putting some structures in place to ensure a successful investment. The integration of ICT in Nigerian SMEs would help integrate these SMEs into the world's IT village. For further research, more case studies would be helpful in order to have a better understanding of the benefits associated with ICT adoption in SMEs.

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