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ICT as an Equalizing Agent for SMEs Competitiveness in the Global Market

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1. INTRODUCTION

Computers and related gadgets are at the backbone of Information and Communication Technology (ICT) in modern day 21st century. The impetus and revolutionary spread of ICT adoption is akin to the growth of industrial revolution in medieval Europe, in the sense that it has transformed not only manufacturing processes, but also the way business is conducted and the competitiveness of enterprises in the global economy. In modern day global economy and business transactions, advances in information technology is seen as the “life wire” of any organization both domestic and global (Ekakitie, 2009; Lal, 2007). This is because information is crucial in the eyes of organizational leaders for planning, control and

coordination of work activities, especially for firms that have gone global (Matlay & Addis, 2003; Ogbor, 2009).

The fact that IT or ICT (Information and Communications Technology) has globally struck a functional and linear relationship with corporate growth, productivity and market share increment is not in dispute. It is an open secret that latest breakthroughs in IT has brought about the use of e-mail (electronic mail), e-commerce, internet information access system with its accompanying software of Microsoft platforms which facilitates wide information sharing for greater productivity. This has given birth to what is widely known as *virtual knowledge* which means or translates into “borderless knowledge” (Sheppard & Hooton, 2006; Walsham, 2001). Fundamentally, the emergence of ICT has allowed the user access to all manner of information as desired by organizational leaders to achieve set corporate, business, functional and operational goals and objectives.

Ogbor (2009) and Ongori (2009) defined information technology as the technology which supports activities involving the creating, storing, manipulating and communicating of information, together with their related methods, management and application. It has also been seen by Lehr and Lichtenberg (1997) as a seamless integration of telecommunication, data processing and personal computing with manual business process, which support key business function, and which improves effectiveness, efficiency and quality of working life.

Thus, information networking enables information sharing, access and dissemination across short and long distances. With the advent of GSM and ISP firms, many individuals and SMEs operators share and have access to markets where information about prices and availability of products/services are needed and thus organize enterprise capacities to serve identified markets in remote areas of the global economy. It is on this basis that the world or the global economy is described as a “global village” in which electronic and other such media are “re-tribalizing society” (Nwankwo, 2008).

For forward-looking enterprises, a sense of limitless opportunities is provided with the borderless or virtual concept. ICT not only provide benefits for business success and enterprise growth but a “Tsunami” of some sort – this time crunching time and space for knowledge and exchange possibilities.

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Indeed this paper *ip so facto*, attempts a discussion of the role or importance of ICT in the development, growth and competitiveness of SMEs and entrepreneurial firms in the global economy with a focus on Sub-Saharan Africa. The paper will also examine the problems and challenges facing ICT adoption in the region and proffer solutions capable of enhancing entrepreneurial development in Sub-Saharan Africa. In addition, we will provide a discussion of how ICT could enable SMEs to achieve growth and development by synergizing capacities effectively via seizing this unique "level playing ground" provided by ICT to access viable markets with potential across the globe and compete with large corporations in the global place.

Our point of departure is that if ICT infrastructure is provided by government or transnational corporations and cost of access and use is affordable, SMEs can benefit from the trickle-down effect associated with technological diffusion in industries located in the developing world (Ogbor, 2009). The leverage this provides is the thrust of this paper. In scope, our discussion of the relationship between ICT and SMEs is limited to small and medium-size enterprises, including entrepreneurial firms in Sub-Saharan Africa. The rest part of the paper examines the following issues in the order in which they are presented: Literature review, in which we examine the meaning and importance of ICT in the global economy, ICT and the competitiveness of enterprises, the challenges and of ICT in the context of SMEs in Sub-Saharan Africa. Finally, the paper discusses the prospects of ICT in the form of suggesting ways for the development of ICT infrastructure beneficial to the growth of SMEs in the Sub-Saharan region.

II. LITERATURE REVIEW

a) Globalization and the Global Economy

To start with, we are moving away from a world in which national economies were once seen as relatively self-contained entities, isolated from each other by barriers to cross-border trade and investment; by distance, time zones, and language; and by national differences in government regulation, culture, political ideologies and business practices (Ogbor, 2002). And we are moving toward a world in which barriers to cross-border trade and investment are tumbling; perceived distance is shrinking due to advances in transportation and telecommunications technology; material culture is starting to look similar the world over; and national economies are merging into an interdependent global economic system. The process by which this is occurring is commonly referred to as globalization. Similarly, we will call this period "globalization era." The era of globalization is the ongoing period in which the state of a nation's economy is based on worldwide interdependence of resource

supplies, product markets, and business competition. In this book we see globalization as *a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology* (Ogbor, 2009).

Although globalization is not new phenomenon and has been an historical process, the era beginning from the mid eighties has witnessed a fundamental shift in the pattern of economic development with considerable impact on entrepreneurship and its role in economic development. Various developments in the global economy have created opportunities for the growth of entrepreneurship. This is especially true for national governments and individuals who are able to seize the opportunities presented by the process of globalization. Although various developments in the global economy have created opportunities for the growth of entrepreneurship, some of these have also hindered entrepreneurial initiatives in a number of countries.

As discussed in Ogbor (2009), the major global factors driving entrepreneurial development in this era are (i) expanded cross-national cooperation and the formation of regional trade blocs; (ii) the preeminence of information technology, global communication, the Internet boom and the emergence of the World Wide Web; (iii) MNEs and the growing trend in the outsourcing of means of production by major global and multinational corporations; and (iv) the diminishing role of the nation-state. In Sub-Saharan Africa, these factors have either provided opportunities or threats in the development of indigenous entrepreneurs.

b) Information and Communications Technology

Information and communication technology (ICT) is a generic term covering computers, broadcasting, telecommunications, data networks and related components, which are being increasingly applied in diverse uses. It can be defined as the totality of the electronic means to collect, store, process and present information to the end-users in support of their activities, and consists of computer systems, data communication systems, knowledge systems, office systems and consumer electronics. By Information we mean any piece of data that has meaning and relevance to anyone, firm or government. Information is that substance which is communicated and it is the central pivot around which communication and the communication process revolves (Achumba 2000). The obtaining of information for decision-making is too serious a matter to be handled with levity. As society develops, mankind has evolved a means by which information is transferred from one point to the other where it is needed. The means by which this objective can be achieved has resulted in creative evolution and assemblage of scientific gadgets and equipment that

would help carry information in a faster, cheaper manner by shrinking distances.

Achumba (2000) posits that the term IT can be described as information system meant to provide information so as to aid planning and organizing. It includes the internet, e-mail and its variant, the electronic commerce (e-commerce). Again, IT has been defined as the acquisition, production and transformation, storage and transfer of data (information) by electronic means in forms such as vocal, pictorial, textural and numeric, so as to facilitate interaction between people and machine. It includes the applications and implications (social, economic and cultural) of these processes. Thus the electronic commerce is born to minimize the cumbersomeness of time, distance and space in doing business. IT has thus become a vital strategic management tool.

In management and especially its extension into global business, it can be seen that IT reduce cost and increase profitability, to enhance quality of product and services and to improve efficiency of the corporation and strengthen its competitiveness. "In the 21st century, mastery of functional information technology is a *sine qua-non*" Achumba (2000). Accordingly, Harper (2001) asserts, that managing a business well is to manage its future; and to manage the future is to manage information requirement effectively. Information is required by managers in order to carry out their activities efficiently and effectively. For marketing to develop to a level that would enable it play its expected role in global business, information available to marketers and the like must be well processed, adequately and timely too. To achieve this objective, marketing requires the best of information technology to collect data, process data, analyze information which will help in building a database necessary for the development of strategic marketing policy. Hence, knowledge, information technology and strong creative business culture are seen as the essential success factor in global business (Ekakitie, 2009).

According to extant literature, investment in ICT is considered as the enabling (if not causal) factor for an effective integration into the new global order. According to Wolter and Schweri (2002) its immense advantages in overall business revenue and the cost-benefit outcome cannot be underplayed. Research outcomes reveal that both multinational and global firms aid the diffusion of ICT and the generation of innovations in the field of ICT - this is likely to go on. The expectation of researchers is that the relative demand for skilled labour especially by global firms will further increase. According to extant literature, there are several properties of ICT driving the substitution of lower skills:

- ICT allows automating routine and well-defined tasks, whereas it is much more difficult to do the same in case of more complex tasks that involve

judgement and creativity (Bresnahan, 1999; Bresnahan et al., 2002; Autor et al., 2000);

- Highly computerised systems produce large quantities of data that need high-skilled workers to get adequately utilised (Arvanitis, 2005);
- The adoption of ICT itself and its integration in the firm's productive system requires skilled workers, the more so as the use of ICT involves many uncertainties (Caroli, 2001). Whereas it is quite clear that a more intensive application of ICT increases relative demand for skilled labour as a whole, it is less obvious which category of higher skills will "profit" from this technical change.

It is no doubt a wonder the speed with which ICT generally reached modern day heights. Achumba (2000) chronicles the genealogy and facts thus:

1. During the past two and half decade, the global network of computers, telephone and television has increased its information carrying capacity a million times over.
2. Computing power is doubling about every eighteen months.
3. Today's laptop computer is many times more powerful than a US 100 million dollars mainframe computer was about twenty years ago.
4. Just twenty-five years ago, only about 50,000 computers existed in the whole world; soon there will be an estimated 450 million.
5. No communication medium has ever grown as fast as the Internet. In 1996, it had an estimated 50 million users world-wide, with the number doubling every year.
6. In 1960, a transatlantic telephone cable could only have 138 conversations simultaneously. Now a fiber - optic cable can carry 1.5 million conversations.
7. A three-minute telephone call between New York and London now costs about two US dollars. In 1930, it would have cost more than a hundred times as much in today's dollars.

c) *Digital Divide in ICT*

Generally speaking, digital divide (both local and global) refers to the distance between those with access to information and those who do not both in the global and local contexts. The digital divide is the gap between those with regular, effective access to digital technology and those without. (Ogbor, 2009) suggests that digital divide results from the socio-economic difference between communities that in turn affects their access to digital information mainly but not exclusively through the Internet.

In Sub-Saharan Africa, the digital divide is still at its most extreme where the use of information and communication technologies is still at a very early stage of development compared to other regions of the world.

Other researchers (Cayla, et al., 2005; Peters, 2003; and Sciadas, 2002) 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 (2003, as cited in Apulu and Latham, 2009) 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 recognize 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 preexisting 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 order 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).

d) *Small and Medium Sized Enterprises (SMEs)*

It is widely recognized 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 percent of the entire enterprises in Nigeria are SMEs and they employ an average of 50 percent 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 organization to organization (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 N100,000,000 (100 million Naira). NASME further defines a medium scale enterprise as a business with less than 100 employees and with an annual turnover of N500, 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 N200, 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.

III. ICT, MNCs, GLOBAL CORPORATIONS AND THE GLOBAL MARKET PLACE

The process of globalization has increasingly been made possible by the instrumentality of Multinational Companies (MNCs), Transnational Companies (TNCs) and global corporations. These firms have strong IT capacities along with strong support from international financial institutions which act as catalyst to facilitate their expansion. As a result of limited resources, SMEs do not necessarily have these opportunities.

Fapounda (1996) says the globalization process describes the processes that MNCs have employed simultaneously in recent times to effect enormous changes in the practice of world business. One can posit that the MNCs supported aggressively by the home countries with a fine blend of financial, economic and political gerrymandering to ensure or create safety for these companies to operate without hindrance in any part of the globe where they choose to invest.

Globalization also refers to the rapid growth, development and transformation in MNCs operations, employing rationalization, rather than national base, to create resource center at home and using mergers, acquisition and strategic alliances abroad to create borderless markets. The process exploits modern technology (transportation, communication, markets, machines and information systems) economic of scale, stiff competition and integrated strategies to achieve low production cost, high profits and economic eminence in world business. Fapounda (1986) argues that global firms have the world as their field of operation and because of this global approach to business, terms like global markets, borderless markets, virtual knowledge, rapid technological change, global amortization of R & D, cost and global management have become popular and has now assumed the language of international business.

IV. GLOBALIZATION, ICT AND ENTREPRENEURSHIP

Several studies (e.g., Berisha-Namani, 2009; Golding, Donaldson, Tennant & Black, 2008; Eunni, Brush & Kasuganti 2007; Braun, 2003; Ogbor, 2009) argue that in national and regional economies, entrepreneurial firms, including 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).

Studies have also indicated that entrepreneurial firms and 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). As a consequence, the benefits normally associated with ICT in terms of entrepreneurial development have not been fully realized in the context of Sub-Saharan Africa.

As noted earlier, globalization is partly driven by information and communication technology (ICT). Thus, synonymous with the era of globalization is what has been commonly referred to as "the information age", the "digital age" or "ICT revolution." The rapid spread of the use of information and communication technology (ICT) is both an outcome and a determinant of the process of globalization, which has manifested itself in accelerated movement of goods, services, factors of production and technology across national boundaries (Ogbor, 2009). This development has, in turn, impacted the growth of entrepreneurial firms, including SMEs, in many fundamental ways.

Economic globalization arises out of the interaction between market- and technology-related factors as well as economic policies at the national and international levels. Market-related factors (such as increased competition for resources, greater engagement in international trade and enhanced efforts to attract foreign direct investment) have all been assisted by technological and information-related improvements. The growing role of multinational enterprises (MNEs) and transnational corporations (TNCs) in both the production and service sectors in practically every country is the result of information technology. This has put competitive pressure on home country firms, exerting an inordinate influence on the existing pattern of specialization.

As a result of information technology, financial innovations have led to lower transaction costs and the development of new financial institutions and instruments, as well as dramatic growth in cross-border financial transactions. For example, attempt to integrate the Ghana and Nigeria Stock Exchanges in 2007 is seen as the first step to the full integration of capital markets of member countries of the West Africa Monetary Zone (Ogbor, 2009). Integration through improved information technology is seen as a necessary mechanism to facilitate transaction process through improvement in market infrastructure and the security settlement system to promote online real time payment. Through information and communication technology, the integration of the region's financial markets is also seen

as necessary for the capital market in the sub-region to fully participate in the global market.

In terms of technology-related factors, the componentization of production, facilitated by advancements in both manufacturing technologies and ICT, has led to lower costs and the dramatic shortening of economic distances. New communication technologies have facilitated the international diffusion of new production, marketing and organization technologies at low costs, allowing faster and cheaper movements of goods and services. At the same time, systematic rationalization of procedures and documentation for international trade, together with a wider and easier dissemination of prices of traded goods, has contributed to the convergence of market prices, resulting in fewer distinct markets.

In the context of the global economy, there are four dimensions of the positive impact of ICT on economic growth and the development of entrepreneurial and small and medium sized enterprises.

- First, ICT allows process innovation (new ways of doing old things), which increases productivity and creates new value added.
- Second, innovative economic activities (new ways of doing new things) may be generated.
- Third, ICT represents a new factor of production along with land, labour and capital, which can lead to economic restructuring, and
- Fourth, it represents a new means of organizing activities through its synergies with other technologies.

More specifically, the growth in ICT has had a tremendous impact on economic development, including enterprise growth and competitiveness. For example, the recent advances to smaller, faster and cheaper ICT had led to a considerable decline in the cost-to-performance ratio of its application, which raises productivity (Ogbor, 2009). The potential for growth has been expanded by the use of ICT to promote more efficient utilization of inputs such as energy, raw materials and land. Some new applications of ICT have made production processes more flexible. With the facility to pay closer attention to customer tastes and preferences, producers have increased the value added of their products, and improved their quality.

Advances in telecommunications enable enterprises, which are geographically separated, to communicate both within a country and across borders. As indicated by the Indian ICT industry, the growing decentralization and globalization of many industries provide new opportunities for developing countries to participate in regional and global economic ventures. The organizational changes and decentralization options made possible by ICT can facilitate a better spatial distribution of economic activities, especially those

industrial operations that have been centralized in large cities. Timely and detailed information about markets, point-of-sale information, and electronic linkages to clients and distributors have enhanced the capability to provide tailor-made products and services to consumers and create market niches.

Information and communication technology has revolutionized the marketing systems for widely traded standardized goods through the diffusion of market-determined prices instantaneously around the world. Entrepreneurial firms, small and medium-sized enterprises and even smaller-scale producers have the opportunity to become an integral part of the marketing chain as they can have access on a real-time basis through mobile phones, Internet etc. to the prices of their products on national and international markets. This has reduced the potential for the exploitation of these producers and enhanced their bargaining position with traders. Local traders have the means to become better equipped to compete with international trading firms, enhancing their competitiveness in marketing products as well. In this way, ICT has served as an equalizing agent of global markets and competitiveness to the benefits of entrepreneurial firms and SMEs.

New applications of ICT are profoundly changing the service sector especially in the context of small and medium-scale enterprises. In particular, the nature and structure of financial, insurance, marketing, distribution, tourism and travel businesses have been transformed by the improvements in the speed, reliability and cost of manipulating vast quantities of information related to financial, inventory and sales transactions. At the same time, providers of services, traditionally small and decentralized, are being linked nationally and globally through the use of communication technology.

In the developing countries, the application of ICT is being used to improve the economic efficiency of the banking and financial sector, both to provide services to clients more conveniently and rapidly and to permit financial intermediaries to evaluate more correctly the investment preferences of savers while managing more effectively the risks inherent in global investment portfolios.

In the medium term there is the potential for enormous economic benefits from a broader and more integrated use of ICT in socio-economic development. In the developing economies, with new forms of application becoming available at decreasing costs, there has been a shift from quantitative to qualitative growth and reinforcement of efforts to promote a better distribution of income. The impact is, however, crucially dependent on the capacity to disperse ICT capabilities across a broad range of economic activities and income groups.

V. ICT, THE PROBLEMS AND CHALLENGES OF ENTREPRENEURIAL DEVELOPMENT IN SUB-SAHARAN AFRICA

Information and communication technology, as defined earlier, is more than cell phones and Internet services. It embraces all forms and tools of modern communication technologies. Building capacity for ICT requires investments in physical infrastructure (such as fiber optic-cable), in the human capital necessary to operate these systems, and in government regulatory agencies. These investments are likely to yield economic growth and improve living standards. Unlike most parts of the global economy, African governments still face the challenge of how to make it easier for technologically-minded entrepreneurs and owners of small and medium-sized enterprises to capitalize on ICT and to build a foundation for long-term economic growth in Africa.

Apulu and Latham (2009) have suggested that 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. According to Apulu and Latham (2009), researchers have attributed this problem to organizational factors, environmental factors and lack of technical skills, among others. It is also argued that the problems in introducing ICT in developing countries can be classified into three generic categories, namely: contextual, strategic and operational. According to Apulu and Latham (2009), 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 cited in Apulu and Latham, 2009). 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), while technical and economic constraints and lack of skilled personnel are operational problems faced by developing countries. Below is a more detailed discussion of the factors affecting the use of ICT as vehicle for economic and enterprise development in Sub-Saharan Africa.

a) *Non-Availability of ICT-skilled Human Resources*

One of the problem facing the adoption of ICT in Sub-Saharan Africa in general and in SMEs in particular is the non-availability of skilled-manpower. Lack of skilled human resources has been described as a principal barrier blocking the diffusion and effective exploitation of ICT in developing countries (Hung, 2003; Imran, 2006; Lal, K. 2007; Matlay & Addis, 2003).

b) *Economic and Institutional Constraints*

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.

c) *Lack of Adequate Telecommunication Infrastructures*

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.

d) *Organizational Culture, Attitudes and Inclination towards ICT Adoption*

The culture and attitudinal behavior of the members of an organization can effect in a fundamental way the degree to which the members of the organization are willing to adopt ICT. For example, in organizations where the prevailing attitude of employees is to maintain the status quo or they are unwilling to achieve ICT education, adopting ICT can be a daunting exercise indeed. Iacovou, et al., (1995) and Crook and Kumar (1998) suggest that the extent of ICT adoption depends on the attitude of the organization 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 organizations to understand the fundamental factors behind technology adoption and the differences in organizational inclination as this would enable organizations to assess the extent to which they are inclined to develop, deploy and use technologies.

In a similar manner, Ginsberg and Venkatraman (1992, cited in Apulu and Latham, 2009). have suggested that different managers and organizations adopt different attitudes towards ICT, depending on its perceived usefulness in the context of their work. In this paper, four broad aspects that influence organizations to adopt ICT are discussed. Apulu and Latham (2009) identified the role of top management in organizational leadership, the effect of organizational culture, availability of resources and level of internet penetration

as some of the factors affecting the adoption of ICT in an organization.

Top management attitudes play a vital role towards the adoption of ICT in organizations. According to a number of studies (e.g., Grover, 1993; Crook and Kumar, 1998), an enthusiastic approach on the part of top managers can lead to the adoption of ICT. Similarly, Yap, Soh and Raman (1992) found that management involvement is crucial to ICT success in SMEs. In small businesses, decision about ICT adoption is likely to be made by the owner/manager. 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 organizational attitude towards the adoption of ICT in an SME. According to Apulu and Latham (2009), top management often provides the forward motion for the initiation of technology projects.

Available literature and research have also suggested 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). Apulu and Latham (2009) suggest two aspects of organizational 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 organizational culture which can influence the tendency to adopt ICT. Lack of awareness can also hinder SMEs from understanding the potential benefits associated with new ICT technologies capable of enhancing organizational efficiency and increase in productivity (Chibelushi and Costello, 2009).

Secondly, some organizations 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 (Apu & Latham, 2009). A culture that is innovative, competitive and risk-taking will be favorably inclined towards new ICT adoption (Hoffman and Klepper, 2000). In the discourses on organizational culture (Schein, 1998 and Hofstede, 1996) argue that cultural values or dimensions influence the degree to which nations and organizations are willing to take risks or adopt innovative ideas. For instance, a company with an entrepreneurial mindset is willing to invest in innovative technologies while a company with a bureaucratic culture is comfortable working in a situation that maintains the status quo (i.e., preferring paper work in the place computer files).

e) *Availability of Resources*

In most instances, firms, especially SMEs, in Sub-Saharan Africa and elsewhere in the developing countries suffer from the availability of resources needed to make the use of ICT soft- and hardware possible. The availability of resources enhances the adoption of ICT within SMEs. Factors that include the cost of ICT equipment and networks, software and re-organization 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. As rightly pointed out by Apulu and Latham (2009), 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. As Ogbor (2009) has rightly pointed out, a combination of resources such as human, financial, ICT capabilities are needed for firms, including SMEs, to have competitive advantage.

f) *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 organizational level or at the individual level (Andrade & Urquhart, 2009).

Apu & Latham (2009) have shown that the growth of internet access in the world was 305.5% on average between 2000 and the first quarter of 2008. North America was the lowest with 129.6%, and Middle East the highest with 1176.8% (Miniwatts Marketing Group, 2008 as cited in Apulu and Latham, 2009). However, a closer examination of the distribution of Internet users around the globe in the context of global digital divide reveals some persistent disparities among nations and regions in the global economy. Hence, the low level of internet penetration in Africa has been a major impediment to the adoption of ICT. According to Apulu and Latham (2009), the adoption of ICT increases market reach, enhances customer service, and reduces both marketing and distribution cost. However, its adoption by SMEs in Sub-Saharan Africa has been slow due to some factors that affect ICT adoption.

In examining ICT and entrepreneurial/SMEs development in Sub-Saharan Africa, attention has increasingly been drawn to the abysmal position occupied by the region in what is generally known as the global digital divide.

Other related factors inhibiting ICT adoption in Sub-Saharan Africa, according the Jensen (2002) and the United Nations ICT Task Force (2005) include the following:

- (i) ICT growth tends to be concentrated only in big cities,
- (ii) Lack of transport networks to install ICT infrastructure,
- (iii) Low-education and "brain drain",
- (iv) Political and economic instability, and
- (v) Capital scarcity and lack of entrepreneurship promotion. (Jensen, 2002; UN, 2005).

As a result of these constraints, information and communication technology, within the context of Sub-Saharan Africa, has not contributed to the development of entrepreneurship and SMEs compared to other regions in the global economy. One of the reasons, in addition to the above mentioned ones, has been that, not until recently, African governments have invested very little in expanding the already decaying infrastructures upon which an ICT environment can be developed.

In the context of Sub-Saharan Africa, there are other two areas of interest in terms of the challenges of information and communications technology (ICT) for the development and growth of SMEs and entrepreneurial firms. One is the problem of access to ICT and the other is how to transform that access into productive use.

g) *Problems of Access*

Although Sub-Saharan Africa has lagged behind in terms of access to ICT in what is popularly known as the global digital divide, recent developments in this area have seen Africa experiencing a significant growth in ICT investment. However, many observers have pointed out that the boom in ICT investment and connectivity has not been adequately transformed into productive use.

Digital divide, as we pointed out earlier, is a term that is often used in describing disparities in access to, and usage of, the telephone, personal computers and the Internet across demographic groups, within the same country, or between countries. As pointed out by the United Nations, the presence of a digital divide, particularly between rural communities and urban centers in Sub-Saharan Africa, directly affects the ability of small- and medium-sized enterprises to reach and compete in the larger domestic and even global markets. Compared to other regions, there is inadequate access to ICT in Sub-Saharan Africa.

There are a number of reasons for the poor access to ICT in Sub-Saharan Africa. For example, the prevalence of obsolete systems, irregular electricity and a stultifying lack of local content are partly responsible for the poor access. In addition to these problems is the burden of illiteracy in Sub-Saharan Africa, which has made access and use of ICT particularly difficult.

h) *Productive Usage of ICT*

Experience in the region indicates that availability of information and communication

technology has not been adequately transformed to productive usage. One of the reasons is the absence of enabling environment necessary for information technology to function effectively. In some cases, many potential users of ICT do not benefit from the imported information technology hardware precisely because authorities failed to create the enabling environment for the use of such technologies such as constant supply of electricity. Other problems and challenges which have made it difficult to translate the availability of ICT to productive usage in many parts of Sub-Saharan Africa are (i) the tendency to view ICT technology as a solution unto itself. Many African governments have imported ICT hard- and software only to see them decay as a result of the inability to put them into productive use; (ii) over-hyping the power of the Internet and the tendency to encourage developing countries to invest in fancy equipment they do not really need; (iii) the erroneous view that a new technology brought into a society not hitherto accustomed to its use can automatically jumpstart entrepreneurial initiative; (iv) lack of flexibility and adaptation of imported technology to fit local needs and conditions; (v) rural-urban migration, population explosion in urban cities and problems of unsustainable growth in African urban settings. This has made it possible for the over-concentration of cyber-cafes in the urban areas and the concomitant absence of it in the rural areas especially for local producers in need of such services; (vi) a disconnect and discrepancy between what Africans really needed and what technology planners and donor organizations are willing to provide; (vii) the use of ICT for unproductive social activities rather than productive reasons. These include cyber crimes, trade in and exchange pornographic materials, etc; (viii) lack of active collaboration between the public and private sectors in the development of ICT for economic growth; (ix) over-emphasizing the role of information technology without developing the human resources needed to transform the availability of such technologies into economic use or for promoting entrepreneurship; and (x) the tendency to ignore the social, institutional and other supportive organizational factors necessary to transform access to productive usage.

VI. CONCLUSION AND RECOMMENDATIONS: MAKING ICT AS AN EQUALIZING AGENT FOR ENTREPRENEURIAL DEVELOPMENT

In spite of the above difficulties, there are over 100 million cell phone users in Africa in 2006, compared to just 1 million a decade ago (Jensen, 2002). Cell phones are being used for everything from simple banking services to comparing commodity prices in different markets. Yet, for Sub-Saharan Africa to fully benefit from information and communication technologies (ICT), investment in broadband Internet

and other robust information technology is necessary. For firms in traditionally marginalized and disadvantaged areas, the Internet can be especially valuable, because it can override the distance factor and provide opportunities to connect to worldwide markets.

Several studies have suggested in the extant literature that bridging the global digital divide would benefit Sub-Saharan Africa by (i) providing better means of communication; (ii) integrating economic activities (specially Agro-business which represents 80 percent of African economic activities); (iii) making public services more efficient (usually named as E-Government, E-Health, E-education, etc.); (iv) improve infrastructure and productivity; and (v) improving democracy and participation mechanisms (Onyeiwu, 2002).

It is observed from the preceding discussion that SMEs play 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. 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 governments and firms especially entrepreneurial firms and 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. The discussion in the paper has indicated that most SMEs in Sub-Saharan Africa under invest in technology adoption due to financial constraints. On one hand, for a successful ICT deployment, SMEs in Sub-Saharan Africa are advised to seek assistance from the government especially in the area of funding. On the other, the government should provide a variety of incentives and financial support for SMEs, which would assist Nigerian SMEs to adopt ICT.

Lack of awareness is also identified in the literature review as another factor that affects SMEs' adoption of ICT. With reference to the literature review, it is clear that many SME owner-managers in Sub-Saharan Africa are not familiar with the conceptual basis and potential benefits of adopting ICT. Therefore, this paper is suggesting that the government should introduce training programmes for owner-managers of 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 organize seminars that will encourage SMEs to adopt ICT. From the perspective of this paper, 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 is an urgent need for policy makers to create an environment for ICT growth. 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 in the region and within individual countries. The adoption of ICT among entrepreneurial firms and SMEs in Sub-Saharan Africa would not only increase SMEs turnovers but would also help to attract foreign investors. Hence, African governments are advised to introduce and promote various initiatives that will help to speed-up ICT adoption in SMEs.

African governments need to set up different agencies to consider the various problems associated with SMEs and provide an enabling environment in which ICT can realize its full potential. Governments can also help to address the challenges of awareness and infrastructure underdevelopment. In developed countries, governments have been able to prioritize the improvement of infrastructures and the upgrading of skills necessary to participate effectively in the restructuring of technology adoption. Therefore, the technological capability of SMEs in Sub-Saharan Africa needs to be further strengthened.

In addition, lack of policy/institutional framework is a problem that affects entrepreneurial firms and SMEs in Sub-Saharan Africa. Hence, it is important for policy makers to have a proper understanding of ICT adoption and how it enhances economic development. This paper suggests that ICT should be used as a strategic resource to help SMEs compete both locally and international. Sub-Saharan Africa needs to have business leaders with the mindset for a digital evolution in order to leap-frog into the knowledge economy. ICT adoption in Africa can yield significant benefits in improving the economy as it has the potential to solve many of the deep-rooted problems such as corruption. 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. The government and policy makers in Sub-Saharan Africa should develop an ICT action plan for SMEs. Taking into consideration Africa's size and potential, the rate of ICT adoption amongst SMEs is relatively low. Hence, in this digital age, Sub-Saharan Africa needs to focus on increased computer literacy and ICT professionalism. Undoubtedly, 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 Sub-Saharan Africa intends to compete in the global economy, then adequate

attention must be given to SMEs as the growth driver to that destination.

The adoption of ICT in Africa's entrepreneurial firms and SMEs is relatively low; hence there are still many factors that need to be considered. Based on the literature review, it is certain that the adoption of ICT would bring about enormous opportunities for entrepreneurial firms and SMEs in Sub-Saharan Africa. 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 SMEs in Sub-Saharan Africa 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 active involvement of African governments making more funds available to SMEs and putting some structures in place to ensure a successful investment. The integration of ICT in Africa's SMEs would help integrate these SMEs into the world's IT village.

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