



Information Communication Technology (ICT): Great Tools for the Development of SMES In Nigeria

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Abstract

This study investigates the essential function of Information and Communication Technology (ICT) in the growth and development of Small and Medium Enterprises (SMEs) in Nigeria as a nation. The outstanding contributions of information communication and technology in modern business world cannot be overelaborated, as they serve as critical resources for organizations to gain a competitive edge. The study emphasizes ICT as great tools for the development of SMEs in Nigeria, which include enhanced productivity, effectiveness, efficiency, and customer satisfaction. Information and communication technologies (ICTs) are seen as one of the main drivers of SMEs, while small and medium-sized businesses (SMEs) are seen as the backbone of the economy. The function of the ICT is to ensure that as far as the organizations are concerned, their strategy and design, innovation of new products, services, processes, productivity, expansion of market size, improvement of product qualities, enhancement of performance and, development, as well as supporting business competitiveness can be executed accordingly. However, debates about the efficient uses of ICTs by SMEs in developing nations are being discussed and reported widely. As a result, this study examines the crucial success determinants for ICT adoption in SMEs worldwide. It has been discovered that a variety of success elements, such as market accessibility, the development of new goods, services, and procedures, productivity, market expansion, the enhancement of product quality, and others, contribute to the successful use of ICTs in SMEs. Some challenges are encountered in the use of ICT in developing nations, which includes inadequate infrastructure, management information system constraints, and limited resources etc. The study concludes with recommendations for policy makers and SME owners to enhance the effective integration of ICT for the growth and development of the SME sector in Nigeria

Keywords: Information, communication, technology, Great Tools, Development of SMEs, Nigeria

I. Introduction

Through increased productivity, efficiency, and market access, information and communication technology (ICT) can greatly accelerate the growth of small and medium-sized businesses (SMEs) in Nigeria. By utilizing ICT, SMEs can enhance their competitiveness, improve operations, and gain access to international markets. Task automation with ICT tools like computer-aided design (CAD) and computer-aided manufacturing (CAM) can result in lower labor costs and faster output. ICT solutions can help SMEs optimize their supply chains, track inventory, and manage logistics more effectively, reducing waste and improving lead times. ICT provides data analytics tools that allow SMEs to analyze their performance, identify areas for improvement, and make informed decisions about resource allocation. (Uchenna & Audu, 2022)

ICT enables SMEs to sell their products and services online, reaching a wider customer base and expanding their market reach. SMEs can leverage social media and other online platforms to promote their products and services, attracting new customers and building strong ICT base to allow SMEs to connect with suppliers and customers globally, participating in international trade and increasing their competitiveness. ICT tools like email and instant messaging facilitate faster and more efficient communication between employees, partners, and customers. ICT enables SMEs to work with remote teams, access expert advice, and collaborate on projects more effectively. ICT platforms can be used to store and share knowledge, improving collaboration and reducing duplication of effort. ICT enables SMEs to access online banking services, manage their finances more efficiently, and track their transactions. SMEs can access online



lending platforms that offer financing options, enabling them to invest in their businesses and expand their operations. ICT-driven mobile money platforms can facilitate transactions, reduce reliance on cash, and increase more on cashless system economy. (Nasser, Abul and Norhayah, 2019)

Online marketplaces and social media platforms allow SMEs to reach a wider customer base, both locally and internationally. ICT enables businesses to communicate with customers more effectively, gather feedback, and personalize services. Data analytics and business intelligence tools provide SMEs with valuable insights into customer behavior, market trends, and operational performance, enabling them to make informed decisions. The internet and online resources provide SMEs with access to a wealth of information, training materials, and financial assistance. The growth of the ICT sector itself creates new jobs in fields like telecommunications and network management. Poor internet connectivity and electricity supply can hinder ICT adoption and utilization.

Many SMEs lack the necessary ICT skills to effectively utilize technology. The cost of ICT infrastructure, software, and training can be a barrier for some SMEs. Unequal access to ICT resources creates a digital divide, potentially exacerbating inequalities.

ICT an Undeniable apparatus in promoting SMEs in Nigeria.

The importance of information and Communication Technology in the growth of corporate organizations and the global landscape cannot be exaggerated. It is evident that information is a critical factor that heavily influences every aspect of modern management. In today's business environment, information is power and serves as a fundamental resource for developing other resources, including human resources - the employees who are the lifeblood of any business. Therefore, to thrive, managers must have access to accurate and sufficient information, readily available for effective decision-making. (Alshikhi & Abdullah, 2018).

The ability of a manager to adapt to changes relies on their capacity to gather adequate information using the latest technologies (Kaasinen, Schmalhub, Öztürk, Aromaa, Boubekour, Heilala & Walter, 2020) This is particularly crucial in small and medium enterprises (SMEs), where competitive

advantage is built on credibility and information. Consequently, one way for organizations to harness their capabilities is through the development of Information and Communication Technology (ICT), which enables businesses to meet their information needs. Although ICT does not have a universally accepted definition, it encompasses the key aspects of developing and implementing organizationwide information systems today. It is one of the most important tools for businesses, with the goal of promptly giving people accurate, comprehensive, easily available, and intelligible information. (Pandey, Gautam, Pal, Bandhey, Dhingra, Misra, & Sethi, 2022, Uchenna & Audu, 2021; Uchenna & Audu, 2022). This enhances organizational productivity, effectiveness, efficiency, and customer satisfaction.

In the current knowledge economy, businesses worldwide have been profoundly influenced by ICT. Organizations of all types are leveraging ICT to gain a competitive edge. SMEs, in particular, are recognized as significant contributors to economic development, and ICT presents opportunities for them to enhance their capabilities (Lutfi, Al-Khasawneh, Almaiah, Alsyouf, & Alrawad, 2022). The communication revolution and dynamic nature of ICT have encouraged many resource-constrained countries to adopt and employ ICT for business purposes. This is further facilitated by the adoption of emerging technologies such as cloud computing, the Internet of Things (IoT), blockchain, mobile phones, and digital computing devices. These technologies provide the means to address social, technical, and economic development challenges. (Lutfi, Al-Khasawneh, Almaiah, Alsyouf, & Alrawad, 2022).

ICT plays a crucial role in the growth of small and medium enterprises, and its effective utilization has been shown to yield significant outputs in terms of socio-economic development and environmental sustainability (Zhang, Zhu, Zhou & Zou, 2022, Nzewi & Audu, 2023)

The dynamic role of Small and Medium Enterprises (SMEs) in developing countries can never be overemphasized as they contribute significantly towards socio-economic objectives by providing innovative and creative jobs, entrepreneurship and industrial development (Chege, Wang, and Suntu. 2019, Adanlawo, Vezi-Magigaba & Owolabi, 2021), and are key in actualizing self-reliance and sustenance as well as enhancement of the overall development of an economy be it developed or developing nation. (Napitupulu, Syfrullah, Rahim and Setiawan., 2018; Zafar and Mustafa, 2017, Olowookere, Hassan,



Adewole, & Aderemi 2021). According to Chege, Wang, and Suntu (2019), SMEs have a significant role in alleviating poverty in developing countries by generating money and creating favorable conditions for employment chances by empowering women and youth. Small and medium-sized businesses (SMEs) are important contributors to national development, particularly the socioeconomic development of nations, and are segments of economies that sustain growth. (Omiunu, Omotayo, and Longe 2021, Adanlawo et al, 2021). ICT has recently been a major worry for ambitious business executives that wish to expand their market share, boost their rate of return on investment, and advance and improve customer acceptance of their goods and services (Joensuu-Salo, Sorama, Viljamaa, Varamäki, 2018). The extant literature uncovers the dynamic and complex nature of relevance of ICT application in the operations of SMEs, considering the existence of various internal and external forces that interact to influence a SMEs' ability to apply ICT in their activities (ILO, 2018). Information and communication technology (ICT) adoption and application in SMEs' operations is essential to both their expansion and the socioeconomic advancement of economies (Rahayu and Day, 2017). The more labor-intensive technology SMEs use, the more likely it is that they will have an immediate effect on creating jobs (Olorunshola, 2016; Udechukwu, 2016; Ogujiuba et al., 2017). These technologies can typically be produced quickly and provide a significant return on investment (Adanlawo et al, 2021).

The significant roles small and medium-scale enterprises (SMEs) play in growth and development is acknowledged universally (Adanlawo et al, 2021). They are known to be major contributors to national development, especially the socio-economic development of countries. As a sector, they create jobs and introduce innovative ideas or products, thereby contributing to nations' gross development product (Omiunu et al., 2021). SMEs play a vital and significant role in innovation and growth in both developed and developing nations around the globe. They are major source of job creation and employment opportunities (Napitupulu et al., 2018; Niebel, 2018). In Nigeria, about 90% of the businesses are SMEs, unfortunately, the contributions of these businesses contribute less than 10% of the Nigeria's gross domestic product GDP (Okundaye., Fan, & Dwyer, 2019, Adanlawo et al, 2021), this could be as a result of the inadequate or complete absence of ICT in the operations of the MSEs domiciled in Nigeria

(Okundaye et al 2019). ICT adoption and implementation rates among SMEs in developing nations like Nigeria have remained remarkably low, according to Yunis El-Kassar and Tarhini (2017) and Rahayu and Day (2017). The ICT revolution has helped businesses in both developed and developing nations achieve a competitive edge and improve organizational outcomes (Niebel, 2018). Executives of SMEs use ICT for a variety of reasons, including the volatile global business climate, competitiveness, and the desire to foster corporate expansion (Niebel, 2018; Rahayu and Day, 2017; Yunis et al., 2017, Adanlawo et al, 2021).

More generally, the development of SMEs is seen as accelerating the achievement of wider economic and socio-economic objectives, including poverty alleviation (Napitupulu et al., 2018). Even though the significance of SMEs in these nations is acknowledged, a number of factors hinder their growth, including a lack of access to suitable technology, restricted access to global markets, laws, regulations, and rules that hinder the sector's development, a lack of institutional capacity, a lack of management expertise and training, and—most importantly—finance (Adanlawo et al, 2021). Some of these variables, like technology, have not gotten enough attention in the literature, while others, like money, have (Chege & Wang, 2019). Investing in technology and keeping up with information technology (IT) is becoming increasingly important for all firms (Farak et al, 2019). Technology plays a major role in the expansion of new SMEs. Technology not only helps in evolving a multi-pronged strategy but also in maximizing business opportunities. IT is perceived as essential to achieve sales. According to Chege and Wang (2019), information is most likely to have an impact when it is incorporated into organized business procedures and utilized by individuals who possess the skills and training necessary to properly interpret and implement it. Adanlawo et al. (2021) and Niebel (2018) contend that technology's impact on organizational productivity extends beyond discrete behavioral adjustments; it also has an impact on the organization's prevailing culture. But using technology comes with a price. It is necessary to purchase and install computer hardware and software. It could be challenging for SMEs without access to funding to buy the technology they need (Adanlawo et al, 2021, Olowookere et al, 2021). Growth may be hampered by Nigeria's rising production input costs, particularly those of power and other running expenses. In light of the difficult economic climate, it is important to consider how information technology relates to the operations of



small and medium-sized businesses in Nigeria (Olowookere et al, 2021).

Adaptation of ICT as fundamental strategy for the growth of SMEs in Nigeria

It has been widely recognized that the adoption and use of information and communication technologies (ICTs) becomes an essential element of organization's strategy and represents a fundamental source of facilitating innovation and enchaining performance, growth, and competitiveness for firms that are able to exploit them (Ashrafi & Murtaza, 2008; Bayo-Moriones, Billón, & Lera-López, 2013; Díaz-Chao, Sainz-González, & Torrent-Sellens, 2015; Higón, 2012). At the same time, the Small and Medium Enterprises (SMEs) are considered as vital engine for the economic growth in every nation. Empirical evidence has been provided in literature to explain the positive influence of the SMEs sector on the economic, industrial and social development of the countries nationwide. In most countries, SMEs generate a substantial percentage of GDP, a central component of the country's economic stability, and a primary source of business creation and poverty relief, income generation and distribution as well as training ground for entrepreneurship and new venture ideas (Ashrafi & Murtaza, 2008; Chughtai & Alam, 2014; Ongori & Migiro, 2010). Moreover, SMEs account for 99.7% of jobs in the United States and over 95% globally, in that 90% of them include matter pertaining to computer organization as function of their everyday operations. In developing countries, SMEs also contribute to poverty alleviation, create business opportunities, enhance entrepreneurial skills among the endowments, and function as a source of development for the state and its rural regions (Okundaye, 2016).

In the same way the ICTs adoption and uses by the firms had become an important topic of academic research during recent decades. There has been an increasing number of theoretical and empirical studies that have demonstrated the importance to gain and exploit the positive outcomes of ICT adoption and uses on the organization capabilities and consequently on its performance, growth, and competitiveness (Tarutè & Gatautis, 2014). However, the context of these studies was mainly focused on large organizations. Research on how ICT adoption among SMEs affects business capacities, such as marketing capabilities, and how these elements impact competitiveness, growth, and business success is lacking.

The Concept and Development of ICTs

The ICTs refers to any technology that enables communication and the electronic capturing, processing and transmission of information (Ashrafi & Murtaza, 2008). Desktop computers, laptops, handheld devices, wired or wireless intranets, business productivity tools like spreadsheets and editors, enterprise software, data storage, and network security are a few examples of these technologies (Ashrafi & Murtaza, 2008). In addition, ICTs is described as a collection of hardware, software, and services within an enterprise used to process information in order to achieve the organization's goals and objectives (Okundaye, 2016).

Furthermore, Wangwe (2007) defined ICT as a wide range of independent media, including computers that are connected to or not connected to the Internet, as well as radio, television, video, teletext, fax machines, mobile phones, and voice information systems. ICT, according to him, is an integrated system that includes the infrastructure and technology needed to store, process, distribute, and transmit information. Furthermore, (Ongori & Migiro, 2010) state that ICTs include a collection of software, hardware, telecommunication and information management technologies, applications and devices that are used to create, produce, analyze, process, package, distribute, retrieve, store and transform information. Hence, ICT can be referred to as an organized communication networks and data resource that collect, transform and spread information within and among enterprises including SMEs (Apulu, Latham, & Moreton, 2011).

According to (Campo, Rubio, & Yagüe, 2010), the development of information and communication technologies, in the last two decades, has created important changes in organizations. These changes can be noticed in their organizational structures, processes, relationships with other firms, and have assisted them to enhance and improve their economic performance and relational performance. In a similar vein, Selamat, Jaffar, and Kadir (2013) assert that SMEs can benefit greatly from the efficient use of ICT in strengthening their competitive edge, creating a worldwide network for product interchange, and streamlining their company operations. According to Kollberg & Dreyer (2006), ICT was employed by numerous businesses in a variety of business operations and operating areas, offering new methods for storing, processing, distributing, and exchanging information both inside the firm and with its stakeholders.



Nowadays, organizations also use ICTs to run their inventories, control accounting, manage and develop their human resources, etc. Additionally, ICTs can be a vital instrument for enhancing the quality of goods and services, cutting down on storage expenses, speeding up procedures, getting rid of or minimizing paperwork, and effectively communicating with partners and stakeholders. All managers and employees should receive adequate training to develop technology skills so they can search and collect data from various sources, analyze it, choose the pertinent data, and arrange it so they can make appropriate and appropriate decisions based on the information. This is necessary for organizations, including SMEs, to use ICTs effectively (Eze, Ayigbe, Eberechi, & Jordan, 2015). Also, the policymakers should develop accurate policies to promote effectively the diffusion of ICT, and managers should take actions, within their organizations, to motivate ICT usage and improve performance by adapting indicators such as the ability to attract more customers, to produce innovative production, and to participate in overseas markets (Higón, 2012).

The Process of ICTs Adoption in SMEs

The ICTs have two main wings comprising information and communication technology. Information technology ranges from basic hardware and software such as personal computer equipped with basic hardware and installed with free open source software connected to printer to more advanced and information technology, e.g. PC with updated and sophisticated hardware and software such as databases, Enterprise Resource Planning, Inventory Management, and Customer Relationship Management. In the same sense, communication technology is divided into two groups.

First, basic communication includes for example radio, landline/mobile phone, and fax. Second, advanced communication capabilities involved for example email, internet browsing, video conferencing, intranet, file sharing, creating websites, e-commerce, e-business and others. The following figure 1 describes about the progression of ICT Adoption by firms including SMEs.

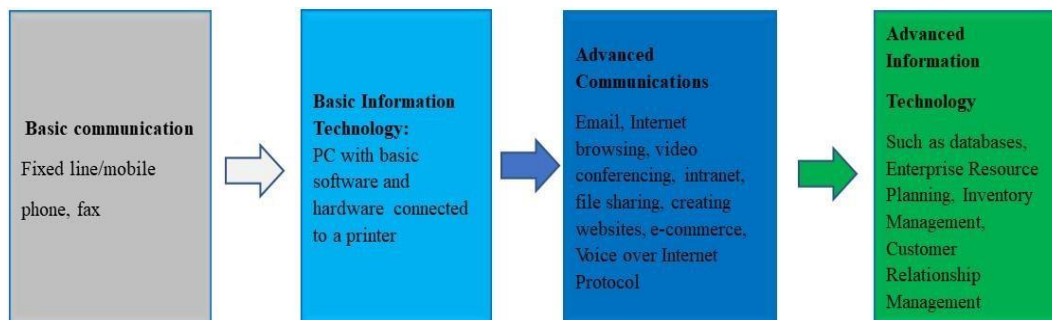


Figure 1. Progression of ICT Adoption by firms including SMEs.

Source: (Nasser, Abul and Norhayah, 2019) referencing (Hak-Su, 2007)

The most common information and communication technology (ICTs) by SMEs are, mobile phones, PCs, PCs with local network connected (intranet), email and electronic data interchange, Internet and an own website. The decision of SMEs' owners/managers to choose the type of ICT products depends on many factors such as the actual benefits they can bring to their core business, employees' ICT capabilities, firm's financial resources capacity, and etc. (Nasser, Abul and Norhayah, 2024) referencing (Hak-Su, 2007). However, usually SME in startup stage can use basic information and communication technologies as most people are familiar with them, including for example, fixed or mobile phone and fax machine, PC with document processing software like

Microsoft Words, PowerPoint, etc., and printer. Then within the development of their business activities, they can shift to a more upgrade or advanced communication technology which are actually more complex and slightly expensive compared to the basic one that rely primarily on internet and intranet (Nasser, Abul and Norhayah, 2024) referencing (Hak-Su, 2007).

Through intranet, employees can share files, memos, and other internal firm's issues with each other and within employees and managers over the same network. Availability of internet connection enables firm to utilize and adopt other ICT tools, such as communication through email, internet searching and browsing, website creation, and conducting of e-commerce. Therefore, effective



and efficient communication with clients, suppliers, and other stakeholders is made possible by this degree of ICT use. Information technology (IT), which includes items like Supply Chain Management (SCM), Knowledge Management (KM), Customer Relationship Management (CRM), and Enterprise Resource Planning (ERP), is frequently very costly, complex, and takes time to install for businesses. If SMEs have the financial and personnel resources to adapt, they may use one or more of these technologies; if not, they may choose to outsource in order to cut costs.

Prospective Benefits of ICTs Implementation in SMEs

The literature offers a affluence of empirical and theoretical information regarding the advantages that businesses could experience in the current, worldwide business world if they begin integrating ICT into their business operations and strategies. According to (Ongori&Migiro, 2010), ICTs enhance competition, improve knowledge management, access to robust business information, improve administration process, efficient and effective enterprise resource management, control and accountability, broaden market reach in which allow them to expand their sales and growth locally and globally.

Through the use of ICT infrastructure, SMEs are able to engage in e-commerce. This step will allow them in improving the efficiency of their daily business operations and develop their business growth by expanding or entering new market channels. Also, ICTs' implementation in SMEs can reduce significantly the operational costs, such as, decreasing usage of material, procurement and transaction costs, in which it will lead to lowering prices for the final goods and improve the value of their output (Pilat, 2005). SMEs are likely to derive the benefits of ICT adoption through participation in regional and international markets. For instance, in the Caribbean, numerous SMEs have grown and expanded their market globally through extensive use of ICTs which improve customer service and access of information access (Ongori&Migiro, 2010). Also, in Jamaica, the acceptance of ICTs in the SMEs sector is on the rise, due to increased awareness and decreasing global costs of technologies such as hardware and software (Ongori&Migiro, 2010). In Singapore and Ireland, ICTs' adoption has affected significantly the growth of SMEs businesses which led to improved SMEs responsiveness to customers/client needs, and compete effectively in both regionally and globally (Al-Jaghoub&Westrup, 2003). The significant

perceived benefits of ICTs include the establishment of reputation in the global markets, enhancing sales, increasing revenues and profit margin, improving distribution channels, and competitiveness (Zaidan, 2017). Thus, ICT can be used as a "strategic knob" to reinforce the business strategy of SMEs and to improve competitive advantages in the rapidly globalized and deregulated market (Al-Jaghoub&Westrup, 2003; Ongori&Migiro, 2010).

Types of ICTs in SMEs

ICTs have been categorized into three different groups namely; general-use ICTs, communication-integrating ICTs and marketoriented ICT (Bayo-Moriones et al., 2013). General-use ICT includes internet access, computer, and other basic ICTs such fax, printers, fixed phone, mobile phone etc. While Communication-integrating ICTs includes e-mail, intranet and extranet, marketoriented ICTs includes e-commerce, web pages and social media applications. Information Communication Technology are most commonly use in SMEs operation business and their role and impact in enhancing marketing capabilities and business performance of this type of enterprises. E-mail, commonly referred to as electronic mailing, has grown in importance as a quick, affordable, accessible, and easily replicable commercial communication tool. Businesses can gain a lot from email since it offers quick and easy means to send any type of electronic data. Email communications can be customized for specific client groups and include images, videos, and sounds in addition to text (Kotler & Armstrong, 2008; Yusuf, 2013). E-mail has changed the world and has had a tremendous effect on business. It is used to communicate internally with other employees and externally with customers. The invention of email and its early use in communication dates back to the early 1960s when messages could only be sent to users of the same computer. In 1970s, when computers started to work on networks, the current e-mail began that use @ symbol to specify addresses of the email recipients. Companies started to use email in their businesses communication after the military and educational systems. It was easily adopted because of its simplicity, speed and extreme low cost. It was perfect for businesses that had international branches and became a cost-effective way of scheduling information, verifying shipments and confirming transactions. Therefore, the email is almost 40 times more effective than combined Facebook and Twitter in assisting business in attaining new customers. Email is an important ICTs tool for SMEs as it has many advantages such



as enhancing products and services marketing, building strong relationship with clients, improving internal and external communication, and attract new and potential customers.

Social media has become an integral part of our daily life for communicating and sharing information and other media, with year-on-year growth in the number of users. At end of November 2018, there are 3.03 billion active social media users worldwide. Facebook has 2.072 billion users, LinkedIn has 562 million users, Twitter has 326 million users, WhatsApp has 900 million users, and YouTube has 1.5 billion users, 81% of all SMEs in the world use some kind of social media platform (Brandwatch, 2018). The literature has provided a number of definitions of social media, this is because the term of social media is understood and used in a different way by different people and researchers.

For enterprises, that their businesses are already internet connected, social media provides broad opportunities to conduct businesses with relatively quick and less cost method of connecting with customers (McCann & Barlow, 2015). It has been claimed to transform and affect consumer behavior with more important for firms, products and brands (Kaplan & Haenlein, 2010). It has been acknowledged by many researchers that social media has brought revolutionary new ways of involving users to interact, participate, cooperate, collaborate, generate content, and connect with other users through new communication approach, that is many-to-many, rather than the traditional one-to-many (Ahmad, Abu Bakar, & Ahmad, 2018; McCann & Barlow, 2015). Social media can even be more beneficial to SMEs because such firms have limited financial and technical resources to market their products or services (Jones, Borgman, & Ulusoy, 2015). According to (Hassan, Shiratuddin, & Ab Salam, 2015) the perceived impact of social media (SM) on business should not be underestimated as literature shows that digitalization in its various forms, including social media, has a positive impact on SME's growth, performance and competitiveness. SMEs can benefit from digital marketing and social media in attracting new target customers and reaching existing ones in easy manner with less cost, as well as facilitating both internal and external communication (Ahmad et al., 2018; Jones et al., 2015; Kaplan & Haenlein, 2010; Stockdale, Ahmed, & Scheepers, 2012; Taiminen & Karjaluo, 2015). Hence, it is important that SMEs should deploy and utilize digital channels, such as social media, if they want to remain competitive and grow

(Taiminen & Karjaluo, 2015). However, deploying effectively social media in business, SMEs should have a clear plan of how it will be used and what it will be used for (McCann & Barlow, 2015).

Generally, there are two types of electronic business (e-commerce) comprising business to consumer (B2C), and business to business (B2B) (Yu, Wang, Zhong, & Huang, 2016). B2C model refers to business that online transactions occur between a business firm and its consumers. Amazon.com, Priceline.com, and Souq.com are successful examples of B2C leaders. This type of electronic business requires intensive advertisements to gain and attract customers, high investments in updated hardware and software, and developing a superior customer relationship management (CRM) capability (Nica, 2015). B2B model refers to a situation where one business makes a commercial transaction with another. The volume of B2B transaction is much higher than the volume of B2C (Yu et al., 2016). However, the purchase of B2B products could be riskier than B2C products due to wrong quantity or wrong terms/conditions (Sila, 2013). The benefits of internet, such as low cost, speed, and wide accessibility provide good opportunity for electronic commerce (e-commerce) to be increasingly diffused globally, bringing countries together into a global networked economy.

The development of online business has changed the traditional way of doing business among organizations, including SMEs. Most businesses worldwide give special attention to the adoption of e-commerce by SMEs such as issuing policies and regulations to support them to adapt and use ICT. Despite these efforts by the governments, the adoption of e-commerce by SMEs is still far behind the adoption of e-commerce by large companies. Since SMEs play a vital role in the economic development of a country, it is important to identify the factors behind the low usage of ICT among the companies. They also represent as an incubator for job seekers and recognized as a key driver of economic growth and innovation. Moreover, they contribute to household income and welfare, self-confidence, social change, and political stability (Rahayu & Day, 2015).

Issues and Challenges of ICTs Adoption in SMEs

SMEs in developing countries face several challenges and barriers that make them difficult to be adopted. These challenges include, for instance, high cost of access to telecommunications, insufficient government policy towards ICT, lack of skilled and trained workforces, and poor



communication infrastructure as well as high cost of internet connectivity, cost of ICT equipment and resistance to change. (Ongori&Migiro, 2010). emphasized, particularly, that one of the strongest factors that hinder SMEs to implement ICTs is lack of information system knowledge, as most owners/mangers and staff do not have the necessary technological knowledge end becomes difficult for them to adopt ICT in their business. In addition, other researchers' report that lack of technical and human infrastructure, political and economic structure, and conservative bureaucratic approach are among other barriers affecting organizations in adopting ICTs effectively (Manochehri et al., 2012). (Kapurubandara, 2008) classified the factors that have been identified as causes for the reticence into external and internal factors. He emphasized that SMEs need support to overcome the barriers, some could be provided internally and some with the help of external interventions or both.

Similarly, in Arab Countries the implementation and adoption of ICTs is facing major challenges due to many factors that hinder or slow down the adoption (Hamade,2009). He categorized these factors into two categories: Firstly, it is related to the basic infrastructure and economic problems, and secondly it is related to government's policies and regulations. However, the adoption of ICTs in SMEs sector is not the same, partially due to that SMEs do not have sufficient financial and skilled human resources to acquire, maintain and utilize sophisticated ICTs (Ashrafi &Murtaza, 2010). For instance, a study conducted by (Manochehri et al., 2012) to analyze the ICT adoption by SMEs in Qatar, found that there is a need for more training facilities and governments supports in order to enhance the adoption of ICT in SMEs.

Unlike large firms, the less complicated structures of SMEs allow them to be more flexible to act and change including the adoption of ICT. However, still the diffusion and potential of ICT in this sector is low and not fully exploited like large companies due to constraints and challenges that they face such as limited resources, technology and ICTs capabilities (Consoli, 2012). Other researchers identified additional constrains such as poor telecommunications infrastructure, limited ICT literacy, inability to integrate ICT into business processes, high costs of ICT equipment, incomplete government regulations for ecommerce, and poor understanding of the dynamics of the knowledge economy (Hak-Su, 2007). Other reason might be due to that SMEs desire to gain a quick returns and benefits from their investment on ICT tools. However, gaining the advantages and benefits of ICT can only occur after a period of adoption and it depends on the type of business, internal changes such as reengineering process, personnel retraining, and suppliers-customers interaction (Consoli, 2012). While internal factors include top management, resources, end users, IT solution (computer application), and organizational characteristics, external factors include an external and competitive pressure, customers and supplier, external IT consultant and vendors, as well as government. Others review prior studies that analyse the factors influencing the adoption of ICT in SMEs and classified them into three groups; factors related to the staff of the company who are going to use ICT, factors related to the characteristics of the company, and factors related to the environment in which the company operates (Ollo-López&Aramendía-Muneta, 2012). With regards to the adoption of ICT in SMEs, the factors are classified into five groups (Consoli, 2012; Skoko, Buerki, & Ceric, 2007) individual, organizational, environmental, technological, and economical factors as described in the figure 2, below;

Influencing Factors of ICTs Adoption in SMEs

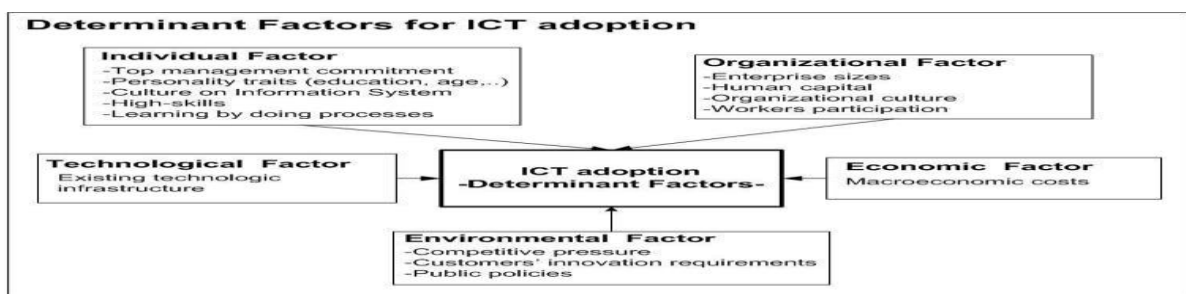


Figure 2. Determinant factors for ICT adoption. Source: (Nasser, Abul and Norhayah, 2019) referencing (Consoli, 2012; Skoko, Buerki, & Ceric, 2007)



Pertaining to the area of research in developing countries such as Bangladesh, it is found that the awareness of ICT benefits, government and top management support, as well as financial support are the most determinant factors that influence the adoption of ICT among SMEs. In Nigeria, (Apulu&Ige, 2011) investigate the reasons for non-effectively utilizing of ICT by SMEs using a survey of 180 SMEs. The results revealed that most of SMEs use basic ICT such as word processing, fixed landlines, printers and fax machines. It has been found that using ICT for advance functions such as business analysis, planning and decision making, is very limited.

In Malaysia, (Alam& Noor, 2009) found that perceived benefits, ICT knowledge, and government support are significantly important to the adoption of ICT while perceived cost and external pressure are found to be insignificant in determining ICT adoption. Furthermore, Selamat et al. (2013) discovered that three key elements—perceived utility, perceived ease of use, and perceived complexity—have a significant impact on ICT use in Malaysian SMEs, although perceived impetus and management support had no bearing on ICT use. In the context of Oman, few studies in the specific area have been conducted but on the whole the research is still very limited (see (Ashrafi &Murtaza, 2008; Ashrafi &Murtaza, 2010; Ashrafi, Sharma, Al-Badi, & Al-Gharbi, 2014).For instance, (Ashrafi et al., 2014) identified, through an empirical research, key factors that are vital for attaining business value by SMEs through ICT adoption. Seven factors were found that assess business value of ICT adoption in SMEs namely: organization and management practices, strategic, informational, transactional and organizational change benefits, impetus for ICT investment and support from government. They also conclude that size of an organization plays the most important role in its ICT infrastructure.

II. Conclusion

ICT is a powerful tool that can significantly enhance the development of SMEs in Nigeria by improving their efficiency, expanding their market reach, and facilitating access to financial services and investments. Overcoming the challenges of digital divide and cybersecurity is crucial to unlocking the full potential of ICT for SME growth in Nigeria. The present critically identified the ICTs adoption by SMEs and facilitate to improve their performance and achieve extraordinary growth by becoming more efficient, effective, innovative, and competitive in national and international markets.

III. Recommendations

1. A cooperative effort involving multiple stakeholders, including the federal, state, and local governments, banks, regulatory bodies, SME owners and management, staff, and donor organizations, is necessary to effectively address the complex issues and challenges surrounding ICT usage among SMEs in Nigeria. Owner-managers must understand the essential success criteria associated with ICT usage and create a strategic vision in order to guarantee the competitiveness and success of SMEs in Nigeria.
2. In addition to developing goods and services that are specifically designed to meet company demands, the ICT sector must constantly look for methods to assist SME owners and managers in realizing the added value and possible advantages of utilizing appropriate ICT solutions. To enable SMEs to assess new ideas, this may entail setting up seminars or introduction sessions. To encourage a greater interest in putting ICT into practice, it is advised that certifications and financial aid be made accessible for attending these seminars. With this strategy, authorities may build strong relationships with SMEs and get continuous input to identify problems with their goods and services and implement required in Nigeria.

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