

Challenges Of Adopting Information And Communications Technology By Small And Medium Enterprises In Nigeria

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Abstract - The adoption of Information and Communication Technology (ICT) tools in Nigeria has sparked a revolution in business practices. However, the widespread use of ICT by Small and Medium Enterprises (SMEs) in organizational operations and business transactions remains abysmally low slowing socioeconomic growth and sustainable development. Therefore the main objective of this study is to identify and highlight the challenges affecting the adoption of ICTs by SME's in Makurdi, Nigeria. The study adopts a convenience study approach based on the Innovation Diffusion Theory (IDT) to analyze the benefits and challenges of adopting ICT tools in SMEs. The study was accomplished by administering questionnaires to a randomly selected sample size of 109 staffs of SMEs followed by analysis of their responses using SPSS Software. The results demonstrate that ICT adoption by SMEs potentially increases the efficiency of business operations, communication, connectivity and market development. However, the results also demonstrated that the cost of acquiring or accessing the latest tools and lack of electric power supply are the greatest challenges to ICT adoption by Nigerian SMEs.

Keywords: Information and Communications Technology, Small and Medium Enterprises, Nigeria

I. INTRODUCTION

The term ICT – Information Communications and Technology refers to technologies that relate to collecting, storing, processing and transmitting information. Therefore, ICT can be referred to as a tool used by organizations to efficiently administer and deliver services to its various clients. The study by *Ashrafi and Murtaza* [1] demonstrate that firms around the world adopt ICT not only for efficiency improvement and cost reduction but also for improved customer service delivery. *Buhalis* [2] showed that ICT can ensure the efficient interaction and cohesion of business operations. Furthermore, ICT can play key roles in the disseminating of information and

also sharing which ultimately increases information supply within organizations. The findings of *Spanos et al.*, [3] states that ICT usage spurs the sharing of information and goods transfer carried out by buyers and sellers across international borders, which help global supply chains increment. Organization transparency and openness are ensured by this [4, 5].

Consequently, many organizations use ICT in transaction cost reduction, averting distance constraints by cutting across different international boundaries thus helping in the improvement of various organizations activities [6]. Currently, the availability of modern ICTs ranging from mobile phones, software, and applications associated such as 'VOIP' (Voice over Internet Protocol) are available in many countries and represent the most rapid growth is the use of mobile phone [7]. Hence, the adoption and utilization of ICT has had tremendous organizations benefits. Organizations including SMEs are undergoing extraordinary changes at the moment and are searching for channels to stand out in order to improve their competitive advantage. Small and Medium Sized Enterprises (SMEs) are searching relentlessly for ways to create and deliver desired value to customers through ICT usage.

The importance of Small and Medium Sized Enterprises (SMEs) is essential in the economic growth and development of any country, since the role played by SMEs improves the development of any country and Nigeria cannot be an exception. SMEs concept is dynamic and relative in nature. There is no widely accepted universal definition of SMEs and its largely dependent on the development level of a country [8, 9]. The definition of SMEs differs from one country to another but is often based on employment, assets or a combination of both. *Jutla et al.*, [10] state that SMEs can be defined against various criteria such as the value of assets employed and the use of energy. SMEs definition differs from one country to another but assets employment or a combination of both can be used as its basis. The role played by SMEs in the creation of jobs and economic development in developing countries cannot be overemphasized [11].

Organizations strategies and coordination have been shaped with the effective use and support of ICT [12]. According to *Kyobe* [13], the effective adoption and ICT utilization can be seen as the provision of competitive advantage to organizations with use of ICT resources mainly software and hardware. Strategic gains used by modern organizations to improve and strengthen key areas are aided by the adoption of ICT [14]. In addition, SMEs' performance are improved by the adoption of ICT; however, despite the high increase in growth rate diffusion of digital technologies globally in recent years, ICT usage within SMEs remains low especially in Nigeria [15, 16]. Hence, the combination of problems relating to habits and attitudes caused by environmental factors, government instability and frequent government policy changes contribute to Nigerian SMEs performing below expectations [17]. United States is way ahead in terms of adoption of ICT compared to developing countries like Nigeria [18]. There are quite a handful of contributions towards sustainable economic development harnessed by SMEs; however, the challenges Nigerian SMEs experience have negative effect on their ability to adopt and utilize of ICT applications [19].

Several studies relating to ICT adoption by SMEs, [20, 21] still advocates on the need to further research on other key factors that hinder the effective adoption of ICT in different contexts around the globe. However, the area of ICT adoption by SMEs is still under-researched especially in developing countries and Nigeria is no exception. *Bartholomew et al.*, [22] state that the benefits brought about by the emergence of ICT applications have not been fully explored in the developing economies of the world. Therefore, more emphasis needs to be placed on the adoption of ICT by SMEs based on its potential to improve competitiveness and business performance particularly in the face of the rapidly changing and globalized world. As a result of the above mentioned issues on the adoption of ICT in Nigeria, this study aims to identify the factors responsible for the adoption of ICT among the SMEs in Nigeria. It will further analyze the extent to which the adoption of ICT can be improved among Nigerian SMEs.

II. ICT and SMES IN NIGERIA

a. Information and Communication Technology (ICT) Tools

The growing reliance of organizations on ICT has become paramount and important in the drive for change in recent times [23]. ICT has been defined as a technology which facilitates communication and assists in capturing, processing and transmitting of information electronically. Hence ICT can be described as "the array of primarily digital technologies designed to collect, organize, store, process and communicate information within and outside an organization" [24, 25]. Consequently ICT is now typically considered as an enabler of organizational change [26]. The term ICT in business is often divided into two types of product namely traditional computer

based technologies and sophisticated (advanced or more recent) digital communication technologies that allow people and organizations to communicate and share digital information [27, 28]. Current technology assist businesses to share and disseminate relevant information amongst users concurrently, achieve higher levels of interaction and functionality customization [29]. With the help of current technologies, operational cost of organizations are reduced; customer satisfaction levels are enhanced, thereby improving managers decision making and also the quality of information they use. *Apulu and Latham* [30] opine that the rapid development in ICT has significantly influence the normal way of doing businesses in many organizations. *Jutla et al.*, [31] posits that ICT has created a digital revolution which has made the world seemingly smaller thereby improving its potential for global socioeconomic growth.

b. SMEs in Nigeria

The National Council of Industries in Nigeria defines SMEs as any business enterprise whose total costs, excluding land, are not more than two hundred million naira (₦200, 000,000.00) [32]. According to Small and Medium Sized Development Agency of Nigeria (SMEDAN) an SME can be categorized "as a micro enterprise or business with less than 10 persons with a turnover of less than ₦5,000,000.00 annually, a small business enterprise with 10-49 people with a turnover of ₦5 to 6 49,000,000.00 annually; and a medium business enterprise with 50-199 persons with a turnover of ₦50 to 499,000,000.00. *Apulu and Latham* stated that competitive advantage can be achieved by SME's adoption as a strategic tool. In some countries, SMEs play important roles like creation of jobs, industrialization building and economic growth [34]. Consequently, some researchers have observed that SMEs in developing countries engage in eradication and alleviation of poverty and also stimulate growth of economies around the world [34, 35].

According to *Chen et al.*, [36], SMEs create different channels which expand activities in rising economies and help to change market demands. Furthermore, *Ongori and Migiro* [37] explained that SMEs not only improve the living standards of people but also enhance formation of local capital and achieve high levels of productivity and capacity.

The study by *Odeyemi* [38], illuminated that the diverse nature of Nigerian SMEs is divided into groups of businesses, operating at various sector of the economy and contributes the Gross Domestic Product (GDP) of over 50% annually. Over the years a handful of deliberations on the relevance and need of the SME sector to many economies were carried out. For example a few others highlighted the adoption of ICT by SMEs promote SMEs' competitiveness amongst each other [39, 40]. *Jutla et al.*, [41] states, the compulsion to adopt and utilize ICT by SMEs in various business activities for it to overcome certain constraints and as well as business environment challenges.

c. ICT Adoption in SMEs

The adoption of technologies that are recent, important emphasis should be laid on the integrating towards a higher quality and competitiveness in SMEs [42, 43] see adoption and ICT usage as essential for the competition by SMEs globally and effective use of time has been the result. According to *Kollberg and Dreyer* [44], ICT is important to SMEs because of its stimulant and organizational change enabler trait. According to *Chibelushi* [45] ICT can provide opportunities for business transformations. In addition, *Jennex et al.*, [46] noted that ICT provides SMEs with the opportunity to conduct business anywhere and improves global outreach [47]. This can be seen as the ways in which organizations communicate, collaborate and conduct transactions with their various customers, suppliers and distributors via the internet and the ability for local SMEs to participate in the digital economy [48, 49]. The groups posit that with the aid of ICT, SMEs can change business processes, creation and entering markets. In addition products and services are improved with added value increment, organizational performance and productivity are enhanced, business channel creation and matching competitors' activities.

Through ICT advances like marketing advancement, advertising, efficiency gains improved quality, customer responsiveness and innovation SMEs have greater chances to achieve competitive advantage [50]. Likewise *Levy, et al.*, [51] demonstrate that ICT improves the proactive nature of firms. Other researchers ascertained that SMEs use ICT in order to reduce cost [52, 53]. According to *McCormick* [54], the contributions of ICT has been so persistent to business development, hence it's been difficult for companies to compete without adequate ICT infrastructure in place especially by SME's. Furthermore, ICT use by SMEs to play crucial roles in offering various opportunities and also aids in knowledge based economy to constrict economic and social ills which assist SMEs in achieving their various development goals [55].

d. Benefits of ICT in SMEs

The adoption of ICTs by SMEs in the contemporary business world offer numerous benefits ranging from productivity increment the process of production, internal business operation enhancement [56]. ICTs enable SMEs connect to management systems for inventory improvement; enhance communication amongst departments of the same organization and budgeting practices. Other benefits include lowering cost of communication amongst global clients and suppliers, client based expansion with the aid of e-marketing (e.g. creation of websites, interactive portals and mailing list) and opportunities in outsourcing. Overall new frontiers in information sharing can be increased and harnessed as well as the introduction of new methods of payment through e-commerce.

According to the finds of *Lal* [57], services connected to the web increases the competitive nature of SMEs because ICT help improve relationship

amongst customers by forging or acting as a bridge between firms and clients. [58], ascertained that "with the use of ICT some local or indigenous SME's partake in the digital economy. Also, competitive advantage can be gained by SME's in reducing their cost of operation and improving core processes in business. Furthermore *Golding et al.*, [59] states that ICT assists the growth of SME and innovative in nature and highlights the adoption of ICT by SME's should be encouraged. The managerial and technical skills making-business solutions available for SMEs and making sure the rising cost of ICT ownership of equipment can be tackled by ICT.

Hence, ICT usage provides SMEs with benefits at different levels which could either be operational, tactical and strategic [60]. In addition, ICT adoption can change the operations of businesses by first increasing the business operations and changing the structures of business which would in turn create competitive advantage [61]. Consequently, SMEs can grow if they compete to become highly successful and rapidly respond to the changes in the global markets. With this, it shows the relevance of ICT in SME's and how they connect to digital marketplace.

III. CHALLENGES OF ICT ADOPTION IN NIGERIAN SMES

This section of the paper will highlight the significant challenges affecting ICT utilization and adoption in Nigerian SMEs. ICT usage in developing countries is associated with numerous issues [62]. The challenges that can impede ICT adoption by SMEs can be categorized into internal and external barriers [63]. The internal barriers comprise owner or managerial characteristics, firm characteristics, cost and return on investment while external barriers include, infrastructure, political, social, legal, cultural and regulatory [64, 65]. Some studies have investigated and identified some factors which affect ICT adoption by SMEs in Nigeria [66, 67]. The challenges outlined include; shortage of infrastructural facilities, unavailability of funds, implementation cost, inadequate awareness, inconsistent governmental policies, insufficient skills and training, Lack of constant power supply, profound corruption, and educational level is low, inadequate information and so on.

According to *Adenikinju* [68], the issues associated or relating to Nigerian SME's development have been highlighted by constant government neglect by the authorities in power and this attributes to cultural, infrastructure problems and also ICT exploitation in Nigeria. In general, the major factors that affect ICT adoption are infrastructure, cost of purchasing computer equipment, government support and management support respectively [69]. In addition, *Sajuyigbe and Alabi* [70], reported that lack of finance, unstable electricity, insufficient computer skill personnel's and low government support are the major challenges that hinder adoption of ICT by SMEs. Lastly, the adoption and utilization of ICTs in SMEs is also hampered by organizational factors [71].

a. Innovation Diffusion Theory (IDT)

In understanding and resolving the highlighted problems outlined, it is conventionally necessary to review a theoretical perspective that is particularly relevant to the underscored issues in this study. Therefore, this study adopted the innovation diffusion theory (IDT) originally propounded due to the concerns on assuring the ubiquity of important innovations such as technologies that improve living standards. However, since its development the theory has gain credibility amongst innovation researchers from different disciplines. Most importantly, IDT has been applied to study the characteristics and history of diffusion of innovation purposefully to provide tangible information for decision makers. It emphasizes the need to structure effective diffusion of future innovations in corporate organizations, governmental organizations, communities or any other social settings [72].

Communication is imperative in innovation diffusion theory, in order to determine its success which involves the use of mass media or interpersonal communication channels. This is evident with the advent of rapid developments in information technologies, for example the internet, smart phones, and social networking tools like Facebook and Twitter. Diffusion can be both at the interpersonal level and mass media levels. Communications allow the information about the innovation to spread [73] allowing diffusion to take place throughout the target communities. Hence identification and strengthening of communicative networks are essential to drive the effective diffusion of innovation.

b. Theoretical Perspectives of IDT

The theoretical perspectives of IDT offer five different features that characterize the diffusion of innovation by an individual. The features include relative advantage, compatibility, complexity, and trialability and observability. The underlying dynamics of these features can be elaborated in detail.

Relative advantage is defined as the degree to which an innovation is considered to better than the idea it replaced. This construct is found to be one of the best predictors of the adoption of an innovation. In the context of this study, this construct would be used to measure users perspectives on the benefits of ICT and what advantages ICT tools has to offer users in their corporate activities.

Compatibility: refers to the degree to which innovation is regarded as being consistent with the potential end-users' existing values, prior experiences and needs. This construct will be used to examine how comfortable users are with the adoption of ICT in their daily corporate activities. Items will be adapted from past studies to determine if users' experience in using ICT tools in their daily business frightens them or uplift their performances.

Complexity: is the end-users' perceived level of difficulty in understanding innovations and their ease of use. This construct will be employed in this study to evaluate users perceptive towards the diffusion of ICT innovation in SME business activities in Nigeria. This construct will help in articulating different types of difficulties faced by users in adopting ICT tools.

Trialability: refers to the degree to which innovations can be tested on a limited basis. This construct help to examine the trial options available to users before finally decide to adopt ICT tools in their daily business activities.

Observability: is the degree to which the results of innovations can be visible by other people. This is basically the measurement of the visible product of adopting ICT tools in business activities. Users will be examined to evaluate the functionalities of ICT in their business operations.

The above discussed features are the characteristics of diffusion process highlighted in IDT. The features are basically to theorize the personal experience of innovation users and diffusion process, including several stages of making decision and their attitudes towards the innovation [74].

IV. RESEARCH METHODOLOGY

This study employed a quantitative research approach which is based on the nature of the objective [75]. This study used a stratified random sampling technique to collect data from 109 SMEs in Makurdi, Benue State, Nigeria. The population was divided into different groups depending on their type of business. Each stratum of the respondents represented a sub-group in which the individual respondent belongs. Data collection stage included two basic sub-processes which include instrument development and main data collection. The instrument used in this study was adapted from previous literatures on adoption of ICT by SMEs. Furthermore, the developed instrument was subjected to validity and reliability test. Content validity was conducted to determine if the instrument measures what it is supposed to measure while the reliability test was conducted to determine the internal consistency of the measuring instrument. Analysis of the data in this study was done by using SPSS tools to descriptively analyze the data obtained for the aim of this research.

V. FINDINGS

The findings of the study on the diffusion of ICT tools among SMEs in Nigerian found that 97.10 % of the respondents are computer literates while 2.90 % responded not being computer literate. Hence it can be inferred that ICT tools are widely diffused among SME staffs in Nigeria. Computer literacy is regarded as one of the major tool of ICT and being literate of computer is invariably being literate and familiar with other ICT tools like phones, tab and the internet.

Additionally, the result found that 68% of the respondents possessed a personal computer in their homes while 32% do not have a personal computer. This implied that a substantial amount of the SMEs staff in Nigeria possess personal computer. In addition, 83.5% of the respondents have access to personal computer in their workplace while 16.5% of the respondents do not have access to personal computer in their workplace. This indicates that most of the SMEs staff in Nigeria has access to ICT tools which invariably points to a considerable diffusion of ICT tools in Nigeria.

Based on the descriptive analysis of the exploration of the different types of ICT tools that are used among Nigerians SMEs staff. The result revealed that the entire population of the sample size (100%) have access to desktop and browse the internet using the desktop computer. Furthermore, 50.9% of the respondents have access to laptop and browse on the laptop. 90% of the respondents access tablet and browse the internet using tablet. iPad is not so widely used among the respondents as 14.6% of the respondents used iPad for internet surfing. Smartphone is averagely used among SMEs staff in Nigeria; only 32.1% of the respondents browse or have access to smart phone among SMEs staff in Nigeria.

Lastly, only 33% among the respondents have access to all the listed ICT tools (such as; desktop, laptop, tablet, iPad and smartphones) for surfing the internet and subsequently for their daily corporate activities. Table 1 summarizes the result of the descriptive analysis of this study.

Table 1: Summary of the descriptive analysis of the study.

Construct	Responses	Frequency	Percentage (%)
Computer Literate	Yes	100	97.10
	No	3	2.90
Possession of Home PC	Yes	70	68.00
	No	33	32.00
Access to PC at work place	Yes	86	83.50
	No	17	16.50
ICT tool use among SME staff	Desktop	103	100.00
	Laptop	53	2.90
	Tablet	93	90.00
	iPad	15	14.60
	Smartphone	33	32.10

	All of the Above	34	33.00
Internet Surfing Frequency	Daily	75	72.80
	Weekly	13	12.60
	Monthly	9	8.70
	Not at all	6	5.80

Furthermore, the study also explored the frequency of internet surfing among the respondents. It was revealed that 72.8% of the respondents surf the internet on daily basis, 12.6% surf the internet on weekly basis, 8.7% of the respondents surf the internet on monthly basis while 5.8% of the respondents do not surf the internet at all. It is evident from the analyses that SMEs staffs in Nigeria access the internet frequently and are familiar with the use of ICT tools on daily, weekly and monthly basis.

VI. IDT AND USE OF ICT TOOLS IN NIGERIAN SMEs

a. Relative Advantage of Using ICT tools

Table 2 presents results for the analyses of the relative advantage of using ICT tools in Nigeria. The result presented in Table 2 revealed adopting ICT tools in SMEs corporate activities in Nigeria offers substantial benefits and advantages in corporate activities (M= 3.84, STD = 0.90). The terms Min., Max and SD represent minimum, maximum and standard deviation of the responses, respectively.

Table 2: Relative advantage of using ICT tools

Items	Min.	Max.	Mean	SD
ICTs improve business efficiency when use them	1	5	3.84	0.91
Communications among business partners are faster when I use ICTs	1	5	4.10	0.83
I can easily connect with business partners with ICT tools	1	5	3.85	0.92
Customers can get reach of our products with ICT tools	1	5	3.88	0.91
There are enough advantages of ICT tools for me to consider using them	1	5	3.97	0.93

Business can be promoted with the help of ICT tools	1	5	4.01	0.86
Errors in transactions can be corrected easily with ICT tools	1	5	3.79	0.86

One of the important advantages of ICT tools in SMEs business operation is that, using ICT tools improve the efficiency of business operation in SMEs corporate activities. Respondents also observed that ICT tools improved communications (M= 4.10, STD = 0.83) and connectivity (M= 3.85, STD = 0.92) between business partners. The respondents also maintained that connectivity between business-partners, progressive business or corporate organizations can be severely undermine by lack of communication. In addition, respondents also reveal that using ICT tools in business operations enables effective business transportation and distribution of products and services among consumers (M= 3.88, STD = 0.91). The respondents also show a considerable interest in adopting ICT tools in their daily business operations because they are aware of important advantages that ICT tools offers their organizations (M = 3.97, STD= 0.93). For instance, one of the important advantages of ICT tools offer corporate organizations is that, adopting ICT tools in business operation help promoting business and products (M= 4.01, STD = 0.85). Lastly, under the advantages of adopting ICT tools in business performance is that it creates a platform for resolving transactional errors (M= 3.79, STD = 0.85). These findings indicate that adopting ICT tools in SMEs' corporate activities in Nigeria hold important advantages and promise organizational developments.

b. Compatibility of ICT tools in Corporate Activities of SMEs in Nigeria

This study examines the compatibility of using ICT tools in SMEs corporate activities in Nigeria. Most of the items developed under this constructs were constructed with negative terms in order to ensure response consistency [17]. Table 3 presents the analysis results of compatibility of ICT tools in Corporate Activities of SMEs in Nigeria.

Table 3: Compatibility of ICT tools

Items	Min.	Max.	Mean	SD
I do not need any ICT tools in my business transactions	1	5	2.22	0.97
ICT tools delay business transactions	1	5	2.41	0.99
The use of ICT tools reduce our business finan-	1	5	2.32	0.98

cial income				
The use of ICT tools will make business transaction more complicated	1	5	2.27	0.89
ICT tools cannot be adopted in the production of our products	1	5	2.19	0.84
Our business private information is no more safe with use of ICT tools	1	5	2.55	0.98

Respondents believe that adopting ICT tools in corporate activities in SMEs organizations is compatible and efficient. Low mean score was recorded for respondents' perceptions towards the compatibility of using ICT tools in corporate activities. Consequently, the respondents believe that using ICT tools in their corporate operations by recording a low mean score (M= 2.22, STD = 0.96) and disagree that ICT tools delay business transactions (M= 2.41, STD = 0.99). Furthermore, the respondents also disagreed that ICT tools reduce business financial income (M= 2.32, STD= 0.98) or complicates business transactions (M= 2.27, STD = 0.89). Likewise, respondents did not accommodate any disbelieve on adopting ICT tools in production or manufacturing of products (M = 2.19, STD = 0.84). Lastly, respondents disagree that business information is unsafe if ICT tools are adopted in the corporate activities in SMEs (M= 2.55, STD = 0.97). In conclusion, the observed disagreements to the negative expression in the items of this construct show that ICT tools are strongly compactable with corporate performance in SMEs.

c. Triability of ICT tools in Corporate Activities of SMEs in Nigeria

One of the important characteristics of diffusion of innovation of technology is the triability of ICT tools before the actual adoption in business performance. The results presented in Table 4 shows respondents opinion to the triability of ICT tools. Respondents of this study revealed that after trying ICT tools in business tractions, it was easy to adopt ICT tools in business activities (M = 3.64, STD = 0.85). The respondents were also aware that using ICT tools in business transactions is convenience and comfortable (M = 3.67, STD = 0.84).

Respondents also show that trying ICT tools before actual usage in business transaction is not so important (M = 3.40, STD = 0.94). Respondents believe it is not important to emphasize on trying ICT tools before actual adoption in business transaction because it does not take much time to adapt with the use of ICT tools in business transactions (M = 3.37, STD = 0.81).

Table 4: Triability of ICT tools use.

Items	N	Min.	Max.	Mean	SD
It was easy to use ICT tools in business after trying them out	103	2	5	3.64	0.85
A trial convince me that using ICT tools for business transactions is better than manual	103	2	5	3.67	0.85
I do not need a trial before I adopt ICT in my business transactions	103	2	5	3.40	0.94
I do not take much time to try ICT tools before I finally accepted their use	103	2	5	3.37	0.82
It is better to try ICT tools before finally adopting them	103	2	5	3.50	0.87

Although on a final note and consistent with the postulations of the IDT theory, respondents also believe that trying ICT tools before the actual adoption is important (M = 3.50, STD = 0.87).

d. Observability of ICT tools in Corporate Activities of SMEs in Nigeria

Table 5 presents results for the observability of ICT tools in Corporate Activities of SMEs in Nigeria.

Table 5: Observability of ICT tools use.

Items	N	Min.	Max	Mean	SD
I was influenced by what I observed as the benefits of using ICT tools in business transactions	103	2	5	3.53	0.97
I observed others using ICT tools and saw the advantages of doing so	103	1	5	3.53	0.91
Observing ICT users before using ICT tools is unnecessary	103	1	5	3.28	0.96
I have seen how others use ICT tools in business transactions before I use them	103	1	5	3.28	1.01

The results show the users' observability of ICT tools performances and functionalities influence the adoption of ICT tools in business operations (M =

3.53, STD = 0.96). Respondents they are being influenced by observing other people using ICT tools in their business activities before adopting it too (M = 3.53, STD = 0.90). Although, respondents recorded that it is not so important to observe the use of ICT tools in business transactions before being able to use it (M = 3.28, STD = 0.96), but respondents still reported that they see other people using ICT tools before deciding to adopt it for business transactions (M = 3.28, STD = 1.01).

e. Complexity of ICT tools in Corporate Activities SMEs in Nigeria

This study also investigated users' complexity in adopting ICT tools while attending to business activities. The result of the complexity of adopting ICT tools in SMEs corporate performance is presented in Table 6.

Table 6: Complexity of ICT tools use

Items	Min	Max.	Mean	SD
ICT tools are complicated to use in business transactions	1	4	2.98	0.99
ICT tools are difficult to understand	1	5	2.83	0.98
ICT tools are convenient to use	1	5	3.11	0.99
ICT tools are confusing to use	1	5	2.83	1.05
ICT tools are easy to use even if one has not used them before	1	5	3.01	1.07

The response of the respondents revealed that ICT tools are neither complicated to use in business transactions (M = 2.98, STD = 0.99) nor difficult to understand or access (M = 2.83, STD = 0.98). Consistently, respondents believe that ICT tools are convenient to use in business transactions (M = 3.11, STD = 0.98). While respondents also revealed that the use of ICT tools is not complex for corporate activities (M = 2.83, STD = 1.05). Lastly, respondents believe that ICT tools are easy to access or adopt for business transactions (M = 3.01, STD = 1.07). The results indicate that there is no major complexity in adopting ICT tools in SMEs business transactions in Nigeria.

f. Challenges of Using ICT tools in Corporate Activities of SMEs in Nigeria

Table 7 presents the results for the analysis of the challenges users' face in adopting ICT tools in business transactions. This represents the main objective of this study which seeks to explore the challenges SMEs encounter in the use of ICT tools in their daily

activities. The respondents' answers refute the claim adoption ICT tools is expensive for business transactions (M = 2.99, STD = 1.02). Respondents also believe that fluctuating power supply in Nigeria discourages them from adopting and using ICT tools constantly in their business transactions (M = 3.02, STD = 1.01). Respondents do not believe that they do not have access to recent ICT tools (M = 2.83, STD = 0.90). Lastly, the respondents do not believe they need to acquire more technical training before adopting ICT tools in their business transactions (M = 2.98, STD = 0.97).

Table 7: Challenges of using ICT tools

Items	Min.	Max.	Mean	SD
It is expensive to use ICT tools	1	5	2.99	1.02
I can't use ICT tools because there is no constant power supply	1	5	3.02	1.02
I do not have access to recent ICT tools	1	5	2.83	0.90
I need more technical know-how before I can use ICT tools	1	5	2.89	0.98

In conclusion, this results show that respondents consider constant power supply the major challenge for adopting ICT tools for business in Nigeria.

VII. DISCUSSION

The benefits of adopting ICT tools in SME corporate activities was analyzed based on the theoretical perspective of the IDT. The study has publicized several empirical findings which can potentially contribute to the adoption of ICT tools in SMEs and other organizations in Nigeria. It is revealed that SMEs staffs in Nigeria, other than being well educated are computer literate and well informed about ICT tools. Furthermore, the study also emphasized the importance of accessibility and convenience of ICT tools to businesses in the country. For instance, most of the respondents in this study have access with desktop, laptop, smartphones, iPads and surf the internet on daily basis. In addition, this study highlighted that adopting ICT tools in corporate activities in Nigeria is crucial and advantageous. The use of ICT tools like computers embedded with different managerial tools and techniques avail SMEs and their staffs with important professional skills and managerial benefits that will ostensibly improves business efficiency.

Communication and connectivity among business partners are also discerned to be among the invaluable

benefits adopting ICT tools can offer to corporate organizations. ICT tools like smartphone, iPads, laptops and computers are also equipped with software and applications that make connections among business partners stress-free and meaningful. Through the use of ICT tools communication between business partners will be more timely and cost effective. Amongst other benefits of adopting ICT tools in SME corporate activities includes accessibility of organizational services and products. ICT tools also avail the enormous advantage of promoting business transactions beyond borders and to numberless customers and last ICT tools offers an important benefit of minimizing errors in business transactions.

The findings of this research revealed that users adopt ICT tools in corporate organization for different five reasons consistent with the five constructs of the IDT. This is because of advantages such as business efficiency, communication effectiveness, connectivity, accessibility of products and services, business promotion and development and resolving business transactions errors between business partners. The second characteristic for adopting ICT tools in corporate activities of SMEs in Nigeria is compatibility with business transactions. Users consider the compatibility ICT tools they adopt before considering functionality and type of their business transactions. Users also consider time factors of getting transactions done compared to manual or traditional methods. Another important factor is the complexity of the tools and lastly is information security. The third factor that influences the adoption of ICT tools for corporate activities in SMEs organizations are the triability as according to the theoretical perspectives of IDT. In general Nigerian SMEs staffs do not believe trial of ICT tools is required before adoption for their business transactions. However respondents acknowledged the importance of trying the ICT tools before the actual adoption. The fourth important factor is observability.

The findings revealed that it is important to observe the functionalities of ICT tools before adopting for business transactions. Observation influenced the actual adoption of ICT tools among users. Hence it is necessary to observe the functionalities and utilitarianism of ICT tools before adoption in corporate organizations. Lastly according to the theoretical paradigm of IDT, one of the major features of adopting ICT tools in business organizations is determining the complexity of the ICT tools. The findings in this study consistently lay credence to the importance of determining the complexity of adopting ICT tools before actual adoption, although respondents in this study do not believe ICT is complex to use. In addition, this research revealed the importance of adopting ICT tools in corporate activities in Nigeria SME organizations as well as how wide ICT has been adopted by in SME organizations in Nigeria.

As a developing a nation, Nigeria needs workers of SME organizations to value and efficiently use of ICT tools for business and communication. The development, adoption and diffusion of innovative tech-

nologies will significantly stimulate socioeconomic growth and sustainable development. Furthermore, the study also finds that major ICT tools like computers and laptops are well saturated among Nigerian SME staffs. Smartphones and iPads are among the most popularly used ICT tools in Nigeria. Nigeria SME workers were also observed to be regular internet users. Amongst the objectives of this study was to explore challenges faced by SME workers in Nigeria with regards to the issue of adopting ICT tools in corporate activities. This study reveals that the cost of acquiring or accessing the recent or sophisticated ICT tools and lack of constant electric power supply pose severe challenges for SME staff in Nigeria.

VIII. CONCLUSION

The study examined the challenges of adopting ICT tools by SMEs in Nigeria using the Innovation Diffusion Theory (IDT). The results demonstrate that adopting ICT in corporate organizations like SMEs in Nigeria will avail workers with benefits including efficient business operations, effective communication, constant connectivity and business promotion and development. In addition, the adoption of ICT tools by SMEs is characterized by the relative advantages such as complexity and compatibility with the organizational business transactions as well as testability and observability before adoption. The findings also demonstrate that the cost of acquiring or accessing the recent or sophisticated ICT tools and lack of constant electric power supply pose severe challenges to SMEs in Nigeria.

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