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Information Communication Technology (ICT) and the Effective Growth of SMEs in Anambra State, Nigeria

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Abstract
This study examines the role of Information and Communication Technology (ICT) in the growth and development of Small and Medium Enterprises (SMEs) in Anambra State, Nigeria. The importance of information and technology in modern business management cannot be overstated, as they serve as critical resources for organizations to gain a competitive edge. The study emphasizes the benefits of ICT adoption for SMEs, which include enhanced productivity, effectiveness, efficiency, and customer satisfaction. However, it also highlights the challenges faced by SMEs in Anambra State in effectively utilizing ICT, such as inadequate infrastructure, management information system constraints, and limited resources. The primary objective of the study is to evaluate the extent to which ICT contributes to the growth and success of SMEs in Anambra State. The research employs a stratified random sampling approach, collecting data from SMEs across various sectors, including pharmaceutical, manufacturing, textile, telecommunications, and others. The findings provide insights into the factors that influence ICT adoption and ownership patterns among SMEs in the region, as well as the moderating effects of different business categories on technology utilization. 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 Anambra State.

Keywords: Information, communication, technology, growth.

Introduction

The importance of information in the growth of corporate organizations and the global landscape cannot be overstated. 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, Schmalfub, Özturk, Aromaa, Boubekeur, 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 organization-wide information systems today. It is one of the most essential tools for organizations, aiming to provide reliable, complete, accessible, and understandable information to users in a timely manner (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 study emphasizes the benefits of ICT in the context of SMEs in Anambra State and identifies some challenges faced by the SME sector in the region. The research draws upon secondary sources, including internal documents and academic references, to provide insights into the subject matter.

Objective of the Study

The main objective of the study is to know if ICT plays an effective role to the growth of SMEs in Anambra State

Statement of Problem

Many organizations, especially the small and medium enterprise in Anambra State are still lagging behind in updating and maintaining a computer based technological system where personnel records and information can be easily accessed and acted upon. Management Information System (MIS) helps business owners in effective planning and controlling it workforce to achieve desired results. This implies that the ineffective utilization of ICT can result in poor or low employees' productivity. Planning and implementing an effective information system for small and medium enterprise presents a challenge to most organizations or industries. The cost and management of these systems at times becomes a constraint in the achievement of organizational goals.

The SME sector provides, on average, 50% of Nigeria 's employment, and 50% of its industrial output. Frank and Ngozi (2012). Specifically, Nigerian businesses have little or no infrastructural support, whether in telecommunications, transportation, manufacturing, electricity supply, agriculture. Most people start their own businesses and then do virtually everything by themselves to succeed. The success levels of SMEs in Nigeria still leave much to be desired, Osagie (2010). As unemployment assumes a frightening dimension, efforts undertaken by the Nigerian government to promote ICT use among SMEs across different industries have not yielded many dividends; many of the SMEs have failed to reap the benefits evenly. There is a dearth of research on ICT utilization and ownership patterns among SMEs in Nigeria. The moderating effect of business categories on technology among SMEs remains yet to be discovered which presents a significant gap in knowledge. In similar vein, though studies like an financing industrial development in Nigeria. It is still unclear whether the factors affecting SMEs in Nigeria cut across different sectors or are restricted to specific sectors (Oyediran, Misra, Maskeliūnas & Damaševičius, 2018). However, the problem confronting this research seeks to provide an assessment of the place of ICT for the effective growth of SMEs in Anambra State.

Review of Related Study

Several related empirical and theoretical literatures have probed into the subject of ICT adoption and challenges in relation to SMEs with varying opinions and divergent views.

Mutua and Wasike (2009) reviewed literature on ICT adoption and its impacts on firms in both developing and developed countries and analyses the determinants of ICT adoption and their impact on firm's performance. By conducting an additional survey on ICT service providers, they uncovered and addressed challenges facing ICT providers in Nigeria and how to deal with these challenges. Their study provided empirical evidence both on the factors that determine adoption of ICT (landline or internet connection) and the impact of proxies for ICT adoption on output of SMEs. Findings show that the main determinants of adoption of ICT are the size of the firm as indicated by firm employment, formal registration, and if a manager has some internet training. Registration or formalization of firms is also correlated with a higher probability of adopting ICT. As predicted, the study finds that ICT tends to augment both capital and labour thus raising productivity of firms. Thus, the analysis shows that the ICT adoption as proxied by access to internet, or a landline is significantly correlated with higher SMEs output. The study shows that adoption and use of ICT is a key factor to helping enterprises to raise their productivity and competitiveness.

Ghobakhloo et al. (2012) conducted research to enhance the understanding of IT adoption within small and medium-sized enterprises (SMEs) by reviewing and analyzing current IT literature. Their review included theories, perspectives, empirical research, and case studies related to IT adoption in SMEs from various databases such as Business Premier, Science Direct, JStor, Emerald Insight, and Springer Link. The proposed model of effective IT adoption aims to provide managers, vendors, consultants, and governments with a practical overview of the IT adoption process in SMEs, assisting them in successfully institutionalizing IT within these businesses.

The study by Mpofu et al (2009) observed that the organizational readiness of every organization is reflected in factors such as size, type, nature of business, ICT expertise, and the perceived benefits held by the management and employees. The results of the study revealed that small and medium-sized enterprises (SMEs) are still hindered by inadequate ICT infrastructures for promoting their businesses, which is consistent with findings from previous studies. This challenge can be attributed to the limited number of Internet Service Providers (ISPs) and mobile operators within the country.

Methodology

Due to the nature of these study, a stratified random sampling research design was adopted, which involves collection of data from SMEs in pharmaceutical, manufacturing, textile, telecommunication, agro-allied, tourism, printing, building & construction, events &entertainment, and trading based on different categories. The dispersed nature of the subjects and the unavailability of ample data on registered SMEs in the state justify selecting a few respondents from whom generalization about the population could be made. Ease of access to the SMEs was negotiated through their professional associations. SMEs in Nigeria belong to various associations like: Nigerian Association of Small-Scale Industrialists (NASSI), Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), Chamber of Commerce and Industries. However, no comprehensive list of firms operating within the state could be provided while some associations outright refused to divulge any information. The Anambra state chamber of commerce, however, proved helpful as it had a list of 100 registered firms across the different sectors within the state. The researcher also independently discovered that some unregistered SMEs had incorporated the use of basic ICTs like the mobile phone and the computer system in their business activities. Conversely, this development made the researcher to purposively select 60 SMEs who use other forms of ICT which specifically include (the internet, intranet, e-mail, web portal, video conference and enterprise resource systems) Nonetheless, the unevenness in the population made the researcher to randomly select variable sampling elements to ensure proportional representation of the different SME sectors.

Method of Data Analysis

In analysing and interpreting the data, the researcher will use a table for representing data in tabular form, percentage, and chi-square formula of data analysis in testing the hypothesis.

The formula is represented as:

$$X^2 = \frac{\sum (Oij - Eij)^2}{E}$$

Where
Oij = observed frequency
Eij = expected frequency

Table 1: Demographic characteristics of SMEs

Organization Nature	**Frequency**	**Percent**
Private Limited Company	20	33.3
Public Limited Company	5	8.3
Partnership	10	16.6
Sole proprietor	15	25
Family-Owned Business	20	33.3
Others		
Organization Type	**Frequency**	**Percent**
Manufacturing	5	8.3
Textile	3	5
Telecommunication	8	13.3
Tourism	5	8.3

Building & Construction	10	16.6
Printing	8	13.3
Pharmaceutical	5	8.3
Events & Entertainment	4	6.6
Trading	10	16.6
Agro- Allied	2	3.3
Age of Organization	**Frequency**	**Percent**
1-5 years	20	33.33
5-10 years	30	50
>10 years	10	16.6
Owner ICT Literacy	**Frequency**	**Percent**
Yes	50	83.33
No	10	16.6
Years of ICT Use	**Frequency**	**Percent**
1-3 years	20	33.33
4-6 years	10	16.66
7-10 years	15	25
>10 years	12	20
No response	3	5

Research Question 1: What are the types of ICTs used by SMEs in Anambra State?

Results revealed that most of the organizations used mobile telephone 60(100%) in their businesses, 52(84.6%) reported that they used computer, 42(65.6%) used internet while 27(42.8%) used the electronic mail. However, very few of the sampled organizations made use of video conference and enterprise resource system as portrayed by 16(27.7%) and 16(24%) respectively, the reason for the low volume can be attributed to the nature of their businesses.

Table 2 Distribution of Types of ICT used by SME's

Sectors	Video conference		Internet		E-mail		Credit Card System		Web portal		Computer		Enterprise resource System		Intranet	Telephony (mobile)		Broadcasting (Radio/TV)		
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Pharmaceutical	3/5	60	5	100	3	60	5	100	3	60	5	100	2	40	5	100	5	100	3	60
Manufacturing	4/5	80	4	80	4	80	2	40	0	0	5	100	2	50	4	100	5	100	3	60
Textile	1/3	33.3	2	66.6	1	33.3	3	100	0	0	2	66.6	0	0	1	33.3	3	100	1	33.3
Telecommunications	4/8	50	4	50	4	50	6	75	4	50	8	100	2	25	8	100	8	100	5	62.5
Agro-allied	0/2	0	1	50	0	0	1	50	0	0	1	50	0	0	0	0	2	100	0	0
Tourism	0/5	0	3	60	0	0	0	0	0	0	4	80	0	0	3	33.3	5	100	3	60
Printing	4/8	50	6	75	4	50	4	50	7	87.5	8	100	4	50	8	100	8	100	6	75
Building & Construction	0/10	0	5	50	0	0	4	40	1	10	7	70	0	0	4	40	10	100	3	30
Events &Entertainment	0/4	0	4	100	3	75	2	50	2	50	4	100	1	25	4	100	4	100	2	50
Trading	0/10	4	8	80	8	80	5	50	5	50	8	80	5	50	5	50	10	100	6	60
Total	16	27.7	42	71.1	27	42.8	32	55.5	22	30.7	52	84.6	16	24	42	65.6	60	100	32	49.1

Data presentation and analysis of the research questions

Substantive Data of Respondents

Question two: Does ICT have a role to play in the growth of SMEs in Anambra State?
Table 3

Responses	Frequency	Percentage (%)
Strongly Agreed	20	33
Agreed	10	16
Disagreed	15	25
Strongly disagreed	10	16
Undecided	5	9
Total	60	100

Source: Field Work, 2024.

Table 3 explains that 20 (33%) strongly agreed, 10 (16%) respondents agreed 15 (25%) disagreed, 10 (16%) respondents strongly disagreed, while 5 (9%) respondents were undecided.

Question 3: Do you think that the government of Anambra state can play a vital role to the effective use of ICT among SMEs?

Table 4

Responses	Frequency	Percentage (%)
Strongly Agreed	13	22
Agreed	20	33
Disagreed	17	28
Strongly disagreed	7	11
Undecided	3	5
Total	60	100

Source: Field Work, 2024.

Table 4 explains that 13 (22%) strongly agreed, 20 (33%) respondents agreed 17 (28%) disagreed, 23 (23%) respondents strongly disagreed, while 7 (11%) respondents were undecided.

Question 4: Do you think ICT plays an effective role to the growth of SMEs in Anambra State

Table 5

Responses	Frequency	Percentage (%)
Strongly Agreed	13	21
Agreed	20	33
Disagreed	5	8
Strongly disagreed	10	17
Undecided	12	20
Total	60	100

Source: Field Work, 2024

Explicit in table 5 is that 13 (21%) respondents strongly agreed. 20 (33%) among the respondents agreed, 5 (8%) respondents disagreed, 10 (17%) respondents strongly disagreed, while 12 (20%) respondents were undecided.

Question 5: The use of ICT among SMEs has great role to play for greater efficiency and greater productivity in the workplace?

Table 6

Responses	Frequency	Percentage (%)
Strongly Agreed	20	33
Agreed	10	16
Disagreed	15	25
Strongly disagreed	10	16
Undecided	5	9
Total	60	100

Source: Field Work, 2024.

Table 6 explains that 20 (33%) strongly agreed, 10 (16%) respondents agreed 15 (25%) disagreed, 10 (16%) respondents strongly disagreed, while 5 (9%) respondents were undecided.

Question 6: there's no cordial relationship between the Government and SMEs in Anambra State

Table 7

Responses	Frequency	Percentage (%)
Strongly Agreed	13	22
Agreed	20	33
Disagreed	5	8
Strongly disagreed	10	16
Undecided	12	20
Total	100	100

Source: Field Work, 2024

Table 7 explains that 13 (22%) among the respondents strongly agreed, 20 (33%) respondents agreed, 5 (8%) respondents disagreed, 10 (16%) among the respondents strongly disagreed while 12 (20%) respondents were undecided.

Question 7: Owner's decision to use ICT is the major Internal Factors Inhibiting ICT Use among SME's?

Table 8

Responses	Frequency	Percentage (%)
Strongly Agreed	25	41
Agreed	16	27
Disagreed	14	23
Strongly disagreed	5	8
Undecided	5	8
Total	60	100

Source: Field Work, 2024

Table 8 shows that 25 (41%) respondents strongly agreed, 16 (27%) respondents agreed, 14 (23%) respondents disagreed, and 5 (8%) respondents strongly disagreed, while 5 (8%) respondents were undecided.

Test of Hypotheses

Having given a critical analysis of the responses obtained from the respondents through questionnaire administered, the hypotheses formulated in this study would now be tested and results are fully discussed below. Hence, the researcher used chi – square formula as the statistical instrument for testing the hypotheses raised in this study.

Statement of the Hypothesis

H_o: ICT does not play an effective role to the growth of SMEs in Anambra State
H1: ICT plays an effective role to the growth of SMEs in Anambra State.

Table 9: Contingency Table

Question 4	Male worker	Female worker	RT
Strongly Agreed	16	4	20
Agreed	7	3	10
Disagreed	13	2	15
Strongly disagreed	3	7	10
Undecided	1	4	5
Total (CT)	40	200	60

Grand Total (GT)

Source: Field Work, 2023

Table 10: Table for Computation of 'e'

O	Calculation	E
16	$e_1 = \frac{40x20}{100} =$	8
4	$e_2 = \frac{20x20}{100} =$	4
7	$e_3 = \frac{40x\ 10}{100} =$	4
3	$e_4 = \frac{20x10}{100} =$	2
13	$e_5 = \frac{40x15}{100} =$	6
2	$e_6 = \frac{20x15}{100} =$	3
3	$e_7 = \frac{40x10}{100} =$	4
7	$e_8 = \frac{20x10}{100} =$	2
1	$e_9 = \frac{40x5}{100} =$	2
4	$e_{10} = \frac{20x5}{100} =$	1

Source: Field Work, 2024

Note that: To know the calculated value of chi-square (x^2) of the hypothesis:
The level of significance is 5%
The degree of freedom is given (k-1)
Where k is No of rows or columns
Ie (2-1) = 1

The critical value is given as $X^2 = 0.020$
This value was determined from the chi-square table, using the d.f. and level of significance.
Where R = Row number
C = Colum number
Hence D/F = (2-1) (3-1) =1x2=2

Table 11: Table for Computation of Chi-Square

0	E	0-e	$(0-e)^2$	$\frac{(0-e)^2}{E}$
16	8	8	64	8
4	4	0	0	0
7	4	3	9	2.25
3	4	-1	1	0.25
13	2	11	121	60.5
2	6	-4	16	2.67
3	3	0	0	0
7	4	3	9	2.25
1	2	-1	1	0.5
4	1	3	9	9
Chi-square $(X^2) = \sum\frac{(0-e)^2}{e} = 85.42$				

After necessary calculations and computations, we got the following.

i. Chi-square (X^2) calculated =85.42
ii. Degree of freedom (df) of 4, that is,
(C-1) (R-1)

= (5-1) (2-1)

= 4 x 1

= 4

iii. Level of significance 0.05 (5%)
iv. Chi-square (X^2) tabulated = 9.488, which is obtained with df of 4 at 0.05 level of significance in the chi-square table of sampling distribution

Decision

Reject H_o, if chi-square calculated valued is greater than chi-square tabulated value, accept H_o if otherwise reject

X^2 Calculated value is 85.42

X^2 tabulated value (0.05, df) is 9.49

Therefore, our Null hypothesis (Ho) is rejected because 85.42 is greater than 9.49

The implication is that the hypothesis (H_1) is upheld. ICT plays an effective role to the growth of SMEs in Anambra State.

Discussion of Findings

The study revealed that most of the SMEs are still at the early stage of ICT use. They predominantly use basic ICT equipment like mobile telephones and computers. This explains why Irefin et al (2012) noted that the most basic ICT tool for SMEs is having communication capabilities through fixed or mobile phones and those SMEs may then use a personal computer with basic software for things like information processing or keeping track of accounting items. Quite remarkably, the result also revealed that few of the SME's have begun to use some advanced communication equipment like the electronic mail, internet browsing, web portal, intranet, and enterprise resource system. These suggest that ICT use by SMEs ranges from basic technology such as radio and telephone lines to more advanced technology such as emails, e-commerce, and information processing systems. However, availability does not imply use. Further enquiry into the services delivered by the SMEs using available ICTs revealed they are channeled towards keeping up with competitors and providing online transaction services while also using it to communicate with members of staff of the organization thereby suggesting that the technologies are predominantly used as a marketing and communication tool. This form of ICT use is considered beneficial on the long run. The ability of organizations to effectively communicate with customers and suppliers can give them a competitive advantage. Research has shown that factors such as the nature of the business, having skilled ICT staff, perceiving the benefits of ICT, and the use of ICT by customers and suppliers all play a significant role in encouraging companies to use information and communication technology. ICT is transforming the way we live, work, and learn. Studies have found that small and medium-sized enterprises (SMEs) are increasingly integrating ICT into their business operations due to the influence of customers and suppliers.

Conclusion

The use of ICT can provide a platform for the future growth of SMEs. However, the use of ICT in Anambra SMEs is relatively low due to many factors that hinder their growth. For Anambra SMEs to effectively use ICT, the government should put technological infrastructures in place to support ICT use. There are several benefits associated with the use of ICT, and its effective use in Anambra SMEs would bring about enormous opportunities for these businesses. To set themselves apart from their competitors and to have a sustainable competitive advantage, SMEs need to invest in ICT. The government also needs to intensify its efforts to promote the use of ICT in Anambra SMEs, as ICT is known to improve managerial practices and assist SMEs in growing and becoming more innovative. The Nigerian government must invest heavily in the SME sector by making more funds available to SMEs and putting structures in place to ensure successful investment. The integration of ICT in Nigerian SMEs would help integrate these businesses into the world IT village.

Recommendations

The challenges and problems of ICT usage among SMEs in Nigeria are complex and can only be effectively addressed through a collaborative effort involving various stakeholders, including the government at the federal, state, and local levels, as well as other agencies, banks, regulatory authorities, SME owners and management, employees, and donor agencies. To ensure the

competitiveness and success of SMEs in Anambra State, it is crucial for owner-managers to grasp the critical success factors related to ICT usage and develop a strategic vision.

Based on the above, the following recommendations are made:

i. The ICT industry must continuously find ways to help SME owners and managers recognize the additional value and potential benefits of using suitable ICT solutions, while also creating products and services tailored to address specific business needs. This could involve organizing seminars or induction sessions to allow SMEs to evaluate new innovations. To encourage greater enthusiasm for adopting ICT, it is suggested that certificates and financial support should be provided for attending such seminars. This approach would enable authorities to establish a close connection with the SMEs and gather ongoing feedback to pinpoint areas of concern in their products or services and take necessary corrective actions.

ii. ii. This study also suggests that the Government of Anambra State should urgently aid prospective entrepreneurs in accessing finance and essential information related to business opportunities, modern technology, raw materials, markets, and machinery. This support would enable them to lower their operating costs and become more efficient in meeting market competition.

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