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EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) UTILIZATION ON PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES (SMEs) IN WUKARI

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ABSTRACT

The study aimed to establish the impact of ICT on the performance of SMEs in Wukari through the use of computer systems, mobile applications, and social media. This study adopted a cross-sectional study design. The primary data was collected from 145 respondents by using a structured questionnaire. The collected data were analysed descriptively, and regression analysis was used to test the study hypotheses. The research also found that ICT had a positive impact on the performance of SMEs. The findings showed that the application of ICT technologies by SME operators improved their performance through increased market exposure, higher marketing efficiency, and improved business sustainability. The results of this study may offer the final evidence for SME operators to understand the vast opportunity of ICT and how it can improve the performance of the company in a more competitive world. The report recommends that SME operators in Nigeria, especially those in Wukari should improve on their ICT technologies and integrate them into their companies to achieve market visibility through market infiltration, brand promotion, customer interaction and market control.

Keywords: Information Communication Technology, Mobile Application Software, Social Media Resources, SMEs Performance

INTRODUCTION

SMEs are beneficial, especially to the economy of the countries involved, in that they are a source of employment contributing to economic growth and poverty decrease (Etuk et al., 2022). Ezigbo (2022) projects that SMEs would contribute about 50% of Nigeria's GDP and provide jobs for over 60 million people, or about 84% of the population of Nigeria. SMEs are essential in many parts of the world's economies, including Europe, Africa, and Nigeria (Etim et al., 2023). Over 60 percent of employees in developing countries work for SMEs, and by World Bank estimates, these firms contribute more than 40 percent to the gross domestic product (GDP) (Ezigbo, 2022). A multitude of business methods and technologies have been devised to augment the competitiveness of small and medium-sized firms (SMEs), given their significance in fostering national and worldwide economic development. For instance, information and communication technology (Khalil et al., 2022). The phrase "information and communication technology" (ICT) includes all varieties of digital storage and transmission methods. Okundaye et al. (2019) assert that information and communication technologies include a wide range of internet-based software, hardware, apps, and devices designed to enhance productivity with little human

intervention. Contemporary information and communication technology have significantly enhanced the efficiency and profitability of corporate operations relative to prior generations. To thrive in today's competitive economic environment, small and medium companies (SMEs) must formulate an ICT strategy. Etim et al. (2023) discovered that, alongside major organisations, SMEs use ICTs to improve their production processes.

ICTs are used in the whole production process, from inventory management to the finished product or service. Due to the fact that stock-outs and overstocking are detrimental to SMEs, the firms can use ERP software to track the inventory in real-time. ICTs may be used by SMEs in the enhancement of their manufacturing processes. They can also review the sales records and trends, the customer preferences and other market trends.

STATEMENT OF THE PROBLEM

In Nigeria, small and medium enterprises (SMEs) have faced significant challenges over the years, resulting in the shutdown of many companies. These challenges arise from unfavourable business environments such as political risks, economic risks, legal risks, cultural risks and risks associated with technology adoption. While social media, financial technologies, and mobile software and other ICTs have been available and used more often since the COVID-19 pandemic, there has been inadequate or improper use of the technologies by many SMEs.

The recent policy on fuel subsidy removal has also contributed to other operational costs such as transportation costs, rent and cost of doing business. This has put pressure on the SMEs to use ICT tools more purposefully to enhance productivity and sustain the competition. However, the ICTs that are supposed to have improved the operational efficiency of SMEs in Nigeria are not yet effectively utilised by most of the SMEs. This gives rise to the following research question: Is the adoption and effective utilisation of ICT capable of offering SMEs a realistic business environment to continue performing and reducing disruption? Therefore, the study seeks to address the critical question: How does information and communication technology (ICT) influence the performance of small and medium enterprises in Nigeria?

Objectives of the study

The main purpose of the study is to examine the effect of ICT on the performance of small and medium enterprises, with the following specific purposes

1. To examine the effect of computer systems on the performance of small and medium enterprises in Nigeria
2. To assess the effect of mobile application software on the performance of small and medium enterprises in Nigeria
3. To investigate the effect of social media resources on the performance of small and medium enterprises in Nigeria

LITERATURE REVIEW

Information and Communication Technology (ICT)

ICTs, anything electronic and digital, are there to assist people to do more with less. These are the gadgets and equipment used in conveying, generating, storing, analysing and disseminating information

(Anyadighibe et al. 2023; Etuk et al. 2022, Inyang 2022; & James 2022). In the context of this research, information systems refer to electronic accounting software, inventory management applications, desktop computers, mobile applications, social networking sites, and tools that may improve organisational performance. The integration of ICTs in the business environment has revolutionised the way companies manage themselves and interact with their stakeholders. Business organisations strive to enhance their communication, work output, performance, and market position (James and Inyang, 2023). The application of ICTs has revolutionised the local and international dynamics of business communication. There is a strong positive relationship between internal communication and organisational performance. Fast and efficient communication channels include electronic mail, instant messaging, video conferencing, and other aspects of social media; as pointed out by Inyang (2022), the adoption of ICTs by enterprises may result in increased automation, reduced redundancy and error. Consequently, firms may increase efficiency, reduce costs, and enhance resource utilisation in their business. Another benefit that can be derived from ICTs is the corporate efficiency improvement (Hameed et al., 2018). The use of ICTs has provided employees with the greatest flexibility in determining their working schedules. More flexibility when it comes to performing tasks at work makes it easier to achieve a good work-life balance. Further, through the application of ICTs, organisations may get data in real-time, thus improving their decision-making capabilities. The performance increases when rationality replaces instinctive feelings in decision-making processes.

Yorkulov et al. (2022) show that there is a tendency for increased usage of ICTs around the world. Marketing communication tools are now available to SMEs in a variety of ways. These innovations have the potential to aid SMEs in reaching a wider audience and boosting their brand awareness and market share. Small businesses are vital to the economy of Nigeria, but have not been given much credit until the use of the internet (Seyi, 2022). Many SMEs have gained new customers through improving their web and social media presence. Many organisations have been able to attain success through the development of a strong and effective web presence that allows for client outreach and company advertising. The electronic marketplace has enabled cross-border selling for small and medium enterprises. As a result, these enterprises have enhanced their market share by acquiring clients that were out of reach before (Lukonga, 2020). Seyi (2022) also shows how Information and Communication Technology can increase brand awareness through mobile marketing. With the increasing popularity of smartphones in Nigeria, the products may be marketed using mobile applications by the SMEs. Technological advancement has enabled new ways for small and medium enterprises to advertise themselves on the internet to the public. Modern forms of advertising, like PPC and SEO, have offered SMEs unique platforms through which to reach out to their clients. These companies may market their brand, expand the circle of their customers, and attract more people with the help of modern technological means.

Mobile Application Software

ICTs have become important promotional tools for the firms, particularly the SMEs (Karim et al., 2022). The Internet and Social networking have greatly aided businesses in the absorption of new clients and interacting with the existing ones. Irefin et al. (2012) opine that Nigerian SMEs have unprecedented digital marketing opportunities to communicate with the target clients. SMEs used to have limited and expensive methods of advertising in print or broadcast media as their only choice. The availability of social media sites like Facebook, Instagram, and WhatsApp has brought new opportunities for SMEs in terms of cost-effectiveness. Ladokun (2019) postulates that the use of social media marketing is becoming the order of the day among SMEs in Nigeria. Likewise, Seyi (2022) discovered that the use of ICT improves the relationship between Nigerian enterprises and their customers. SMEs in Nigeria may now be able to communicate with the customers directly using email, instant messaging and chatbots to ensure that the

consumer complaints are handled in the shortest time possible. Electronic commerce has impacted Nigerian SMEs as it has done to other countries (Idris, 2015).

For instance, Jumia, Konga and Jiji.ng have made the market reachable by SME, enabling them to retail their products online. Also, the ICT advancement has enabled these online marketplaces to allow a host of payment options for their consumers. Examples include items such as these and the use of debit and credit cards. The COVID-19 epidemic had a positive influence on SMEs in Nigeria since many people were forced to make purchases online due to restrictions on travel. This study might impact strategies for SMEs in Nigeria seeking to improve marketing communication via ICT use.

Social Media Resources

SMEs play a significant role in Nigeria's gross domestic product. The sustainability of these enterprises is threatened by several obstacles they have to overcome (Ebitu et al., 2016). The ICT could potentially help SMEs in Nigeria. According to Asunka (2016), ICTs might help SMEs increase their consumer base. SMEs could possibly reach out to more consumers through the use of the internet and social media marketing than through the use of advertisements. According to Olatunji (2015), ICTs have the capacity to increase productivity and efficiency for the existing SMEs. Lack of adequate capital and human resources forms a problem for a number of small businesses in Nigeria. However, if SMEs receive the right kind of information and communication technology (ICT) solutions, they may be able to automate processes and reduce costs while increasing efficiency. In addition, Khalil et al. (2022) opine that ICTs could improve SMEs' financial management and capital availability. One of the major problems of SMEs in Nigeria is the issue of finance. Businesses can now get capital from many sources because of the new and diverse forms of AF, such as crowdsourcing. In addition, SMEs might improve their financial management with the help of ICTs. ICTs enable firms to overcome several challenges by expanding their customer base, improving production, and accessing funding. It has been found that SMEs in Nigeria might benefit from using ICT to support their operations.

SMES Performance

Business performance is the extent to which business organisations achieve their stated goals and objectives with available resources amidst competitive forces (Veliu & Manxhari, 2017). To SMEs, performance refers to the extent to which their operations are productive in achieving the set aims and objectives (James et al., 2022). This study examines the success of SMEs via three dimensions: market exposure, marketing success, and survival of a firm. According to Etuk et al. (2022), Subagyo & Ernestivita (2020), market awareness can be attained by SMEs through selling their products or services to the population and using their marketing tools to acquire a strategic market position.

Syaifullah et al. (2021) defined marketing effectiveness in terms of the extent to which SMEs can attain their marketing goals and objectives concerning customer outreach, sales, customer loyalty, and market domain. On the other hand, company survivability relates to the capacity of SMEs to demonstrate firmness and efficiency in the management of operations in the course of changing environmental conditions (Subagyo & Ernestivita, 2020). The efficiency of SMEs has become a major issue for the Nigerian economy's growth because of their contribution to the GDP. Ebitu et al. (2016) opine that the lack of capital is one of the major challenges that face SMEs in Nigeria. Access to funds has always been an issue for small businesses in the country. Lack of infrastructure is a big challenge (Awoyemi & Makanju, 2020). A large part of the country still has poor or no access to power supply, the internet, transport networks, and a clean water supply. Some of the factors include corruption, lack of adequate business education and

mentorship as well as other factors that make small and medium-sized firms (SMEs) in Nigeria perform below their best (Taiwo et al., 2022).

THEORETICAL FRAMEWORK

Dynamic theory of innovation

The theoretical framework for this research was the dynamic theory of innovation developed by Taylor et al. (2002). This theory provides an efficiency-oriented tool that might help firms to optimise their overall output and gain a competitive edge by improving their total factor productivity through innovation and improvement. This is where many conservative enterprises mostly failed to adapt to the new environment. An element of technology. The use of this theoretical framework in the study was appropriate because it revealed how new technologies, especially ICT tools, may help firms, especially SMEs, achieve sustainable long-term success in the face of intense competition.

This research relates to the dynamic theory of innovation because it shows that SMEs function in a constantly changing context. SMEs need to change, develop and transform to be in line with trends in an effort to enhance corporate performance and thus achieve a sustainable competitive advantage in the market.

Empirical Review

Ozavize and Ayodele et al. (2019) used social learning theory to examine the influence of leaders' environments on their capacity to lead ethically and effectively. This study investigated the ethical implications of institutional subordination in Ogun and Lagos states, Nigeria, using self-administered questionnaires. The research design was cross-sectional. The study also investigated the influence of ethical leadership, characterised by actions and communication, in moderating these outcomes. The findings suggest that the enhancement of workplace moral performance may be achieved via the promotion of virtue-based academic ethical leadership and the development of an ethical leadership culture.

Brown et al. (2005) use social learning theory to elucidate the processes of idea production and evaluation in the context of ethical leadership. An exploratory survey was performed in the US to assess the significance and feasibility of the notion. The researchers found that ethical leadership strongly predicted many outcomes, including employee job satisfaction, organizational loyalty, and the propensity to report issues to management.

Torfing and Bentzen (2020) examine stewardship and control-centric performance management. A qualitative study in Denmark offers significant insights into the dominant agency theory of the New Public Management period via the lens of stewardship theory. This thesis established the groundwork for the analysis and careful supervision of performance management systems for public employees.

Okpala and Caldwell (2019) identify humility, generosity, and forgiveness as the three fundamental elements of ethical stewardship. The study will demonstrate that ethical stewardship is attainable by anyone after defining the term and evaluating its importance to leadership. Ethical stewardship relies on three fundamental leadership attributes: compassion, forgiveness, and humility.
Moore et al. (2019) examines the influence of moral leadership. The study, using both survey and experimental methodologies, shown that ethical leadership diminishes moral disengagement, unethical decision-making, and deviant conduct. In instances of workplace misconduct, the evidence indicates that both managers and workers need to incur repercussions.
Al. (2021) used person-organisation fit as a moderating variable to examine the relationships among ethical leadership, ethical environment, and workers' ethical behaviour in the workplace. Medical, industrial, and

insurance datasets were provided separately. The correlation between ethical conduct and the hypotheses was more pronounced for those with high P-O fits than for those with low P-O fits.

Ghanem and Castelli (2019) aimed to ascertain the correlations among moral competence, accountability, and ethical leadership. A more robust positive correlation was seen for leaders exhibiting high moral competence, indicating that moral competency serves as a mediator between accountability and ethical leadership. Research indicates that employee accountability functions as a means for firms to establish themselves as ethical leaders.

Alam (2019) analyzed accountability mechanisms in the Malaysian public sector via the perspectives of leadership styles, integrity procedures, and internal control systems. Multiple connections between accountability practices and the internal control system were uncovered, while a positive correlation was established between the integrity system and the quality of leadership. This research examines the relationships among the integrity framework, internal control systems, and accountability systems in Malaysia's public sector, using both primary and secondary sources.

METHODOLOGY

This study employed a cross-sectional survey using a structured questionnaire to investigate SMEs in Wukari, where the absence of a comprehensive SME database necessitated the use of the Topman formula to estimate a sample size of 156 operators. Through cluster random sampling across 10 wards and with the assistance of six enumerators, 145 SME operators completed the survey. The questionnaire, designed with a 5-point Likert scale, collected demographic data and information on ICT usage, including social networking platforms, mobile applications, and computer systems. Expert review established content and conceptual validity, while reliability tests using SPSS (version 23) produced Cronbach's alpha values above 0.7 across constructs—smartphone applications (0.759), social networking platforms (0.891), and computer systems (0.822)—confirming instrument reliability. Data analysis employed descriptive statistics for summaries and simple linear regression to test hypotheses, modelled as $Y = a + \beta X + e$, where SME performance (Y) was regressed on ICT variables: computer systems (X1), mobile applications (X2), and social media resources (X3).

DATA ANALYSIS

A total of 156 questionnaires were sent to operators of SMEs as part of the study. Out of 156 questionnaire copies, 145 were successfully recovered, while 11 (or 7% of the total) were not. This results in an overall response rate of 88%.

Table 1: Descriptive Statistics of Research Variables

	n	Minimum	Maximum	Mean	Std. Deviation
Computer systems	145	1.25	4.25	2.347	1.911
Mobile application software	145	1.25	4.50	2.589	1.929
Social media resources	145	1.00	4.75	2.485	1.004
Performance	145	1.17	4.00	2.351	1.719
N	**156**				

Source: field survey, 2024, as computed from SPSS version 27.

Table 1 shows the summary of the study's variables in terms of mean, standard deviations, minimum, and maximum values. The conclusion also notes that on the Likert scale used, 1 is the score given to a statement that is strongly disagree with, while 5 is the score given to a statement that is strongly agree with, while scores 2, 3 and 4 are given to strongly disagree, disagree and uncertain respectively. The findings also show that most of the respondents supported the statements made on the assessment of ICT. The respondents' perception of the computer system was that of 4.25 strongly agreeing to 1.25 strongly disagreeing. The mean value was equal to 2.347, and the standard deviation was equal to 1.911. Most of the participants were in a position to agree that market visibility is measurable. The following table, Table 1, shows the respondents' scores on the statements regarding mobile application software, which ranged from 1.25 strongly disagree to 4.50 strongly agree. A standard deviation of 1.929 was equal to a mean of 2.589. The results show that most of the participants confirmed that the statements regarding performance evaluations were true. The answers on the social media technology are also reflected in Table 1, ranging from absolute disagreement to agreement on a scale of 1.00 – 4.75/5. The mean plus the standard deviation was 2.485. Hence, it appears that the majority agreed with the comments on the application of the criterion of firm survival. The Performance ratings obtained during the recording ranged from 4.00 on the strongly agree option to 1.17 on the strongly disagree option. For the standard deviation, we got 1.719, and the mean was 2.35.

TEST OF HYPOTHESES

Ho1: Computer systems have no significant effect on performance of small and medium enterprises in Nigeria
Ho2: Mobile application software has no significant effect on performance of small and medium enterprises in Nigeria
Ho3: Social media resources have no significant effect on performance of small and medium enterprises in Nigeria

Table 2: Model summary of the effect of ICT on performance of SMEs in Wukari

Model	R	R Square	Adjusted R Square	Estimate
1	.614[a]	.426	.416	2.32

a. Predictors: (Constant), computer systems, mobile application software, and social media resources
Source: SPSS 2024

Table 3: ANOVA of the effect of information and communication technology (ICT) on the performance of SMEs in Wukari

Model		Sum of Squares	DF	Mean Square	F	Sig
Sig.						
1	Regression	998.15	4	998.15	201.320	.000[b]
	Residual	1343.49	271	4.96		
	Total	2341.64	275			

a. Dependent Variable: Marketing performance
b. Predictors: (Constant), computer systems, mobile application software and social media resources
Source: SPSS 2024

Table 4: Coefficients determination of the effect of information and communication technology on the performance of SMEs in Wukari

	Unstandardized Coefficients		Standardized Coefficient		
Model	B	Error	Beta	t	Std.
1 (Constant)	16.04	.827		19.403	000
Computer systems.	344	.073.	332	4.720	.000
Mobile application software	.345	.087.	309	3.980	.000
Social media resources	.234	.028	.411	3.652	.002
Social media system	.538	.086	.360	6.262	.000

a. Dependent Variable: Marketing performance

Source: SPSS 2024

The effects of e-commerce on SMEs in Wukari are presented in Tables 2, 3 and 4. Table 3 also shows the R column, where performance is the dependent variable and ICT is the independent variable. The summary model shows that the effect size is 61.4 per cent. In addition, ICT accounts for about 42.6% of the changes in SME performance, as indicated by the R2 value of 0.426. This shows that, ceteris paribus, variations in the extent of ICT usage by SMEs may impact their performance by 42.6%. Table 4 also shows that the regression model is significant. The F-test value of 201.320, $P < 0.05$, suggests that ICT has a significant effect on the performance of SMEs in Wukari.

Table 4 shows the coefficients that define the accuracy of each ICT component in terms of the SMEs' performance prediction. Computer systems, mobile application software, social media resources, and overall performance all have high predictive value for SMEs, with $p<0.05$ and t tests. This goes further to support the growing body of literature showing that SMEs derive benefits from the adoption of ICT. The performance of each ICT parameter model is presented in the standardised beta coefficient column of Table 5 below. Out of the total social media components and systems, resources occupy the largest fraction of 0.411%, systems occupy 0.360% and mobile application software occupies 0.309% which are the three biggest fractions of social media in general. As to the null hypothesis, further research may provide the material proving the opposite hypotheses and denying the null one. The computer system, mobile application software, social media resource, and social media system may be considered as the independent variables because all of the p-values are less than 0.05. Similar studies show that IM helps SMEs increase their efficiency of operations in Wukari, Nigeria.

DISCUSSION OF FINDINGS

Preliminary analysis shows that computer systems are among the several forms of ICTs that SMEs derive benefits from. Although numerous studies have shown that information and communication technology (ICT) tools can greatly improve SMEs' performance, no study in Nigeria has found that ICT increases the visibility of micro, small, and medium-sized enterprises (MSMEs) in the market (Okundaye et al., 2019; Olatunji, 2015; Shettima & Sharma, 2020; Igwe et al., 2020). There is growing literature which suggests a relationship between ICT usage by SMEs and their market presence. The results of this study suggest that entrepreneurs in Nigeria running small and medium-sized enterprises (SMEs) could benefit from using ICT

to boost their brands' visibility. Some of the ways we may use to measure this visibility include market share, brand awareness, customer acquisition, and market control. This research suggests that SMEs might employ ICT to market their products and services more attractively in the target areas, thereby attracting more clients.

The second conclusion from the research is that the performance of SMEs is enhanced by mobile application software, a kind of ICT. Various research suggest that SMEs in Nigeria are deeply impacted by ICT technology. However, from the existing literature, Okatunji (2015), Shettima & Sharma (2020) and Okundaye et al., (2019), there is still no empirical evidence that supports the assertion that ICT enhances the marketing effectiveness of SMEs in Nigeria. Therefore, our study contributes to the existing literature by providing evidence that ICT has a causal effect on the marketing effectiveness of MSMEs in Nigeria. Based on the findings of this study, owners and operators of SMEs in Nigeria can increase their marketing ROI through the adoption of ICT solutions for customer interaction, sales, retention and market share. Thus, through the application of various ICT technologies, SMEs in Nigeria might enhance the efficiency of their marketing campaigns by a number of times and in the long term.

Finally, the findings of the study showed that the integration of social media resources in to ICT had a positive significant impact on the performance of SMEs. The study on the relationship between ICT usage by MSMEs and their company sustainability in Nigeria is still in its infancy. Research studies on the link between knowledge management and the performance of Nigerian SMEs are scarce; the existing studies include those of Igwe et al. (2020), Okundaye et al. (2019), Olatunji (2015), and Shettima and Sharma (2020). This goes to show how little appreciation there is of the effects of ICT on the profitability of small and medium-sized firms. This research supplements empirical findings by describing how operators of SMEs can significantly increase their financial resilience to fluctuating environmental conditions through the application of ICTs.

CONCLUSION

In conclusion, the research for this study, therefore, mainly relied on the survey of small and medium business owners and operators. In a way aligned to the objectives of the study, descriptive and inferential statistics were used to analyze and comprehend the data. The findings of the study showed that the adoption of ICT improved the performance of SMEs. Consequently, the findings suggest that SME proprietors and operators can increase their marketing profile, marketing effectiveness, and the likelihood of business viability by incorporating ICT tools including PCs, mobile applications, and social media.

The study's empirical data gathered recently shows that small and medium-sized firms (SMEs) in Nigeria could potentially benefit greatly from adopting and using ICT to improve their performance.

RECOMMENDATIONS

i. SMEs should adopt and upgrade computer systems to strengthen efficiency in operations such as accounting, record-keeping, and inventory management.
ii. SME operators should leverage mobile applications for sales, payment systems, and customer engagement to expand market access and improve transaction efficiency.
iii. SMEs should integrate social media platforms into marketing strategies to boost visibility, customer loyalty, and brand promotion.

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