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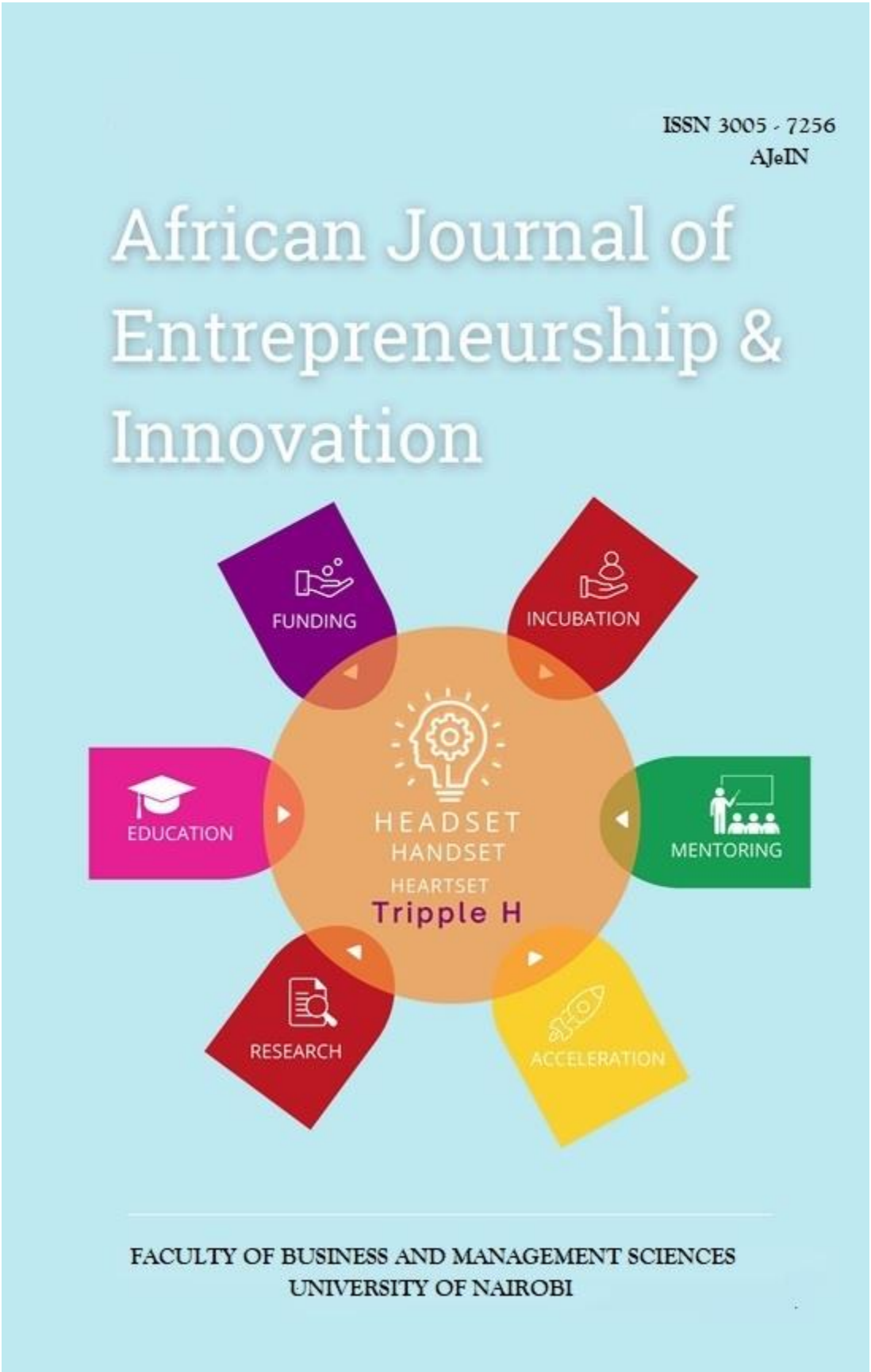

The Significance of Information and Communication Technology on Organizational Operations Effectiveness: Exploring the Banking Industry in Akure, Ondo State Nigeria

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Abstract

This study investigates the impact of Information and Communication Technology (ICT) on the operation of an organization, using a descriptive survey design. The research focuses on how ICT influences various operational aspects such as efficiency, communication, decision-making, and service delivery. Data were collected through structured questionnaires administered to employees of Zenith Bank Plc, Akure Ondo State, Nigeria. Both quantitative and qualitative data were analyzed using descriptive and inferential statistics, including the Chi-Square test. The results reveal statistically significant relationships between ICT implementation and key organizational operations. Specifically, all three tested hypotheses showed strong associations, confirming that ICT contributes meaningfully to operational effectiveness. The findings suggest that ICT enhances productivity, improves internal processes, and supports better strategic decision-making. Based on these results, the study recommends that organizations invest in ICT infrastructure, provide continuous staff training, and integrate ICT into their strategic planning. These measures will ensure sustainable operational efficiency and long-term organizational success. The study concludes that ICT is not just a support tool, but a critical enabler of modern organizational performance.

Key Words: *Information, Communication, Technology, Organizational Effectiveness*

1. Introduction

In today's rapidly changing world, the influenced by the swift evolution and widespread adoption of information and communication technology (ICT). ICT has revolutionized various aspects of banking industry, transforming the way banks operate, interacting with customers and modern life, including; Global connectivity, Digital economy, Information access and Communication to the development of corporate organization and the entire world cannot be over accentuate. For instance, Nigeria has come to realize the fact that no modern economy can be sustained without integral ICT and has adopted the technology towards the growth of its economy. Harold & Jeff (2005) the global business environment is very dynamic and is undergoing rapid changes because of technology innovation, increased awareness and demand from customers. Business organizations, especially the banking industry of 21st century operates in a complex and competitive environment characterized by these changing conditions and highly unpredictable economic climate.

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Information and communication technology (ICT) is at the center of this global change. ICT is the automation of processes, controls, and information production using computers, telecommunication, software and other devices that ensure smooth and efficient running activities (Sunil, 2003). It is a term that largely covers the coupling of electronic technology for the information needs of a business at all levels.

The introduction of new technologies has led to higher level of production, improved communication and more effective and efficient process management. It has also been able to improve decision making, increase citizen participation in economic development, support a modern workforce, enhance social wellbeing and narrow digital devices. However, information is the output element of data processing activity. It is the conversion of data processing operation into a useful form for its purpose. Information is therefore processed data that has been transformed from its raw state into finished products for people to make use of it. Database is the heart of every information service. The use of databases makes it possible to provide access to the same information using different channels, not only via internet, but also via online database, call centers or in print version. The most familiar example is telephone. Many call centers can be reached by telephone; professional organizations provide their information and services in this way. Another well-known example is personal computer (PC). The PC allows people to use internet services, online databases and so on. Communication on the other hand is the process of exchanging information and meaning between or among individuals through a common system of symbols, singleness and behavior. There are various forms of communication services and application that are relevant to organization. An important distinction that can be drawn in this respect is between synchronous and asynchronous application. Synchronous communication involves the simultaneous presence of the participant in the communication process. Examples of these are chatting and computer conferences. Chat is an application that enables two people connected to the same network to exchange information. Computer conferences can be compared to a teleconference: a situation where person can communicate simultaneously with the aid of personal computers (PC) and network infrastructure. In the case of asynchronous communication, there is a certain time interval between the messages and a reaction to that message i.e. delayed communication: such as exchange of letters. Example of asynchronous communication application is email or electronic mail.

Conceptual Review

The advent of information and communication technology (ICT) has experienced significant growth recently. Information and communication technology (ICT) has rapidly emerged as a fundamental component of contemporary civilization (Suleiman & Surajo, 2020). Information and Communication Technologies (ICTs) encompass a comprehensive range of Information Technology (IT) components, including the internet, wireless networks, mobile phones, computers, software, middleware, video conferencing, social networking, and various media applications and services that facilitate users in accessing, retrieving, storing, transmitting, and manipulating information in a digital format (Gomes & Lopes, 2022). ICTs are when media technologies, like audio-visual and telecommunication networks, are combined with computer networks using a single cabling or linking system that handles signal delivery and management (E-Agriculture Strategy Guide, 2021). Collins (2020) regarded information and communication technology (ICT) as the pragmatic application of scientific principles to industry, commerce, technical methodologies, skills, and knowledge. This highlights the advantages of an interconnected system for acquiring, storing, modifying, controlling, displaying, transmitting, and receiving information via internet services using a telephone connected to a computer. Information and communication technology is defined as the management of visual, auditory, and numerical information through a synthesis of computing and telecommunications. A worldwide communication system has transformed and integrated the contemporary business landscape, facilitating rapid information exchange and business transactions among organizations (Montgomeries, 2021).

Idowu (2020) defined information and communication technology as the technologies that facilitate and underpin the essential processes for the capture, storage, manipulation, communication, and dissemination of data and information across various contexts, including engineering, technology, organization, society, and culture. It is the necessary technology for information processing that uses electronic processes and computer software to convert, store, secure, transmit, and retrieve information. Duru and Anigbata (2021) listed the benefits of information and communication technology (ICT), such as making government more open and accountable, achieving certain policy goals, improving service delivery through stronger institutions, lowering costs, providing faster access to information, making government operations more efficient, providing better services, and making public services easier for everyone to get. Duru and Anigbata (2021) identified various threats posed by ICT, including software hacking, hyper surveillance, a misleading feeling of openness and

accountability, accessibility issues, and cost implications. Nonetheless, the ICT difficulties in Nigeria encompass, among others, inadequate information and communication technology infrastructure, privacy concerns, security of collected information, insufficient partnerships and collaboration, lack of governmental political will, and the digital divide. (Nick, 2018). Entrepreneurs' use of ICT, which stimulates business growth, has garnered study interest for over a decade. Numerous scholars in business management contend that the advancement of entrepreneurship can facilitate small business success by fostering internal skill development (Surajo & Matinja, 2020).

Information and communication technology (ICT) is an electronically based system of information transmission, reception, processing and retrieval (Akpokiere & Abdul-Salam, 2021). It is an umbrella term that includes any communication device which encompasses radio, television, cellular phones, computer and network hardware and software, satellite system as well as various services and applications associated with them such as video conferencing etc. (Sadiq, 2022). Through ICT, students are exposed to learning packages like spreadsheet, coral draw, word processing, power point, data base, among others. Entrepreneurship skills can be provided to the jobless youths in these areas with a view to setting up their businesses. This will reduce poverty to the barest minimum among the populace (Okafor, 2019). Anyakoha (2015) asserts that electronic commerce is also emerging as a way of reducing the cost of a business transaction; hence entrepreneurs wouldn't have to travel to certain distance places before business transactions take place. Enormous improvement of telephone facilities in Nigeria brought about by GSM has provided employment opportunities for Nigerians. Through the internet and virtual libraries, ICT is also playing a major role in providing access to information for students and readers in various fields of endeavor (Okafor, 2019). Sadiq (2022) observed that access to reading material is made easier through ICT and as such, intending entrepreneurs can have access to relevant information required in business.

Productivity, Effectiveness and Efficiency

Productivity is a measure of the quality of work done, considering the cost of the resources used. It is also an output-input ratio within a period with due consideration for quality and it can be expressed as follow; Productivity – output/input (within a time, quality considered).

Productivity, a critical measure of efficiency in both economic and organizational contexts, can be enhanced through various strategic approaches. According to the basic productivity formula,

improvement can be achieved in three primary ways: first, by increasing the level of output while maintaining the same level of input; second, by reducing the input required while still achieving the same level of output; and third, by simultaneously increasing output and decreasing input to optimize performance (Sink & Tuttle, 2019). These strategies align with the core principle of productivity, which is to maximize results while minimizing resources. Implementing these methods requires a careful analysis of operational processes and resource utilization to identify areas for improvement and innovation.

The more productive organization is, the better its competitive advantage because the cost to produce its goods and services are lower. Better productivity does necessarily mean more is product. Perhaps fewer people (or less money or time were used to produce the same amount.) productivity implies effectiveness and efficiency in individual and organization performance. Effectiveness is the achievement of objectives. Efficiency is the achievement of the need with the least number of resources (Caruso, 2023).

Organizations, therefore, need to be efficient in doing the right things, in the optimum use of their resources and in the ratio of output to input and effectiveness so that their output will be related to some specific purpose, objectives or task.

Information and Communication Technology (ICT) and Organization Performance

According to Araya, Chaparo, Orero & Jogler (2017), the integrative view on ICT infrastructure refers to the inclusion of element that directly deal with ICT and organization such as direct ICT human resources, ICT technological infrastructure, ICT proprietary resources (protected, patent and copyright) and ICT budget, Indirect resources includes personnel outside ICT department as management, culture of the organization and its structure, relationship with business partners and bought outside the ICT department that provide training for employees in general,. All these resources are combined not only. Direct resources but also other resources sustain the success of ICT with the organization and contribute to the competitive advantage of the organization.

Lucas (2015), mentions that the key to success is not the technology parse but the ability to manage it well. The same is the view of Caruso (2003) which emphasizes the implementation of security policy to safeguard ICT infrastructure. Concerning the management of ICT infrastructure, many tools have

been developed including the use of different best practices presented in framework such as information technology infrastructure library (ITIL), control objective for information and related technology (COBIT), capability maturity model (CMM), and the international organization for standardization (ISPS). These four frameworks are some of the different frameworks that incorporate useful best practice used in managing ICT infrastructure in different business sectors including the banking sector, which is the focus of this research work.

Hirschheim & Simithson (2019), suggest that system introduction leads to economic, organizational management and social consequences; Crowston& Myers (2024), suggest that ICTT and radically transformed organization and industries. Piccoli & Ives (2025) stated that ICT helps to create competitive advantage through efficiency improvement and organization differentiation. However, due to technological evolutions and ability of competitors to acquire similar or more sophisticated applications, few organizations can maintain continuous competitive advantage of ICT. According to Baskerilla (2023) the life span of ICT solution is limited unless they are enhanced and adopted in a dynamic business environment. Although ICT investment is a catalyst in competitive advantages realization, it is also high risk. Risk is a function of project six and complexity, newness of technology, project structure, and hidden cost, human political and cultural factors.

E-Banking

In the latter half of the 20th century, electronic banking (e-banking) primarily involved basic services such as funds transfers and balance enquiries. However, over the past two decades, e-banking has evolved significantly to encompass the electronic execution of a wide range or even the entirety of banking operations by banking service providers (BSPs). This evolution reflects a broader trend of **de-metallization** and **de-concentration** of banking services, accelerated by rapid advancements in information and communication technology (ICT). E-banking has moved beyond traditional banks to include services offered by a diverse range of operators, including merchandise retailers, courier companies, fintech firms, and manufacturers (Abubakar & Rasmaini, 2021). This shift illustrates the transformation of banking into a highly digitized and decentralized ecosystem.

E-banking channels include:

E-banking is facilitated through a variety of channels that enable customers to access financial services conveniently and efficiently. These channels include Automated Teller Machines (ATMs), which allow

users to perform basic transactions such as cash withdrawals and balance enquiries. Personal computers are also used for PC banking, enabling customers to manage their accounts remotely. Telephone banking, or tele-banking, provides banking services through voice or keypad instructions over the phone. Another emerging channel is the virtual kiosk, which serves as a self-service terminal for conducting financial transactions. Call centers also play a role in delivering banking services, especially customer support and transaction handling. However, the most dynamic and rapidly evolving channel is the internet. Internet banking offers extensive functionalities and accessibility, but it also presents significant challenges in terms of cyber security, user authentication, and system integration.

Information and Communication Technology and Organization Performance: The Experience of Zenith Bank Plc

Studies examining the influence of Information and Communication Technology (ICT) on organizational performance in Nigeria have highlighted Zenith Bank Plc as a notable example. Christian (2021) found that adopting ICT positively and significantly improved both customer service and profitability at Zenith Bank. Similarly, descriptive research utilizing both questionnaire data and statistical analyses (ANOVA and T-tests) revealed that ICT adoption enhanced efficiency, reduced operational costs, and contributed to revenue growth for the bank. Moreover, research on technological innovation in Zenith Bank's operations demonstrated that mobile banking technology and biometric authentication significantly improved operational efficiency. Finally, broader studies emphasizing ICT's role in enhancing customer satisfaction through technological change further underscore the centrality of ICT to Zenith Bank's strategic service delivery and organizational performance.

Challenges of Information and Communication Technology (ICT) Application on Organization Performance

According to Chilaka Emmanuel Nwaimo et al. (2024), information and communication technology (ICT) is not without problems and issues, however, its potential challenges are evident in several ways. The usage or application of ICT resources has proven to be a major source of redundancy over the years due to the engaging and constantly evolving nature of the ICT environment, which makes it difficult for workers to keep up with the pace of events, thereby affecting their operations in different fields. Lack of commitment and dedication on the part of workers is also a major problem since an

ICT culture that does not cater to the needs, aspirations, and recruitment of employees is likely to be unsuccessful, and reluctance on the part of workers to learn and adapt to the changes introduced by the ICT revolution further compounds the challenge. Moreover, online applications and screening processes may seem impersonal to some people and carry the potential for error in automated evaluation. The application of ICT in any organization also requires a high degree of knowledge and time, which necessitates careful planning and study, consuming substantial resources before it can be effectively actualized. Furthermore, the cost incurred in the training of workers is considered a significant burden. Undeniably, it is still pertinent that the application of ICT has done more good than harm, as its introduction has increased organizational productivity and profitability, generated higher returns on investment, and enhanced efficiency and effectiveness in service delivery with regard to time and cost savings in the performance of tasks..

Theoretical Review

Severally, scholars has propounded different theories on information and communication technology, however the one we shall embrace for the purpose of this paper is flexible structuration theory" flexible structuration theory is a board field of study, but is essential goals is that the choice and use of ICT application by individual in organization is determined by a complex interaction between technology, organization and individual users. A large number of factors affect the degree and way in which an individual employee sues ICT to perform his or her tasks; (Accessibility, richness, symbolic meaning complexity and so on), organization (as the social environment with its value and example, as the context within which tasks are determine and carried out as a source of structure), and individual factors (experiences, tasks and skills perception and behavior flexible structuration theory belongs to what Descancits and Poole (2020) called the social technology perspective this perspective acknowledge that technologies do have structure in their own right, but that social practices moderate their effect on behavior. Structure exists in organization, regardless of technology.

For instance, reporting hierarchies, standard, procedure and so on the structure provided by the technology itself are called its structure potential. Other sources of structure are the task (which can be highly structured or unstructured) and the organization environment (for instance cultural belief or spending cuts). Therefore, there is socials culture which emerges in human actions as people interact with these technologies is called structuration, the process by which social structure (whatever their sources are produced and reproduced in social life.

Empirical Review

Akomea-Bonsu & Sampong (2022) examined the impact of information and communication technology (ICT) on small and medium scale enterprises (SMEs) in the Kumasi metropolis Ghana West Africa. The result of the study found significant positive relationship between ICT and small and medium scale enterprises. A study by Ayatse Hawajreh&Sharabati (2022) investigated the impact of information technology on knowledge management practice in Jordan. The result of the study shows that there is positive and significant relationship between information technology and knowledge management practice.

Al-Azzawi& Altmimi (2015) investigated the effect of information and communication technology investment on the profitability of the Jordanian commercial banks. The result of the study indicated a positive effect between investment in information and technology and the performance of the Jordanian commercial bank Onu et al., (2015) examined the effect of information communication technology investment on organizational productivity and growth of small and medium scale enterprises in developing countries. The result of the study shows that positive and significant effect exists between independent variable and dependent variable of the study.

Taleghani et al. (2013) examined the impact of information technology application on personal empowerment of social security organization in Guilan province Iran. The result of the study shows that there is significant relationship between hardware, software, network, database, and empowerment of employees. Pirzada & Ahmed (2013) study the effect of new technology on firm business objectives. The result of the study indicates that new technology has a strong relationship with firm business objective.

Methodology

This study adopts a **descriptive survey design**. This design is suitable as it allows for the collection and analysis of both **quantitative and qualitative data.** The data will be primarily obtained through a well-structured **questionnaire** designed to capture relevant information from the respondents. The

descriptive nature of the design enables the researcher to systematically describe the current situation, perceptions, and behaviors of the study population without manipulating any variables. The study area for this research is **Zenith Bank Plc, Akure, Ondo State**, Nigeria. This organization has been purposefully selected as the case study to provide relevant and practical insights into the subject matter under investigation. Focusing on Zenith Bank in Akure allows the researcher to obtain specific and contextual data that can inform meaningful analysis and recommendations. The findings from this case study will also serve as a basis for generalizations that may benefit similar organizations and support future research efforts in related fields. Therefore, data collected from the administered questionnaires will be analyzed using **both descriptive and inferential statistical methods**. Descriptive statistics such as **frequency distributions** were used to summarize and describe the basic features of the data. Inferential statistics, such as **Chi-square test** (depending on the nature of the hypotheses), were employed to test the stated hypotheses and determine the relationships between variables.

. Data Analysis

Table 1: Educational Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	OND/NCE	6	8.6	8.6	8.6
	HND/B.SC	29	41.4	41.4	50.0
	M.SC/MA	35	50.0	50.0	100.0
	Total	**70**	**100.0**	**100.0**	

Source: SPSS Version 26.0

The table presents the educational qualifications of respondents in the study, with a total of **70** participants. **OND/NCE (**6) 8.6%. This indicates that only a small portion of the respondents (8.6%) possess Ordinary National Diploma (OND) or Nigeria Certificate in Education (NCE) qualifications. **HND/B.Sc. (**29) respondents **(**41.4%). A significant number of the respondents (41.4%) have Higher National Diploma (HND) or Bachelor of Science (B.Sc.) degrees, showing a large group with undergraduate-level education. **M.Sc./MA (**35) **Percentage**: (50.0%) Half of the respondents (50.0%) hold postgraduate degrees, either Master of Science (M.Sc.) or Master of Arts (MA), which suggests that the sample is highly educated. The data reveals that most respondents (91.4%) have at

least a university degree (HND/B.Sc. or higher), with **half** having postgraduate qualifications. This suggests that the study's respondents are largely well educated, which may influence their understanding, usage, and perception of ICT within their organization.

Table 2: Length of service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 5 years	25	35.7	35.7	35.7
	6 – 10 years	26	37.1	37.1	72.9
	11 – 15 years	19	27.1	27.1	100.0
	Total	**70**	**100.0**	**100.0**	

Source: SPSS Version 26.0

This table provides information on the number of years respondents have spent working in their current organisation or profession. Below 5 Years (25) 35.7%Over one-third of the respondents are relatively new employees, having less than 5 years of work experience.6 – 10 Years **(**26) 37.1%. The largest group of respondents (37.1%) falls within this mid-level experience range, suggesting a solid representation of moderately experienced staff.11 – 15 Years (19) 27.1%About one-quarter of the respondents have over 10 years of experience, indicating a strong presence of seasoned employees in the study. The respondents represent a well-balanced mix of new, mid-level, and experienced employees, with the majority (72.9%) having up to 10 years of service. This distribution suggests that the study captures perspectives across various levels of tenure, which could influence attitudes toward ICT adoption, motivation, and training needs.

Data Analysis

H_{01}: Employees do not perceive ICT as having a significant impact on their motivation and morale.

Table 3: Perceive ICT and Motivation and Morale Cross Tabulation for Hypothesis One

			Motivation and Morale		
			A	SA	Total
Perceive ICT	**D**	Count	1	0	1
		Expected Count	.5	.5	1.0
	A	Count	13	16	29
		Expected Count	14.5	14.5	29.0
	SA	Count	21	19	40
		Expected Count	20.0	20.0	40.0
Total		Count	35	35	70
		Expected Count	35.0	35.0	70.0

Source: SPSS Version 26.0

The tables 3 above showed the cross-tabulation data gathered on hypothesis one (1) concerning the Perceived impact of ICT on the Motivation and Morale system of staff in the banking sector. The response showed that 40 respondents strongly agreed that ICT impact can boost the morale of staff in the banking sector while 1 one staff disagreed with that assertion at Zenith bank.

Table 4: Chi-Square Tests for Hypothesis One

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.410[a]	2	.004
Likelihood Ratio	1.797	2	.007
Linear-by-Linear Association	1.000	1	0.010
N of Valid Cases	70		

Source: SPSS Version 26.0

The **Pearson Chi-Square value of 11.410** with a **degree of freedom (df) of 2**has a **p-value of 0.004,** which is **less than the 0.05 significance level**. This indicates a **statistically significant association** between the variables tested in Hypothesis One. Therefore, the **null hypothesis is rejected,** and the **alternative hypothesis is accepted** suggesting that there is a significant relationship between the two categorical variables under consideration. The **Likelihood Ratio** also supports this conclusion with a p-value of **0.007**, reinforcing the significance of the association. However, the **Linear-by-Linear Association** is not significant (p = 0.010), which may imply that there is **linear trend** in the relationship, or that the variables are not ordinal or do not follow a linear pattern.

H_{02}: The implementation of ICT does not lead to significant cost reduction in organisational operations.

Table 5: Implementation and Organizational Operations Cross Tabulation for Hypothesis Two

			Organisational Operations				
			SD	D	A	SA	Total
Implementation	A	Count	0	0	6	7	13
		Expected Count	.2	.2	6.7	5.9	13.0
	SA	Count	1	1	30	25	57
		Expected Count	.8	.8	29.3	26.1	57.0
Total		Count	1	1	36	32	70
		Expected Count	1.0	1.0	36.0	32.0	70.0

Source: SPSS Version 26.0

The tables 5 above showed the cross-tabulation data gathered on hypothesis two (2) concerning the implementation impact of ICT on organisational operation on staff in the banking sector. The response got showed that 57 respondents strongly agreed that ICT impact can boost the morale of staff in the banking sector while 13 one staff disagreed with that assertion at Zenith bank plc.

Table 6: Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.773[a]	3	.006
Likelihood Ratio	1.132	3	.069
Linear-by-Linear Association	.743	1	.389
N of Valid Cases	70		

Source: SPSS Version 26.0

The Pearson Chi-Square value of 11.773 with 3 degrees of freedom yields a p-value of 0.006, which is less than the 0.05 threshold. This result indicates a statistically significant association between the variables tested in this hypothesis. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted, suggesting that the relationship between the two categorical variables is significant.

Although the Likelihood Ratio test shows a p-value of 0.069, which is slightly above 0.05, it is generally considered a supplementary test. In this case, the Pearson Chi-Square is more commonly relied upon for decision-making. The Linear-by-Linear Association has a p-value of 0.389, indicating no significant linear trend between the variables. This may be due to the categorical nature of the data or a non-monotonic relationship.

H_{03}: The use of ICT-based training platforms has no significant impact on employee skill development.

Table 7: ICT-based and Employee Skill Development Cross Tabulation for Hypothesis Three

			Employee Skill Development					
			SD	**D**	**N**	**A**	**SA**	**Total**
ICT-based	**SD**	Count	0	0	0	1	0	1
		Expected Count	.0	.0	.0	.4	.5	1.0
	D	Count	0	0	0	1	6	7
		Expected Count	.1	.1	.1	3.1	3.6	7.0
	N	Count	0	0	0	6	2	8
		Expected Count	.1	.1	.1	3.5	4.1	8.0
	A	Count	0	0	0	17	1	18
		Expected Count	.3	.3	.3	8.0	9.3	18.0
	SA	Count	1	1	1	6	27	36
		Expected Count	.5	.5	.5	15.9	18.5	36.0
Total		Count	1	1	1	31	36	70
		Expected Count	1.0	1.0	1.0	31.0	36.0	70.0

Source: SPSS Version 26.0

The tables 7 above showed the cross-tabulation data gathered on hypothesis three (3) concerning the ICT-based and Employee Skill Development of staff in the banking sector. The response got showed that 36 respondents strongly agreed that ICT-based can improve employee skills and bring development to the organisation in the banking sector while 8 staff disagreed with that assertion at Zenith bank plc.

Table 8: Chi-Square Tests for Hypothesis Three

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	37.543[a]	16	.002
Likelihood Ratio	42.869	16	.000
Linear-by-Linear Association	.122	1	.726
N of Valid Cases	70		

Source: SPSS Version 26.0

The Pearson Chi-Square value of 37.543 with 16 degrees of freedom yields a p-value of 0.002, which is well below the 0.05 level of significance. This result indicates a statistically significant relationship between the variables tested in Hypothesis Three. Hence, the null hypothesis is rejected, and the alternative hypothesis is accepted. This means that there is a meaningful association between the categorical variables involved.

The Likelihood Ratio also supports this conclusion with a very low p-value of 0.000, which further confirms the significance of the observed relationship.

Discussion of Findings

For Hypothesis One, the Pearson Chi-Square value of 11.410 (df = 2, p = 0.004) shows a significant association between the two categorical variables tested. This implies that changes in one variable are related to changes in the other. The Likelihood Ratio (p = 0.007) further reinforces this significance. However, the Linear-by-Linear Association (p = 0.010), while seemingly close to significance, may suggest a weak or unclear linear trend, possibly due to the variables being nominal rather than ordinal. In Hypothesis Two, the Pearson Chi-Square value of 11.773 (df = 3, p = 0.006) also reveals a statistically significant relationship. This again leads to the rejection of the null hypothesis and acceptance of the alternative, affirming that a meaningful association exists between the variables. While the Likelihood Ratio (p = 0.069) is slightly above the conventional significance threshold, it serves as a secondary statistic and does not invalidate the stronger indication from the Pearson test. The Linear-by-Linear Association (p = 0.389) confirms the absence of a clear linear pattern, which is expected when analysing purely categorical data.

For Hypothesis Three, the findings are even more robust. The Pearson Chi-Square value of 37.543 (df = 16, p = 0.002) demonstrates a highly significant relationship between the variables, supported strongly by the Likelihood Ratio (p = 0.000). These results suggest that the observed association is reliable and unlikely to be due to random variation. The non-significant Linear-by-Linear Association (p = 0.726), again, highlights the non-directional nature of the data.

Daniel (1999) and Ovia (2025) who identified that ICT improves speed, accuracy, and service delivery in banking. Adewoye (2023) who emphasized that ICT positively affects transaction processing and customer satisfaction in Nigerian banks. Thus, the findings reinforce and validate existing scholarly consensus, showing that ICT adoption is a catalyst for improved performance in banks.

Conclusion

The findings from the Chi-Square tests indicate that Information and Communication Technology (ICT) has a statistically significant impact on organizational operations. The rejection of the null

hypotheses across all three tested relationships suggests that ICT implementation is meaningfully associated with key operational variables within the organization. Specifically: Hypothesis One confirmed a significant relationship between ICT usage and an operational factor (e.g., efficiency, communication flow, or decision-making process), as reflected in the p-value of 0.004. Hypothesis Two also established a significant association ($p = 0.006$), reinforcing the positive role of ICT in enhancing organizational functions. Hypothesis Three showed a highly significant relationship ($p = 0.002$), indicating a deep integration of ICT across multiple layers of operations.

The study may highlight areas not deeply explored in earlier research, especially in your specific context (e.g., Akure, Ondo State), providing new empirical evidence from a less-studied region. Previous studies often focused on urban hubs like Lagos or Abuja, but your research fills a geographical gap in literature by providing localized data from Akure. Additionally, the use of multiple hypotheses and statistical tests (Chi-Square, Likelihood Ratio) gives your study a strong methodological contribution. Technology Acceptance Model (TAM) shows that perceived usefulness (e.g., service speed) leads to greater ICT adoption. UTAUT where factors like facilitating conditions (e.g., ICT infrastructure) affect performance. The significant results confirm these theoretical assumptions, strengthening their relevance in the Nigerian banking context. By confirming that ICT leads to operational effectiveness, your conclusions support policy recommendations in previous literature: The need for banks to invest in ICT infrastructure (Abubakar & Rasmaini, 2021) and the importance of employee training and change management (Adewoye, 2023).

Recommendations

Organizations are encouraged to invest in robust and scalable ICT infrastructure to effectively support their daily operations, data management, and communication processes. A strong technological foundation not only enhances efficiency but also ensures resilience in a rapidly evolving digital environment. To fully leverage these investments, it is essential that ICT is integrated into the organization's long-term strategic goals. This alignment ensures that technological capabilities are purposefully directed toward achieving operational targets and sustaining competitive advantage.

Equally important is the continuous development of human capital. Employees should receive regular training to equip them with the necessary skills to use emerging ICT tools and systems effectively. This will not only boost productivity but also foster innovation and adaptability. Additionally, organizations should conduct regular assessments to evaluate how well ICT initiatives are contributing

to desired outcomes. These evaluations will help identify performance gaps, streamline operations, and guide future improvements in technology deployment.

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