THE EFFECT OF UTILIZATION OF INFORMATION TECHNOLOGY ON ORGANIZATIONAL PERFORMANCE IN KADUNA STATE, NIGERIA

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ABSTRACT
The study objectives are to examine the effect of utilization of Information Technology on Organizational performance in Kaduna Geographic information Service Kaduna State, Nigeria. A total of 191 questionnaires were retrieved from the respondents of the study and distributed using the simple random sampling technique. The questionnaires were screened, and only 163 returned questionnaires were qualified for further analysis. The Descriptive, and inferential statistic was used to analyzed the data, using Statistic Package for Social Science (SPSS) version 25. Findings reveal that Information technology operation has a positive, and significant effect on organizational performance, just as information technology usage has a positive, and significant effect on organizational performance. Therefore, findings showed that the variable of information technology challenges did not significantly contribute to that joint significant effect. However, the variables of information technology operation and information technology usage significantly contributed to the model involving information technology and organizational performance with adjusted R^2 of 0.797 which signifies that information technology accounted for 79.7% change or variation in the organizational performance, thus the information technology usage has a joint significant effect on organizational performance. Finally, the study recommends that workshop should be organized in order to train employees on how to operate and work with GIS. Besides, the employees are to be properly trained on specialized skill sets to understand and interpret information collected in a GIS, so as to increase their performance.

Keywords: Information Technology operation, Information Technology Usage, Information Technology Challenges, Information Technology Steps and Organizational performance

1. Introduction

Today, Survival and development of the world's fastest growing body of knowledge for better business performance solely depend on information technology (IT). Even though, IT is a very complex processes in Software Infrastructure, capacity and capability which determines the equilibrium for national security, the **creation of wealth and for business continuity of nations at all levels (Kemi, 2016).** It has play a significant role in to competitive and dynamic business environment with reference to it impact on superior information system. According to Olaoye, Olaofe-Obasesin and Akanni (2019) IT constitutes hardware, a network,

software, the database and other essential tools which are useful for corporate organizational performance.

Similarly, De Haes and Van Grembergen, (2013) has acknowledged IT as a vital organizational ability to exploit opportunities for innovation and enhance organizational performance. Even though, IT represents a modern platform for executing managerial processes and improve organizational performance (Karakara & Osabuohien, 2020). Therefore, the use of IT has become imperious for efficient, quality, and innovative organizational success (Al-Qatamin & Al-Omari, 2020; Attour & Chaupain-Guillot, 2020). Thus, modern Organizations are highly relying on IT to enhance their innovative skill and performance (Benbunan-Fich, Desouza & Andersen, 2020; Pang, Lee & Delone, 2014).

Performance can be defined as to the firm ability to achieve its objectives in terms of high profit, quality product, large market share, good financial status and survival growth at a determine time using relevant strategy for action (Obiwuru, Okwu, Akpa, & Nwankwere, 2011). Consequently, most businesses have realized that the performance of their employees plays a vital role in defining the performance of the business (Zheng, 2010; Ajila & Awonusi, 2004). Therefore, it is imperative for employers and managers alike to know how to get the best out of their employees so as to attain organizational goals. Accordingly, Organizational performance (OP) is an area of major concern for organizations when they seek operational tactics to allocating their resources, creating customer value, developing and realizing strategies because these efforts may ensure their profitability (Peteraf, 1993). Public organizations are not immune in this regard as these organizations create jobs, generate innovations and contribute to GDP in many countries (Rincon Dıaz & Albors Garrigos, 2017; Liu & Yang, 2020).

However, Organizational failure is due to some senior management inability to devote their time and resource to improve their product and services which is important to the incorporation of IT in their strategic plan (Agbolade, 2011). In view of these therefore, there is a need to find out if the tremendous growth in technology devices use by organizations contribute positively to various aspects of performance concept, competitiveness, relevance, efficacy and financial viability among others. Although, many studies have been conducted on the impact of IT on organizational performance (Adan & Reuben, 2020; Okeke, 2021; Ali, Ibrahim, Mohammed & Bizi 2020), there are few studies that examine the effect of utilization of IT on the organizational performance with a focus on public organization in Nigeria (Bjork, 2017). Although some studies have examined the impact of IT mechanisms on IT governance of various countries, the majority of these studies have investigated the effect of individual mechanisms on IT governance (Ali & Green, 2007), the effect of critical success factors (CSFs) on IT governance and performance (Nfuka & Rusu, 2011), and effect of IT governance mechanisms on IT and organizational performance (Tonelli et al.,2017). Moreover, some studies have explored the link between IT-enabled investments and innovation in public sector, but these studies have mainly focused on IT as a driver of innovation for promoting creativity, constancy, connectivity, and courage for long-term progress (Nemeslaki, 2014). However, studies on IT (operation, usage, challenges and steps) in the relationship between IT and organizational performance has not been fully investigated in the previous studies in public sector (Pandey & Risal 2020; Olaofe-obasesin, Akanni, Ekundayo, Ajibola & Ajibola, 2020).

This study therefore fills this knowledge gap by developing and testing a conceptual model to understand the association between IT and organizational performance, IT operation, usage and organizational performance. Hence, it on this basis that this study aims to investigate the effect of utilization of IT on the relationship between IT operation, usage, challenges and steps on organizational performance in the Kaduna State.

The major objective of this study is to examine the effect of utilization of information Technology on organization Performance in the Kaduna Geographic information Service (KADGIS). Other definite objectives of the study include to:

i. Identify the effect of IT Operation on Organizational Performance in KADGIS.
ii. Identify the effect of IT usage on Organizational Performance in KADGIS.
iii. Examine the effect of IT challenges on Organizational Performance in KADGIS
iv. Examine the effect of IT steps on Organizational Performance in KADGIS

Based on the above objectives, the following hypotheses were formulated in a null form:
i. IT Operation has no significant effect on Organizational Performance in KADGIS?
ii. IT usage has no significant effect on Organizational Performance in KADGIS?
iii. IT Challenges has no significant effect on Organizational Performance in KADGIS?
iv. IT Steps has no significant effect on Organizational Performance in KADGIS?

2. Literature Review

2.1. Concept of Information Technology

According to Cascao and Montealegre, (2016) Technology is defined as the collection of methods, procedures, tools and techniques, machinery, equipment and skills that can be provided to humans through its goods and services. However, information technology (IT) refers to combination of the ability to guide organizational processes, procedures and methods using machine to solve problems (Mashayekhi, 2007). Similarly, Tambe and Hitt (2013) termed IT as a means that led to achieve innovative means of operating and transferring information to achieve economic profits. Hence, IT usage is ever more extended to enterprises because they claimed that IT promotes effective communication, enhances efficiency, strengthens integration, and provides quality goods and services to a superior level (Bjork, 2017).

2.2. Concept of Performance

Performance is a widely used concept in various areas. Performance can be defined as a multidimensional and multifaceted concept that has been measured using different indicators (Stam, Souren, & Elfring, 2013). Similarly, Wu & Zhao, (2009) describe an organizational performance as how well the entire entity of an organization is managed and the type of value the organization renders to its customers and other stakeholders in the business. Even though, Daft (2001) regards organizational performance as an organization's capability to achieve its goals by using assets in an efficient and effective manner. In other words, Performance is an objectively wide concept, and its meaning changes in accordance with the user's perspective and needs (Kabuoh, Ogbuanu & Chieze, 2016). However, from another perspective Organizational performance is an indication of the ability of a company to efficiently achieve independent goals (Venkatraman & Ramanujam, 1986). Thus, Stephen and Edith (2012) defined performance as the success of an organization in fulfilling its purpose and therefore affirm that performance determines the existence of an organization in the economy. In addition, Suleiman (2011) defined performance as the image of how the organization uses its resources in such a way that it will ensure the attainment of its set objectives. Whereas, resources include human, material, financial and information resources, while the other resources are organized by human resource that is the employees. Also, Thao and Hwang (2015), considered performance as that which is related with a volume of yield, nature of yield, ease of yield, participation at work, productivity of the work finished and suitability of work finished. Hence, this study defines firm performance as the determinant of the survival of an organization in the economy which is also in line with (Stephen & Edith 2012) definition of firm performance.

2.3. Relationship Between Information Technology and Organizational Performance

The significance of IT to organizations and its relationship to organizational success has been examined by several writers and scholars (Olaoye, Olaofe-Obasesin &Akanni, 2019; Olaofe-Obasesin, Akanni, Ekundayo, Ajibola & Ajibola, 2020; Yauri, 2021). Even though, utilization

of IT can be evoked on the borderline of its creation in the 1960s and 70s where the technology was used by a large number of organizations or firms, especially in frequently changing work such as clerical and administrative tasks like accounting and bookkeeping work (Bird &Lehrman, 1993). However, IT has also been used as a support instrument to resolve problems in the firm's internal and external environments that are required to achieve the organizational task and objectives. Others like; Revenio, Jalagat, Nasra, & Said Al-Habsi-Assessing the Influences of IT usage on Organizational Performance Mechanisms (Blili & Raymond,1993). But even in their study the degree of usage was still subject to improvement and use of applications of IT, which is still in simple tasks and the primary activities that can be apply is not demonstrative in resolving strategic problems which is fully lacking, such as applications related to improving the role of the company against rivals, expanding into new markets, and providing managers with better information for effective decision making with the aim of target achievement, increasing responsibility and service quality. In other words, it is more applied to simple operations and it is considered that the maximum ability on the IT is lacking in the utilization.

More So, the usage of technology today, particularly the IT, not only provides a data processing tool, but has become a tactical tool that can change the structure of businesses and, as such, the rapid technological transition in IT or ICT has made the business environment strategic that many businesses have established and reexamined their own IT application to be reliable (Galliers, 1994). In agreement with previous studies, Ali, Iqbal, Haider, Tehseen, Anwar, Sohail, and Rehman (2021) affirmed that IT governance positively affected innovation and organizational performance, Yauri, (2021), asserted that the information technology utilization has a significant effect on organizational performance such as to increase in the revenue generation, helped provide the up-to-date technology in computers, and improved the data collection process. Empirical studies such as Olaofe-Obasesin, Akanni, Ekundayo, Ajibola and Ajibola, (2020) depicted accounting information systems have a positive impact on corporate organizations performance in Nigeria. Similarly, Pandey and Risal (2020) in their work argued that the utilization of IT helps to attain the target, make more accountable to the authorities and increase quality service. In Nigeria, Olaoye, Olaofe-Obasesin and Akanni (2019) discovered that information technology utilization has a significant impact on business organizational performance. The above literatures therefore, suggest that Information Technology utilization has a significant effect on organizational Performance in various sectors.

2.4. Theoretical Framework

Technology Acceptance Model (TAM): The model was established by Davis which is extensively believed as one of the influential models in information technology utilization. Therefore, usefulness and ease of usage were prioritized in the model. Perceived usefulness is an amount at which an individual is of the belief the usage of the system would enhance business performance. The perceived ease of usage targets intends users' information technology usage without much effort. The model highlights the effective use of computers efficiently (Davis 1989; Rogers 1983; Hashim etal,. 2012; Olaoye, Olaofe-Obasesin & Akanni 2019). Information System Success Model: The element of information system success includes information quality, system quality, managerial impact, user satisfaction, individual impact and use. This is emphasis to management information system quality, management support, managerial decision-making quality, perceived usefulness, information quality and the fulfilment of decision makers. The adoption of this model is based on the effects of system quality on management decision making (Petter, De Lone & Mc Lean 2003).

3. Methodology

A cross sectional survey research design was adopted for the study in order to obtain the information on the present state of the affair. The study population consists of Three hundred

and sixty-four (364) staff of the Kaduna Geographic Information Service (KADGIS) an agency of Kaduna State Government. The number of the population was obtained from Kaduna Geographic Information Service annual report (KADGIS, 2021). However, the sample size of the study was determined using Taro Yamane (1976) formula for calculating the sample size of a population. A sample size of 191 was obtained using Yamane sample size determinant as mentioned in Israel (2013). However, the minimum sample size for the study was 191. In addition, the study adopted a simple random sampling method for the study. This method was applied because it is simple, easily applied and ensures there is no bias (Nicholas, 2011).

The primary source of data was used in the study to investigate the relationship between utilization of information technology and organizational Performance in the Kaduna Geographic Information Service, Kaduna State. The primary data were obtained through the use of self-administered questionnaires to the staff using simple random sampling techniques. Additionally, content validity was used to validate each statement of the instrument based on the evaluation of the two experts in the management field.

The questionnaire was adapted from the previous studies and data was analyzed based on the modified 5-point Likert scale of strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree to analyze the data. Descriptive and inferential statistics as well as frequency distribution analysis was carried out on SPSS version 25.

4. Data Presentation and Analysis

A total of 191 copies of questionnaires were distributed to the respondents but only 163 copies of the questionnaires were returned. All the 163 returned questionnaires were completely filled. This shows that 163 out of 191 copies of questionnaires represent the overall response rate of 85% and therefore, 163 usable copies of the questionnaire represent a valid response rate of 85%. In line with the view of Sekaran, (2003) a least possible response rate of 30 percent is adequate for a survey. Thus, it can be therefore specified that this study's response rate is appropriate and adequate for further analysis. Table 1 presents the result of the study.

Table1
Questionnaire Distribution and Response Rate

Questionnaires	Frequency	Rate (%)
Distributed Questionnaires	191	100
Unreturned Questionnaires	28	15
Returned Questionnaires	163	85

Source: Field Survey, 2023

4.1 Demographic Statistics

Table 2: *Gender distribution of the respondent*

Gender	Frequency	Valid Percent	Cumulative Percent
Male	109	66.9	66.9
Female	54	33.1	100.0
Total	163	100.0	100.0

Source: Field Survey, 2023

From the above table 2, it shows that the majority of the respondents were male with a total of 109 respondents representing 66.9% of the sample population while female are 54 respondents representing 33.1% of the sample population.

Table 3: Age Range

Age (Years)	Frequency	Valid Percent	Cumulative Percent
11-20	14	8.6	8.6
21-30	34	20.9	29.4
31-40	53	32.5	62.0
Above 40	62	38.0	100.0
Total	163	100.0	100.0

Source: Field Survey, 2023

Table 3 above shows response on the age bracket of the respondents, from the table 14 respondents representing 8.6% of the sampled population falls within 11-20 age bracket, followed by those that falls within 21-30 age bracket with a total of 34 respondents representing 20.9% of the sampled population, followed by 31-40 age bracket with a total of 53 respondents representing 32.5% of the sampled population. However, those that fall within above 40 age bracket have 62 respondents representing 38.0 of the sampled population.

Table 4: Educational Background of the Respondents

Qualification	Frequency	Valid Percent	Cumulative Percent
Secondary	20	12.3	12.3
Diploma/NCE	69	42.3	54.6
Degree/HND	58	35.6	90.2
Post Graduate	16	9.8	100.0
Total	163	100.0	100.0

Source: Field Survey, 2023

From table 4 above, the table shows that the educational background of the respondents is represented as follows: those with a secondary school certificate are 20 respondents representing 12.3% of the sampled population, followed by those that have Diploma/NCE with a total of 69 respondents signifying 42.3%, those that have Degree/HND are 58 respondents signifying 35.6% while those that have post graduate certificate are 16 respondents signifying 9.8% of the sampled population.

Table 5: Current Position

Current Position	Frequency	Valid Percent	Cumulative Percent
Executive	6	3.7	3.7
Manager	18	11.0	14.7
Supervisor	26	16.0	30.7
Others	113	69.3	100.0
Total	163	100.0	100.0

Source: Field Survey, 2023

From the table above, it shows that the response on the current position of the respondents, from the table the executive has 6 respondents representing 3.7% of the sampled population, followed by the manager with 18 respondents representing 11.0% of the sampled population, followed by the supervisors with 26 respondents representing 16.0% of the sampled population while others with 113 respondents representing 69.3% of the sampled population.

Table 6: ***Model Summary***

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig.	
1	.901	.811	.797	.15753	.811	58.738	4	158	.000	1.913

a. Predictors: (Constant), ITS, ITU, ITC, ITO
b. Dependent Variable: OP

Source: Authors' computation, using SPSS version 25

From Table 6, the coefficient of correlation (R) is given as 0.811. The figure explained that there is a positive relationship of up to 81% between the dependent variable (Organizational Performance) and independent variables (Information Technology operation, Information Technology usage, Information Technology Challenges and Information Technology Steps). The adjusted R-square for the number of independent variables and the number of cases was done through SPSS which is 0.797. The higher the R-Square the lower the standard error of the estimation of the residual as it is shown in the table (0.15753). The R-square is given as 0.811. The value explained 81% of variance in organizational Performance, while the remaining 19% will be explained by Information Technology utilization.

Table 7: Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	81.192	4	21.298	105.549	.000
	Residual	81.305	158	2.323		
	Total	162.497	162			

a. Dependent Variable: OP
b. Predictors: (Constant), ITS, ITU, ITC, ITO
Source: Authors' computation, using SPSS version 25

The level of organizational performance was significantly predicted by the level of the independent variables i.e. (Information Technology utilization) as shown in Table 7 above, Since the value of Ftab>Fcal, Therefore, the overall regression model is extremely statistically significant in terms of its goodness to fit. Thus, F= 105.549, p < 0.05 F-statistical indicates that the whole regression model is highly statistically significant in terms of its goodness of fit. Hence, the null hypothesis which states that IT utilization has no significant effect on organizational Performance is rejected.

Table 8: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.508	.332		1.529	.000
	ITO	.633	.191	.581	3.315	.002
	ITU	.630	.268	.632	2.355	.003
	ITC	-.180	.096	-.149	-1.874	.063
	ITS	-.469	..241	-.345	-1.945	..059

a. Dependent Variable: OP
Source: Authors' computation, using SPSS version 25

Table 8 above is the coefficient table that shows how the (Information Technology operation, Information Technology usage) contributed to the prediction of the dependent variable, which is organizational performance (OP). The standardized coefficient showed that the Information Technology operation contributed 58% (positive) to the performance of KADGIS, and this is significant at P<0.05. This proposes that increasing

the independent variable (ITO) by single unit will result in a performance enhancement of 0.581. Therefore, the study can be concluded that the Information Technology operation provided by the KADGIS's has contributed significantly to their performance. On the other hand, Information Technology usage contributed 63% (positive) to the performance of KADGIS, and this is significant at P<0.05. This also proposes that increase in the dependent variable (ITU) by one unit will result in a positive improvement of 0.632**.** Hence, the variables of the information technology operation, and information technology usage significantly contributed to the model involving information technology utilization, and organizational performance, thus information technology utilization has a joint significant effect on the organizational performance. On the other hand, information challenges and information steps with Beta values -.180 and -.469 respectively indicates an insignificantly negative effect on organizational Performance (Dependent Variable) at 5% significant value (p = 0.63 and 0.59) >0.05.

4.2 Test of Hypotheses

The pre-set level of significance for this study is 0.05. Therefore, in testing the Hypothesis, if the P-value (significance level) exceeds the pre-set value (0.05), the Null Hypothesis will be Accepted and the Alternative Rejected. Otherwise, the Null Hypothesis will be Rejected and the Alternative Accepted.

Test of Hypothesis one (H_1)

H_1: IT Operation has no significant effect on Organizational Performance in the KADGIS

The regression Coefficient table shown that the level of significance of the IT operation under the column labelled Significant (sig) at 0.02 which is less than the pre-set value of 0.05; it means the result is significant (See Table 8). Since the P- value (0.02) is lower than the pre-set value (0.05). Hence, therefore the Null Hypothesis (H1) will be rejected. This means there is a significant effect of IT operation on Organizational Performance in KADGIS.

Test of Hypothesis Two (H_2)

H_2: IT usage has no significant effect on Organizational Performance in the KADGIS

The regression Coefficient table shown that the level of Significance of IT usage under the column labelled Significant at 0.03 which is less than the pre-set value of 0.05; it means the result is Significant (See Table 8). Since the P-value (0.03) is lower than the Pre-set value (0.05), the Null Hypothesis (H_2) will be rejected. This means that there is a significant effect of IT usage on Organizational Performance in KADGIS.

Test of Hypothesis Three (H_3)

H_3: IT Challenges has no significant effect on Organizational Performance in the KADGIS

The regression Coefficient table shown that the level of Significance of IT challenges under the column labelled Significant at 0.63 which is higher than the pre-set value of 0.05; it means the result is not Significant (See Table 8). Since the P-value (0.63) is greater than the pre-set value (0.05). The Null Hypothesis (H_3) will be accepted. This means there is no significant effect of IT Challenges on Organizational Performance in KADGIS.

Test of Hypothesis Four (H_4)

H_4: IT Steps has no significant effect on Organizational Performance in the KADGIS

The Regression Coefficient table shown that the level of Significance of IT steps under the column labelled Significant at 0.59 which is higher than the Pre-set value of 0.05; it means the result is not Significant (See Table 8). Since the P-value (0.59) is greater than Pre-set value (0.05), the Null Hypothesis (H_4) will be accepted. This means there is no significant effect of IT steps on Organizational Performance in KADGIS.

4.3 Discussion of the Findings

This study was conducted to depict the effect of Information Technology utilization on organizational Performance, evidence of Kaduna Geographic Information Service, Kaduna State Nigeria. The research adopted IT operation, IT usage, IT challenges and IT steps as a variable for Information Technology. However, this study reveals that only the Information Technology operation and Information Technology usage among the variable adopted has a significantly positive effect on organizational performance while Information Technology challenges and Information Technology steps has an insignificant negative effect on organizational Performance. Hence, the Information Technology operation and Information Technology usage are critical parts of organizational Performance which manifested **through the computerization of land records using information technology. These findings corroborate the work of (Patyal & Maddulety, 2015; Yauri, 2021). However, Yauri, (2021) reported that the use of IT contributed to increase in the revenue generation, improved the performance of organization, improved the information collection process and reporting by the employees, decision making process faster, improved the operational efficiency of the employees, improved productivity, facilitated better communication in service delivery, helped provide the up-to-date technology in computers,** the **internet and helped secure the information. Finally, the Regression analysis shows that the variables of Information Technology utilization in this study explain 79.7% of variation in the organizational Performance of KAGIS. However, 79.7% (0.797) Adjusted R^2 is an indication that there are other unexplained variables up to 20.3% which are not considered in this study. This finding is not unexpected as Information Technology operation, Information Technology usage, Information Technology challenges and Information Technology steps are not the sole determinant of information Technology with organizational Performance.**

5. Conclusion and Recommendations

This study investigates the effect of utilization of Information Technology on organizational Performance in the Kaduna Geographic information Service, Kaduna State, Nigeria. Findings of the study showed significant relationship between information Technology (the information Technology operation and Information Technology usage) and organizational Performance. The study concludes that Information Technology operation is vital **to make the operation more important to improve the performance of the Geographic Information system (GIS). Therefore, GIS can be standardized and maintained and assist with planning the decision. The success of these and other GIS processes are contingent upon the availability of accurate data and information available to the organization. The study also concludes that information technology utilization serves as a foundation for the integrated spatial information system and such information helps to take rational decision. The cogent and appropriate decision leads to the improvement in service quality as well as increase organizational performance.**

The following recommendations are made based on the findings of the study

1. **Management of KADGIS should always provide workshop and seminars that will help staffs on how to operate and work with GIS**
2. **The employees are to be properly trained on specialized skill sets to understand and interpret data collected in a GIS system**
3. **Massive investment on IT resources by the management of KADGIS will ensure effectiveness and efficiency in its operation.**
4. **Management should ensure that data in the GIS' system should be well organized for easy end users' utilization.**

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