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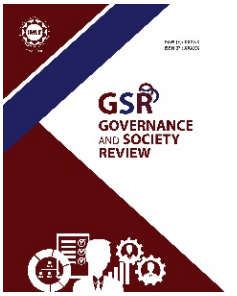

Title: **Adopting Information and Communication Technology (ICT) in Public Healthcare Facilities in Kogi State, Nigeria**

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Adopting Information and Communication Technology (ICT) in Public Healthcare Facilities in Kogi State, Nigeria

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Abstract

The current study focuses on information and communication technology (ICT) and healthcare facilities in Kogi State, Nigeria. This study specifically ascertains the effects and distribution of risk tolerance and costs respectively on the adoption of ICT in the public healthcare facilities in Kogi State. It also investigates the extent to which ICT adoption can influence the efficiency of public healthcare facilities. For this purpose, a survey design was employed. The study targeted 53 public healthcare facilities in Kogi State. A total of 229 health personnel actively participated in this study. Data were collected, presented, and analysed by using a frequency distribution table. Descriptive statistics and regression analysis were applied. The findings showed that both risk tolerance and cost have a significant predictive power regarding the adoption of ICT in the public healthcare facilities in Kogi State. Furthermore, ICT adoption has a substantial influence on the efficiency of public healthcare facilities. It was concluded that ICT could increase patient safety by providing easy information to medical cases, allowing for online treatment reviews, monitoring patient progress, and foreseeing potential medical mishaps. The study also recommends that the management and government organize an intervention programme to promote risk tolerance among users. Moreover, the government should provide financial support to reduce the cost burden in order to increase the adoption of ICT in public healthcare facilities in Kogi State.

Keywords: adoption of ICT, costs, efficiency, Information and Communication Technology (ICT), public healthcare facilities, risk tolerance

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Introduction

Technology is transforming the global scene and moving us closer to a highly technologically advanced future. This is quite evident in how nations of the world are able to manage and combat the current public health issues (COVID-19 pandemic, Ebola, Lassa fever, and dementia among others). Technology has given access to vaccinations, medications, and tests in the current case of COVID-19. In the recently emerged case of the COVID-19 pandemic, Information and Communication Technology (ICT) has facilitated the prevention of its widespread by providing on-time availability of quality information. The emergence of ICT has had a significant effect on the healthcare facilities in Kogi State, Nigeria. The world has found illumination in healthcare facilities with the adoption of ICT. It has raised patients' security and data protection, improved the standard of treatment, and lowered the operational and administrative expenses. While and Dewsbury (2011) posited that ICT has been identified as critical role player in the United States; promoting patient interaction, care coordination, and delivery of healthcare service. Studies (Crotty et al., 2014; Zonneveld et al., 2020) are of the view that ICT has shown great potential in the improvement of the interaction between healthcare providers and patients.

In Africa, the potential advantages of ICT for transforming healthcare services and enhancing transparency in the health sector have not been fully realized. Many African political leaders prioritize seeking quality healthcare abroad, rather than investing in ICT for the healthcare sector. Shekar and Otto (2014) have suggested that Africa expends a considerable amount of its GDP on health services through institutions that are frequently ineffective, expensive, and lacking in transparency. Nigeria, as a key player in the African economy, is expected to improve healthcare delivery and facilities by increasing its adoption of ICT. Ogundaini et al. (2021) have noted that Nigeria and South Africa are among the top five Sub-Saharan African countries in terms of innovation in technology development. However, the potential of ICT for reducing queues, facilitating card collection and payment, and providing other electronic health (e-health) services remains underutilized. Kogi State is one of the Nigerian states that urgently requires the adoption of ICT to improve healthcare delivery and facilities. Despite several efforts to ensure that people have equal access to

high-quality and low-cost healthcare services, the attention given to optimizing the adoption of ICT in Kogi State is still questionable.

The public healthcare facilities in Kogi State have faced many difficulties, including keeping patients medical records, keeping up hospital information systems, maintaining medical equipment, drug errors, and much more. The use of the card-system still remained the adopted rule of thumb, and hospital information is kept in books or files. During the general check-up, drugs and health information were never sent electronically to the appropriate desk. This sometimes leads to falsification of records and sharp practices by nurses who renders home health services for the patients. There is a lack of transparency and inefficiency, which remained unabated in the public healthcare facilities in Kogi State, Nigeria. The hospitals in Kogi State requires to optimally adopt ICT to overhaul their entire healthcare service facilities.

ICT has enabled doctors to consistently keep the track of patient's medical history, diagnostic outcomes, and state of health. The doctors can converse with the patients, suggest a medical assessment, and give a proper medication. The problem associated with the poor adoption of ICT in public healthcare facilities is related to risk tolerance and costs. Technology Threat Avoidance Theory (TTAT) outlined that risk tolerance, social influence, perceived susceptibility, the severity of malicious IT, costs, and self-efficacy toward ICT are the prime factors that lead to the avoidance of ICT adoption (Xue et al., 2015).

Objectives of the Study

The main objective of the study was to assess Information and Communication Technology (ICT) adoption and healthcare service facilities in public healthcare sector in Kogi State. The specific selected objectives are given below:

i. To ascertain the extent to which risk tolerance and costs affects the adoption of ICT in the public healthcare facilities in Kogi State.

ii. To investigate the extent at which ICT adoption can influence efficiency in the public healthcare facilities in Kogi State.

Literature Review

Conceptual Framework

Information and communication technology (ICT) is a more inclusive concept for information technology (IT), which includes all digital tools and services that enable users to access, recover, store, communicate, and manipulate information. It deals with the management of communication systems like broadcast media, telecommunications, audio-visual processing, management information systems, transmission systems, network-based control, and monitoring tasks. Largely, telecommunication can favourably affect the public healthcare facilities in Kogi, Nigeria. The growth of an ICTdriven healthcare practice has been facilitated by telecommunication. Audio-visual aids are used by patients, which may facilitate communication with medical professionals. A health management information system (HMIS) is a way of gathering, storing, retrieving, and processing health data to help with the decision-making. The government's continual objective is to enhance healthcare facilities in the public healthcare sector.

Yang (2015) expressed that modern ICT has become an indispensable tool for public service delivery. It is essential to define the conceptual meaning of ICT specifically for the intent of this research. The concept has been used in several disciplines to address different research issues. From Tolorunleke et al. (2022)viewpoint it is a concept, which is used to collect, store, retrieve, process, evaluate, and transmit information. Jegede (2015) expressed that any tool that fosters communication and transmits information and shares the knowledge through electronic methods is referred ICT. ICT application has the ability to advance patient-centered healthcare at a lesser cost, enhance the level of care and information exchange, inform both patients and health professionals, develop a new kind of relationship between patients and their health practitioners, cut down on travel time, and others. ICT has made information more easily accessible and patients report feeling more at ease when utilizing healthcare services. Desktop computers, laptops, mobile devices, wired or wireless intranets, software like text editors and spreadsheets, hospital software, data storage and security, network security, and other items and services are among these technologies (Ashrafi & Murtaza, 2008).

Hypotheses Formulation

A computer is the main device used for ICT in hospitals. The use of the internet and intranets has led to social networks among users; linking services which have been perceived as difficult. Due to the alarming internet fraud these days, some health professionals have less risk tolerance for the adoption of ICT. Healthcare professionals' acceptance of ICT is determined by their willingness to take risks. This puts risk tolerance as a critical factor to consider in the adoption of ICT. The cost of ICT is another factor confronting the adoption of ICT in the public healthcare facilities in Kogi State. As noted earlier, ICT is inevitable healthcare information management (Adeleke et al., 2015). The cost incurred in the adoption can favourably match with the solution provided according to the problem (Adeleke et al., 2012) in the paper-based system (Adeleke et al., 2015). This led to Hypothesis 1, which states that:

H1: Risk tolerance and costs have significant effects on the adoption of ICT in public healthcare facilities in Kogi State.

Both healthcare professionals and patients have acknowledged that computers have important roles to play in the delivery of healthcare facilities. Healthcare professionals must possess skills in word processing, database design using Microsoft access, database management, electronic mailing, and computer file management among others. The prime goal of this is to increase the efficiency in healthcare facilities by streamlining the processing of medical data. There is an observed gap in academic research, relative to ICT adoption in healthcare service delivery in the public healthcare facilities in Kogi State. Up till now, studies have not been conducted to unveil the adoption of ICT and it influence the efficiency of the healthcare service of public healthcare in Kogi State. Kim et al. (2015) reported that adopting ICT in healthcare services is key of efficiency. There is also the absence of research on the specific skills and knowledge of healthcare professionals relative to ICT. The recent global pandemic has been undoubtedly the propelling force behind the inevitable adoption of ICT in many healthcare facilities, particularly in rural settlement. Adeleke et al. (2015) added that the knowledge and utilization of ICT by healthcare professionals are subject to the ownership of sophisticated laptops and computers. It is possible that computers are used only for conventional health routines such as scanning and x-raying. The social distancing rule erodes the continuous adoption of conventional approaches; leading to ICT

utilization with much illumination through the internet. Kayisire and Wei (2015) insisted that Nigeria among other African countries have fully utilized ICT. This raises substantial questions relative to the perspectives of utilized or adopted ICT. Adeleke et al. (2015) reported that the majority of research participants voiced concerns regarding medical confidentiality as ICT is progressively integrated into the country's healthcare institutions, but all acknowledged that ICT would enhance the efficiency of medical care unit. The claim that healthcare professionals utilize ICT needs to be substantiated leading to the hypothesis that:

H2: Healthcare professionals have been utilizing ICT for health service facilities due to sufficient ICT knowledge and skills.

H3: ICT adoption has significant effects on the efficiency of public healthcare facilities in Kogi State.

Theoretical Underpinning

The Technology Threat Avoidance Theory (TTAT) underpins the assumption of this study that risk tolerance and costs have significant effects on the adoption of ICT in public healthcare facilities in Kogi State. TTAT explained that high-risk poses 'threat' and high cost abrupt 'avoidance' behavioural pattern. Public healthcare facilities are likely to avoid the adoption of ICT when the activities of fraudsters or hackers become uncontrollable. Even, Liang and Xue (2009) emphasized that uncontrollable and overcome-able high threats would cause public healthcare facilities to avoid or ignore the adoption of ICT. TTAT posited that ICT users are prone to avoid an ICT threat by taking a safeguarding approach when they perceive an ICT threat occurs. TTAT assumed that public healthcare facilities might perceive the negative consequences of risk, severity of malicious ICT, and costs. Thus, the TTAT become relevant to define the theoretical positions of this study. Studies (Xue et al., 2015; Fenner Jr., 2017) have also utilized the theory in the medical line to explain anxiety and cost relative to ICT.

Technological Frame of Reference Theory (TFRT) emphasized on the usefulness of ICT for healthcare change. The theory advocated on the necessity of knowledge and skills to drive ICT utilization, which is relevant to ICT knowledge and skills, required for healthcare professionals to utilize word processing, database design using Microsoft access, database management, electronic mailing, and computer file management. A

technological perspective acknowledges that different groups hold different beliefs about the worth, significance, and utility of technological tools, and that these diverse perspectives or viewpoints significantly influence how organizations understand non-conformity, as pointed out by Mesgari and Okoli (2019) and Ghazaleh et al. (2019). As stated by Davidson and Pai (2004), frames are formed through an interplay that arises around an artifact or process, and involves common components like implicit knowledge and shared techniques and protocols.

Methodology

The current study follows a research survey approach. This approach was conducted using a quantitative data gathering technique. The choice of the research survey was backed up by the intent to cover many public healthcare facilities in Kogi State. The information about public healthcare facilities was obtained from the Federal Ministry of Health (2020). For this purpose, 53 public healthcare facilities were covered in Kogi State. The study's target was on personnel (neurologists, internists, residents, nurses, trained technicians, and others). A number of 229 health personnel actively participated in this study. The COVID-19 pandemic raised fear that dropped 273 potential participants to 229 which actively participated in the survey. The survey took place from July 2021-May 2022. Inclusion criteria was adopted to prevent unnecessary biasness in the selection process. This includes demographic characteristics, scheduled appointments, and specialities. Participation by gender includes 135 males (59%), 94 females (41%), and by work experience includes 25 participants (10.9%) with 1-3 years, 41 participants (17.9%) with 4-6 years, 39 participants (17.0%) with 7-9 years, 35 participants (15.3%) with 10-12 years, 28 participants (12.2%) with 13-15 years, 34 participants (14.8%) with 16-18 years, and 27 participants (11.8%) with above 19 years of work experience. The data collection exercise was carefully carried out by observing social distancing. The researchers also made use of email to carry out the survey. The researchers obtained a consent form prior to the survey. Relevant data was collected, presented, and analysed using a frequency distribution table. In addition, descriptive statistics and regression analysis were applied. The Regression analysis provided inferential statistics, which led to the drawing of conclusions. The models are specified as:

$$ICTA = a + \beta_1 RTE + \beta_2 CST + e \quad \text{(i)}$$

Where,

a = Constant

RTE = Risk Tolerance

CST= Cost

β_1, is regression coefficients

$EPS = a + \beta_1 ICA_1 + e$ (ii)

Where,

a = Constant

ICA = ICT adoption

β_1, is regression coefficients

Data Analysis and Results

Table 1
Reliability of Instrument

Constructs	Cronbach's Alpha	No. of Items
Risk tolerance	.954	2
Cost	.857	2
ICT knowledge and skills	.962	2
ICT Utilization	.956	2
Efficiency in the public healthcare facilities	.977	2

Table 1 shows reliability results on the constructs. The table shows risk tolerance (α = 0.954), cost (α = 0.857), ICT knowledge and skills (α = 0.962), ICT Utilization (α = 0.956), and efficiency in the public healthcare facilities (α = 0.977). The results are beyond 70% and could be consensually considered as being reliable.

Table 2
ICT Knowledge and Skills

	N	Advanced-n (%)	Average-n (%)	Basic-n (%)	No knowledge-n (%)
Word processing	229	32(14%)	83(36.2%)	98(42.8%)	16(7%)
Spread sheet	229	44(19.2%)	30(13.1%)	114(49.8%)	41(17.9%)

	N	Advanced-n (%)	Average-n (%)	Basic-n (%)	No knowledge-n (%)
PowerPoint presentation	229	99(43.2%)	56(24.5%)	59(25.8%)	15(6.6%)
Database management	229	23(10%)	87(38%)	87(38%)	32(14%)
Database design using Microsoft Access	229	14(6.1%)	52(22.7%)	52(22.7%)	111(48.5%)
Internet search	229	148(64.6%)	43(18.8%)	25(10.9%)	13(5.7%)
Electronic mailing	229	181(79%)	28(12.2%)	10(4.4%)	10(4.4%)
Computer file management	229	99(43.2%)	87(38%)	33(14.4%)	10(4.4%)
Setting up computer system and install software	229	17(7.4%)	52(22.7%)	37(16.2%)	111(48.5%)

Table 2 shows the range of ICT knowledge and skills possessed by respondents. The table shows that 32 respondents (14%) have advanced knowledge and skills in the use of word processing, 83 respondents (36.2%) have average knowledge and skills in the use of word processing, 98 respondents (42.8%) have basic knowledge and skills in the use of word processing, and 16 respondents (7%) have no knowledge and skills in the use of word processing.

Table 2 shows that 44 respondents (19.2%) have advanced knowledge and skills in the use of spread sheet, 30 respondents (13.1%) have average knowledge and skills in the use of spread sheet, 114 respondents (49.8%) have basic knowledge and skills in the use of spread sheet, and 41 respondents (17.9%) have no knowledge and skills in the use of spreadsheet.

Table 2 shows that 99 respondents (43.2%) have advanced knowledge and skills in the use of PowerPoint presentation, 56 respondents (24.5%) have average knowledge and skills in the use of PowerPoint presentation, 59 respondents (25.8%) have basic knowledge and skills in the use of PowerPoint presentation, and15 respondents (6.6%) have no knowledge and skills in the use of PowerPoint presentation.

Table 2 shows that 23 respondents (10%) have advanced knowledge and skills in the use of database management, 87 respondents (38%) have average knowledge and skills in the use of database management, 87 respondents (38%) have basic knowledge and skills in the use of database management, and 32 respondents (14%) have no knowledge and skills in the use of database management.

Table 2 shows that 14 respondents (6.1%) have advanced knowledge and skills in the use of database design using Microsoft access, 52 respondents (22.7%) have average knowledge and skills in the use of database design using Microsoft access, 52 respondents (22.7%) have basic knowledge and skills in the use of database design using Microsoft access, and 111 respondents (48.5%) have no knowledge and skills in the use of database design using Microsoft access.

Table 2 shows that 148 respondents (64.6%) have advanced knowledge and skills in the use of internet search, 43 respondents (18.8%) have average knowledge and skills in the use of internet search, 25 respondents (10.9%) have basic knowledge and skills in the use of internet search, and 13 respondents (5.7%) have no knowledge and skills in the use of internet search.

Table 2 shows that 181 respondents (79%) have advanced knowledge and skills in the use of electronic mailing, 28 respondents (12.2%) have average knowledge and skills in the use of electronic mailing, 10 respondents (4.4%) have basic knowledge and skills in the use of electronic mailing, and 10 respondents (4.4%) have no knowledge and skills in the use of electronic mailing.

Table 2 shows that 99 respondents (43.2%) have advanced knowledge and skills in the use of computer file management, 87 respondents (38%) have average knowledge and skills in the use of computer file management, 33 respondents (14.4%) have basic knowledge and skills in the use of computer file management, and 10 respondents (4.4%) have no knowledge and skills in the use of computer file management.

Table 2 shows that 17 respondents (7.4%) have advanced knowledge and skills in the use of setting up computer system and install software, 52 respondents (22.7%) have average knowledge and skills in the use of setting up computer system and install software, 37 respondents (16.2%) have basic knowledge and skills in the use of setting up the computer system and

install software, and 111 respondents (48.5%) have no knowledge and skills in the use of setting up the computer system and install the software.

Table 3
ICT Utilization

	N	Yes *n* (%)	No *n* (%)	Not Sure *n* (%)
Used a computer for more than three years	223	151(65.9%)	47(20.5%)	25(10.9%)
Possess email	226	160(69.9%)	45(19.7%)	21(9.2%)
Used computer for more than three times in the last one month	32	21(9.2%)	11(4.8%)	-
Have used the Internet for more than three years	225	106(46.3%)	98(42.8%)	21(9.2%)
Have used social media	229	176(%)	32(14%)	21(9.2%)
Possess a laptop computer	224	161(70.3%)	41(17.9%)	22(9.6%)

Table 3 shows how respondents have utilized ICT. The table shows that 151 respondents (65.9%) have used computer for more than three years, 47 respondents (20.5%) have not used computer for more than three years, and 25 respondents (10.9%) were not sure whether they have used computer for more than three years. The table shows that 160 respondents (69.9%) possess email, 45 respondents (19.7%) do not possess email, and 21 respondents (9.2%) were not sure whether they possess email. The table shows that 21 respondents (9.2%) used computers more than three times in the last month, and 11 respondents (4.8%) did not use computer for more than three times in the last month.

The table shows that 106 respondents (46.3%) have used the internet for more than three years, 98 respondents (42.8%) did not use the internet for more than three years, and 21 respondents (9.2%) were not sure whether they have used the internet for more than three years. The table shows that 176 respondents (76.9%) have used social media, 32 respondents (14%) did not use social media, and 21 respondents (9.2%) were not sure whether they

have used social media. The table shows that 161 respondents (70.3%) possess a laptop computer, 41 respondents (17.9%) did not possess a laptop computer, and 22 respondents (9.6%) were not sure whether they possess a laptop computer.

Table 4

Descriptive Statistics of Factors Influencing the Avoidance or Adoption of ICT in the Public Healthcare Facilities in Kogi State

	N	Mean ($\bar{x}$)	Std. Deviation	Mean Ranking
Ability to accept the risks of utilizing ICT	229	3.3843	1.38314	3rd
Loss of resources due to ICT adoption	229	3.4017	1.39711	2nd
Social group influence	229	3.5328	1.33279	1st
Severity of malicious IT	229	3.0175	1.23886	4th
Self-efficacy toward ICT	229	2.4672	1.26179	5th

Table 4 shows the presence of five factors. The table shows that respondents' ability to accept the risks of utilizing ICT ($\bar{x}$= 3.3843; SD = 1.38314), loss of resources due to ICT adoption ($\bar{x}$= 3.4017; SD = 1.39711), social group influence ($\bar{x}$= 3.5328; *SD* = 1.33279); severity of malicious IT ($\bar{x}$= 3.0175; SD = 1.23886), and self-efficacy toward ICT ($\bar{x}$= 2.4672; SD = 1.26179) influence the avoidance or adoption of ICT in the public healthcare facilities in Kogi State. The standard deviation of each of the factors reflects divergence from the means. The result shows that social group influence has the strongest mean score (3.5328), indicating that it is the strongest factor that influences the avoidance or adoption of ICT in the public healthcare facilities in Kogi State. The result also shows that loss of resources due to ICT adoption (3.4017), ability to accept the risks of utilizing ICT (3.3843) and severity of malicious IT (3.0175) have a very strong mean score; explaining that they are also critical factors to be considered in the avoidance or adoption of ICT for healthcare delivery in the public healthcare facilities in Kogi State**.**

Table 5

Regression Result on Effects of Risk Tolerance and Costs on the Adoption of ICT in the Public Healthcare Facilities in Kogi State

ICT Adoption	Coef.	Std. Err.	*t*	P>|t|	[95% Conf. Interval]	
Risk Tolerance	.9314844	.058746	15.86	0.000	.8157245	1.047244
Costs	-.4601634	.0650796	-7.07	0.000	-.588404	-.331923
_cons	.5113964	.2301253	2.22	0.027	.0579308	.964862
Source	SS	df	MS	*F*		*p*
Model	360.38192	2	180.19096	129.61		0.0000
Residual	314.185766	226	1.3902025			
Total	674.567686	228	2.9586302			
R^2	0.5342					
N	249					
Adj R^2	0.5301					
Root MSE	1.1791					

The R^2-value (in Table 5) shows that both risk tolerance and cost are connected with the 53.4% variations in the adoption of ICT in the public healthcare facilities in Kogi State. The unaccounted 46.6% implies that other predictors, which are not captured in the model, may also explain the variations. The adjusted R^2-value of 0.5301 rectifies positive bias; resulting in a value that is representative of the population. The *F* (2, 226) reflects the degree of freedom of 129.61 with the Prob> *F* showing that the regression model is less than 0.01, and it is statistically significant. The F-value of 360.38192 shows that the model is of substantial goodness of fit, and this provides contrary evidence against the null hypothesis since the P-value is less than 0.001. The square root of the Mean Square Residual (√1.3902025) is the root MSE (1.1791), which is the standard deviation of the error component.

On the individual ground, the coefficient (β = 0.9314844) with a p-value less than 0.01 shows that a 93.1% change in risk tolerance, which would significantly lead to the direct proportional change in the adoption of ICT in the public healthcare facilities in Kogi State. The result shows a positive link between risk tolerance and the adoption of ICT. This means that an increased level of risk tolerance would induce increased adoption of ICT. The coefficient (β = -0.4601634) with a p-value less than 0.01 reveals that a 46% change in costs of ICT would significantly bring about inverse

change in the adoption of ICT in the public healthcare facilities in Kogi State. The coefficient is negative; indicating that increasing costs of ICT would bring the decreased level of adoption of ICT.

Table 6

Regression Results on the Influence of ICT Adoption on Efficiency in the Public Healthcare Facilities in Kogi State

Efficiency	Coef.	Std. Err.	*t*	*p*>|t|	[95% Conf. Interval]	
ICT Adoption	.9607836	.0126557	75.92	0.000	.9358459	.9857212
_cons	.0565136	.0389492	1.45	0.148	-.020235	.1332619
Source	*SS*	*df*	*MS*	*F*		*p*
Model	622.696826	1	622.696826	5763.39		0.0000
Residual	24.525881	227	.108043529			
Total	647.222707	228	2.83869609			
R^2	0.9621					
N	229					
Adj R^2	0.9619					
Root MSE	0.3287					

Table 6 shows the R^2-value of 0.9621 mirroring the predictive power of ICT adoption over efficiency in the public healthcare facilities in Kogi State. The result showed that ICT adoption explains 96.2% variations in the efficiency in the public healthcare facilities in Kogi State. The result also implies that 3.8% variations in the efficiency in the public healthcare facilities in Kogi State can be explained by other variables. The adjusted R^2-value of 0.9619 rectifies positive bias; resulting in a value that is representative of the population. The *F* (1, 227) reflects the degree of freedom of 5763.39 with the Prob> *F* showing that the regression model is less than 0.01, and it is statistically significant. The F-value of 622.696826 shows that the model is of substantial goodness of fit, and this provides contrary evidence against the null hypothesis since the *p*-value is less than 0.001. The square root of the Mean Square Residual (√.108043529) is the root MSE (0.3287), which is the standard deviation of the error component.

The coefficient (β = 0.9607836) is a reflection of the linear relationship between ICT adoption and efficiency in the public healthcare facilities in Kogi State. The result shows that a theoretical relationship exists between ICT adoption and efficiency. This means that a 96.1% change in ICT

adoption would lead to the direct proportional change in efficiency in the public healthcare facilities in Kogi State, which would increase the ICT adoption by bring the increased efficiency in the public healthcare facilities in Kogi State.

Discussion

The findings showed that both risk tolerance and cost have significant predictive power over the adoption of ICT in the public healthcare facilities in Kogi State. The findings also indicated that a positive linear relationship exists between risk tolerance and the adoption of ICT in public healthcare facilities in Kogi State. Changes in the risk tolerance would considerably influence the adoption of ICT in Kogi State's public healthcare facilities, in a direct and proportional manner. This aligns with the assertion of (Bharati & Chaudhury, 2015; Zakariya et al., 2019) that risk tolerance plays a cardinal role in the adoption of ICT. The tolerance level of health professionals would translate into the adoption level of ICT in the public healthcare facilities in Kogi State. The most important aspect of this finding is that the ability or willingness of health professional to tolerate and undertake risk can correspondingly lead to an increased level of ICT adoption in the public healthcare facilities in Kogi State. The finding also showed that the costs of ICT have a significant negative linear relationship with the adoption of ICT in public healthcare facilities in Kogi State. This is that high cost attracts low adoption of ICT in the public healthcare facilities in Kogi State. This supports the finding of Onu (2015) that high cost of computer and internet equipment is a serious barrier to ICT adoption in Ebonyi State. Adenike (2015) also reported that ICT is a reality to individuals at a reduced and convenient cost.

This study's findings also showed that ICT adoption has a substantial influence on efficiency in the public healthcare facilities in Kogi State. This supports the assertion of Abakporo (2012) that ICT proves to have a substantial impact on efficiency. Baridam and Govender (2019) also reported that ICT policy in the healthcare sector increased efficiency. The outcome of Adiele's (2017) research showed that ICT projects facilitated the achievement of efficiency in public healthcare facilities. The finding of Nwachukwu and Pepple (2015) showed that ICTs have great potential to save costs, while improving efficiency. The finding of this study adds into the previous studies (Abakporo, 2012; Nwachukwu & Pepple, 2015; Adiele's, 2017; Baridam & Govender, 2019) because it empirically

revealed that a positive linear relationship exists between ICT adoption and efficiency in the public healthcare facilities in Kogi State. This indicates that changes in ICT adoption would directly and proportionally affect the effectiveness of Kogi State's public healthcare facilities, which is, greater ICT adoption would lead to greater efficiency in Kogi State's public healthcare facilities.

Conclusion

ICT can increase patient safety by providing easy information to medical cases, allowing for online treatment reviews, monitoring patient progress, and foreseeing potential medical mishaps. Generally, ICT is viewed as a beneficial tool for both healthcare professionals and users. ICT has made information increasingly and easily accessible and patients report feeling more at ease when utilizing healthcare services. Today, governments rely on ICT to transform the entire healthcare sector. It is easy to provide treatment and care for patients who are currently suffering in this period of COVID-19. Adopting ICT can boost efficiency, lower medical expenses, and increase opportunities for quality healthcare service delivery. This study provides evidence related to the adoption of ICT and healthcare service delivery.

Evidence abounds that the adoption of ICT in public healthcare facilities is significantly influenced by cost and risk tolerance. This study demonstrates that risk tolerance and ICT adoption in public healthcare facilities in Kogi State have a positive theoretical connection. Modifications in risk tolerance can have a significant effect on the adoption of ICT in public healthcare institutions in Kogi State. ICT adoption can rise given the willingness of health professionals to tolerate risk in public healthcare facilities in Kogi State. The results showed a strong negative linear relationship between ICT adoption and its costs. Inadequate adoption of ICT in Kogi State's public healthcare facilities is due to its high costs.

Research suggests that the use of ICT can significantly enhance the effectiveness of public healthcare facilities in Kogi State. There exists a positive correlation between the adoption of ICT and the efficiency of public healthcare institutions, indicating that altering the utilization of ICT can greatly impact the effectiveness of these facilities. Essentially, increasing the adoption of ICT could be a key factor in improving the efficiency of public healthcare institutions in Kogi State.

Future Recommendations

The study recommends that

i. The management of hospitals and the government should organize an intervention programme to promote risk tolerance among users, as this would enhance increased adoption of ICT in the public healthcare facilities in Kogi State.

ii. The government and policymakers should formulate policy and strategy that favours increased ICT adoption, as these would substantially influence the efficiency of public healthcare services in Kogi State.

Scope of Research

This study contributes to the existing knowledge by validating the predictive power of constructs (risk tolerance and cost) from standard measurement in the context of healthcare sector. The constructs were assumed by the Technology Threat Avoidance Theory (TTAT) to affect ICT adoption. The current study is the first to be used as a measurement relative for the ICT adoption of public healthcare facilities in Kogi State.

This study also contributes to the knowledge theoretically. On the basis of the constructs of Technology Threat Avoidance Theory (risk tolerance and cost among others), this study establishes a theoretical relationship between the variables and adoption of ICT in public healthcare facilities. This would contribute to a greater body of literature in the fields of public health and information and communication technology (ICT). The current study also contributes to the existing knowledge by exposing the nexus between ICT and the healthcare facilities in Kogi State, Nigeria.

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