THE EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGY ADOPTION ON PRODUCTIVITY AMONG CIVIL SERVICE COMMISSION EMPLOYEES IN EKITI STATE, NIGERIA

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Abstract

Using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, this study seeks to ascertain the effects of ICT adoption on employee productivity at the Ekiti State Civil Service Commission. The investigation employed descriptive survey research with a correlational design, selecting a sample size of 730 respondents using a stratified sampling technique, as well as using questionnaires on a 1-7 Likert scale to gather data. Inferential statistics were evaluated employing SmartPLS SEM 4.0.8.5 version, while descriptive statistics were performed using SPSS. Findings demonstrate a strong relationship between employee productivity and performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioural intention of employees is mediated between ICT adoption and productivity. We recommend the expansion of smart offices to all government-owned establishments across the State for expeditious service delivery. The sampled population's novelty in using ICT at the latent stage of smart offices in the selected ministries has limitations identified in this study. Future studies should identify the core quality management frameworks that when used in conjunction with self-efficacy as an intervening variable, best support the method's capabilities and the study objectives.

Keywords*:* Performance expectancy, effort expectancy, social influence, facilitating conditions, behavioural intention.

1. INTRODUCTION

The term "information technology" first appeared in the 1970s. Its theoretical underpinnings were credited to the industry and military co-operation that helped advance electronics, computers, and information theory during World War II. Since the 1950s, computers have gone through several generations of advancement. Hardware changed with each iteration, becoming smaller but more capable of directing computer operations (Sakenov, 2012). ICT became

indispensable for carrying out activities, searching for, gathering, and exchanging data, allowing students to acquire all kinds of knowledge, and facilitating the assessment of such knowledge (Batra, Huang, Petrenko, Kumar, Molchanov & Sukhatme 2022).

According to Kárpáti (2003), 16% of citizens in Hungary have internet connection compared to 40% of persons in the European Union (EU). People can utilize their statutory right to information access attributable to the information society. To boost broadband internet, significant government programmes have been launched. There will be both more and fewer practical internet access points that are accessible. Also, The Paperwork Reduction Act of 1980 and the Computer Security Act of 1987 were both passed by the United States federal government. A framework cryptographic signature strategy was established by the Clinger-Cohen Act of 1996 in an attempt to convince the federal government to migrate to electronic forms. This showed that developed countries have long embraced smart offices.

According to Akande and Belle (2013), the Reconstruction and Development Program (RDP) and the Growth, Employment and Redistribution (GEAR) criteria, the South African government underscored the significance of ICT in fostering equitable growth. Due to the adoption of cutting-edge ICT applications by a broad spectrum of companies and government agencies, the internet has grown into an indispensable factor for interaction and contractual agreements in the commercial sectors, schools, healthcare, financial services, and banking institutions.

2. STATEMENT OF THE PROBLEM

Ugoeze (2022) confirmed that Nigeria's readiness to migrate to a paperless policy by 2030 is assertive. The Nigerian National Petroleum Corporation (NNPC) received approval from the National Information Technology Development Agency (NITDA) for around N152 billion worth of digital projects in 2021 to achieve the migration. The less developed nations, including Nigeria, have taken note of this knowledge and made attempts to integrate ICT into all facets of society, including the educational system, financial, agricultural, and health sectors.

In the Ekiti State Civil Service Commission, the use of ICT has had an impact on employee productivity. The purpose of this study is to examine the effects which performance expectancy, effort expectancy, social influence, facilitating conditions have on ICT adoption, and whether or not behavioural intention acted as a mediator between ICT adoption and worker productivity in the Ekiti State Civil Service Commission using UTAUT model. This research was inspired by the low productivity spurred on by the usage of antiquated and manual service delivery in the Ekiti State government offices before the introduction of the smart office.

This study was also motivated by a plethora of submissions from researchers who concentrated on behaviour intention to use ICT rather than ICT adoption on employee productivity. Gupta & Gupta's (2008) investigation on ICT adoption in developing nations was unable to elucidate on how ICT use affects employee productivity. The gaps identified in various works prompted this research to investigate the effects of ICT adoption on employee productivity in the Ekiti State Civil Service Commission. Previous studies in the financial, academic, health, and agricultural sectors have not concluded how ICT adoption has affected the core civil service offices. As a result, this study examined the effective and efficient use of ICT in some selected offices of the Ekiti State government.

3. REVIEW OF LITERATURE

Employee productivity is highly valued by employers. ICT adoption in the Ekiti State public service facilitates sustainability and quick service delivery. In establishing the conceptual framework for this study, we considerably adapt the Unified Theory of Acceptance and Use of Technology (UTAUT).

A plethora of theories and models have been used to study how users adopt ICT. The most empirically supported models include the Technology Acceptance Model (TAM) (Davis, 1989), the Diffusion of Innovation (DOI) (Rogers, 1995), the Theory of Planned Behavior (TPB) (Ajzen, 1985), the Motivational Model (MM) (Igbaria, Parasuraman, &Baroudi, 1996), the Theory of Reasoned Action (TRA), the Motivational Model (MM), the Model of the IT Implementation Process (Cooper &Zmud, 1990), and the Information Systems Success Model (DeLone& Mclean, 1992). They made concerted efforts to explain user behaviour and the adoption of new technologies by integrating a variety of independent factors.

The study by Venkatesh et al. (2003) on the UTAUT has received the most prominence. We looked at the eight most significant models of technological acceptance as identified. We concluded that UTAUT would be best applied in e-government to the citizens since staff would need to rely on ICT to enhance productivity. The adoption of smart office is premised on the principle of confidentiality, not for pleasure or frivolity, which makes it very significant despite being come of age.

The degree to which a person expects that using the system would help him or her perform better at work is known as performance expectancy. In keeping with the perceived ease of use of TAM (Davis, 1989; Davis et al., 1992) and the ease of use in IDT, effort expectancy is the degree of ease associated with using the system (Rogers, 1995). The level to which a person believes significant individuals other than themselves think they should use the new system, which will increase pride, prestige, and esteem, is known as social influence. The degree to which one believes that an administrative and

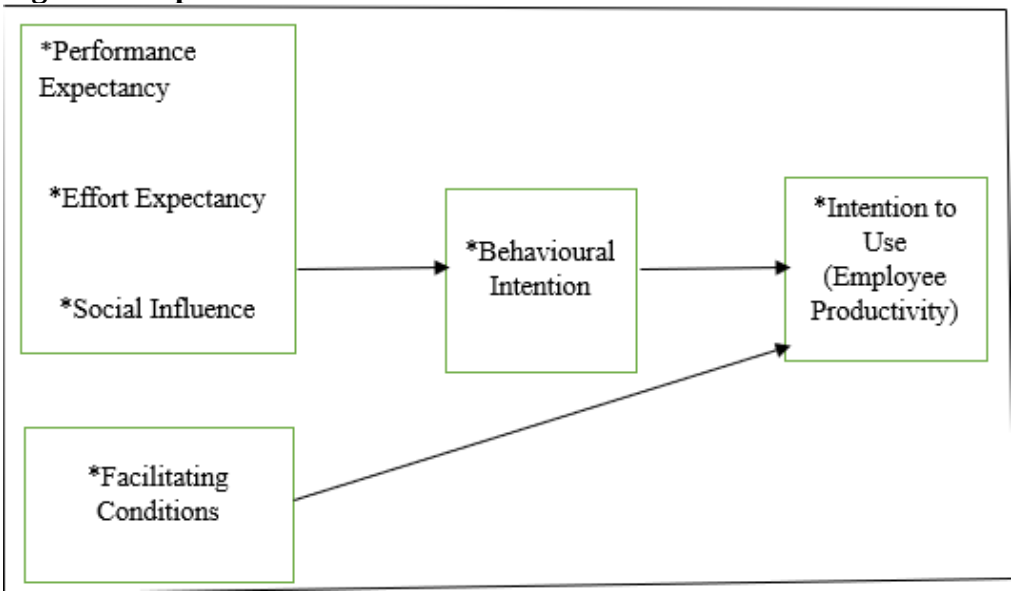
technological framework is in place to assist the use of the system is referred to as a facilitating condition (Venkatesh et al., 2003).

When compared to other variables, behavioural intention has the strongest influence on intent to use, in this study, employee productivity. According to Sang, Valcke, van Braak, &Tondeur (2010), Teo, Lee, Chai, & Wong (2009), Huang &Liaw (2005), and Van-Braak, Tondeur, &Valcke (2004), attitude is one of the factors that influences how computers are used and integrated into the teaching and learning process as well as other sectors of the economy. This is consistent with the Ekiti State Civil Service Commission's study to ascertain how ICT adoption in government offices impacts employee productivity.

The empirical review of previous studies suggests a significant relationship between employee productivity and ICT adoption in this study. This was accomplished by examining the correlation between the variables. Performance expectancy, effort expectancy, social influence, and facilitating conditions represent approximately the independent variables. While behavioural intention functions as both independent and dependent variables. Employee productivity, which is modified to represent an intention to use ICT is the dependent variable. These are backed by several researchers (Transfield, Denyer, & Smart, 2003; Riff, Lacy, Fico, & Watson, 2019).

The operationalisations of the independent and dependent variables were extracted from numerous research and empirical studies on ICT adoption using the UTAUT model to narrow down this research. The conceptual framework, derived from Venkatesh et al (2003) original work, effectively conveys the importance of this study, as facilitating condition was used as a construct, not a moderator to determine the connection between it and staff productivity. The removal of gender as a moderating variable in the UTAUT model is a slight modification. As all Ekiti State government employees in the studied ministries are of legal age and have computer literacy, we believe it is appropriate to disregard age and gender as intervening variables. The model's significance underscores how relevant it is in all contexts. UTAUT design makes an effort to combine all eight of the previous theories on technology adoption into a single model. It intended to give a comprehensive understanding of all the aspects that affect people's behaviour when it comes to using new technologies. UTAUT was developed to assess how well new technology is being used within an organisation. These are the justifications for why we accept the framework as shown in Figure 1.

Fig 1: Conceptual Framework



Source: *UTAUT's modified framework for adopting ICT*

Table 1: **Variables and survey items**

Variable		Items for surveys
Performance Expectancy	PE1	The Internet is beneficial to me in my work.
	PE2	The System helps me in my job since it enables me to do tasks quickly.
	PE3	I am more productive when I use the Internet.
	PE4	My prospects of getting a raise or a promotion rise when I surf the Internet.
Effort Expectancy		
	EE1	Using the Internet, I can complete jobs more speedily.
	EE2	For me, using the Internet would be simple to comprehend.
	EE3	I think it is incredibly easy to use the Internet.
	EE4	Mastering the basics of using the Internet is a task I can do fast.
Social Influence		
	SI1	Individuals who are important to me think I should use the Internet
	SI2	Individuals who can influence my behavior suggest I should use the Internet.
	SI3	The top management and workers of my workplace have been quite supportive while using the Internet.

Facilitating Conditions	FC1	I have everything I require for surfing the Internet.
	FC2	The Internet and the other systems I use are incompatible.
	FC3	My production has increased due to the favorable conditions.
Behavioural Intention	BI1	I find that my internet usage boosts my productivity.
	BI2	I always keep my data safe from prying eyes.
	BI3	My internet-based predicted behavior has no effect on my productivity.
Employee Productivity (Intention to Use)	PO1	My productivity increases when I use the internet to enhance my performance.
	PO2	By raising my expectation of effort, utilising the internet increases my productivity.
	PO3	Using the internet to expand my social impact increases my productivity.
	PO4	My internet facilitating circumstance enhances my productivity.

Source: Adapted from Venkatesh et al. (2003) and Gupta & Gupta, (2008).

The adoption of technology in this stud, which measures employee productivity, has a significant relationship with performance expectation, effort expectation, social interaction, enabling environment, behavioural intention, and the intention to use. In general, researchers concur on this exertion. Riff, Lacy, Fico, & Watson, 2019; Williams & Schubert, 2018; and Attaran et al., 2019, all agreed there is a positive impact on employee workplace output with the adoption of the smart office. However, the following null hypotheses are put forth to examine the relationship previously mentioned by numerous researchers.

1. **H_o:** Performance expectancy of ICT adoption has no effect on employee productivity in Ekiti State Civil Service Commission.

2. **H_o:** Effort expectancy of ICT adoption has no effect on employee productivity in Ekiti State Civil Service Commission.

3. **H_o:** Social influence of ICT adoption has no effect on employee productivity in Ekiti State Civil Service Commission.

4. **H_o:** Facilitating conditions of ICT adoption has no effect on employee productivity in Ekiti State Civil Service Commission.

5. **H_o**: The effect of ICT adoption on employee productivity is not mediated by behavioural intention in Ekiti State Civil Service Commission.

4. METHODS

Questionnaire-based surveys were the predominant means of data gathering for this study. Khong (2005) asserts that survey research is a useful method for extrapolating from a sample to a population and drawing conclusions about the entire population. The population is made up of ICT specialists who work in the sampling ministries at the Ekiti State government offices. Stratified sampling was used for the investigation. This sampling technique is used because it enhances sampling reliability while stratifying the population (Wessing, 2018; Kumar &Ranjit, 2005). To reflect the respondents' understanding of the research framework, perspective, and comprehension of the questionnaire, it was significantly adjusted from previous research (Venkatesh et al. (2003); Gupta & Gupta, (2008). Each survey question was categorized on a Likert scale from 1 to 7, with 1 represents "Strongly Disagree (SD)," 2 indicates "Disagree (D)," 3 denotes "Moderately Disagree (MD)," 4 signifies "Neutral (N)," 5 designates "Moderately Agree (MA)," 6 describes "Agree (A)," and 7 connotes "Strongly Agree (SA)". According to Wu, Yong-ze, & Wang Wen-juan (2010), a 7-point Likert scale has superior internal consistency, construct validity, and user tolerance for completing questionnaires than other Likert scales. Numerous research by Abdurrahaman, Owusu, &Soladoye (2018) as well as Abdurrahaman, &Owusu (2020) substantiate this claim as well. The study's data analysis employed SPSS for descriptive statistics and SmartPLS 4.0.8.5 for inferential statistics, respectively.

Survey Validity and Reliability

The construct validity of variables evaluated by interval measurement items on an examination or rating is determined using reliability analysis (Hair, Anderson, Tatham & Black, 1998). For each construct, Cronbach's Alpha scores were calculated to assess internal consistency and to indicate how different items may successfully measure the construct, as shown in Table 2.

Table 2: **Results of construct validity and reliability**

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
BI	0.535	0.541	0.762	0.517
EE	0.857	0.860	0.903	0.699
FC	0.577	0.567	0.769	0.527
PE	0.854	0.859	0.902	0.698
SI	0.925	0.928	0.953	0.870
PO	0.761	0.764	0.848	0.583

Depending on the questions, an internal consistency of >0.700 can be considered "acceptable" according to Hair et al. (1998). In this investigation, every scale had reliability coefficients greater than 0.700, except BI (0.535) and FC (0.577), which are regarded as "unacceptable" if they are <0.700 (see Table 2). The scales used in this investigation are therefore valid and reliable.
The final respondents for the selected ministries were chosen using the stratified method based on the total number of questionnaires distributed. 750 questionnaires were distributed. 8 questionnaires were rejected due to filling errors, while 738 were returned, and 730 were analysed (with a response rate of 98.9%). Data from the items of the surveys were evaluated using SmartPLS SEM 4.0.8.5 version by performing the algorithm and bootstrapping in sequential order.

5. RESULTS

Descriptive analysis of the respondents' demographics was conducted using IBM SPSS as represented in Table 3 below. Analysis shows Male employees (51.8%) outnumbered female employees (48.2%) in this survey by a significant margin. The workers from age 31-40 made up the largest percentage of respondents (37.7%). First-degree holders received the greatest results (55.1%), trailed by cadre GL07-14 workers (71.9%).

Table 3: Demography of respondents

Variable	Item	Frequency	Percentage (%)
Gender	Male	378	51.8
	Female	352	48.2
Age	21-30	74	10.1
	31-40	275	37.7
	41-50	231	31.6
	51-60	150	20.5
Cadre	GL02-06	143	19.6
	GL07-14	525	71.9
	GL15-17	62	8.5
EduQual	PhD	27	3.7
	M.Sc	105	14.4
	B.Sc	402	55.1
	ND	139	19.0
	O/L	57	7.8

Hypothesis Testing

To investigate the connection between the endogenous variable (employee productivity) and the exogenous variables (performance expectation, effort expectation, social impact, enabling environment, and behavioural intention), the path coefficient was estimated using the SmartPLS SEM as presented in Table 4.

Table 4: **Path coefficient**

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
BI -> PO	0.375	0.375	0.044	8.593	0.000
EE -> BI	0.362	0.364	0.035	10.227	0.000
FC -> PO	0.198	0.201	0.038	5.167	0.000
PE -> BI	0.215	0.216	0.042	5.154	0.000
SI -> BI	0.208	0.207	0.036	5.749	0.000

Table 5: Summary of relationships between exogenous and endogenous variables

Hypothesis	Relationship	t value	p-value	Decision	2.5%	97.5%
Ho_1	PE -> BI	5.154**	0.000	Rejected	0.132	0.295
Ho_2	EE -> BI	10.227**	0.000	Rejected	0.288	0.428
Ho_3	SI -> BI	5.749**	0.000	Rejected	0.136	0.280
Ho_4	FC -> PO	5.167**	0.000	Rejected	0.120	0.269
Ho_5	BI -> PO	8.593**	0.000	Rejected	0.283	0.455

*p<0.05, **p<0.01

Table 6: Model Fitness

	R-square	R-square adjusted	Q^2predict	RMSE	MAE
BI	0.369	0.366	0.341	0.815	0.620
PO	0.234	0.231	0.129	0.937	0.745

6. Discussion

The UTAUT model, which was used for the study, was created by Venkatesh et al. in 2003 and is still acknowledged by scholars across many fields. To establish the connection between the dependent variable and the independent variables, previous studies' independent variables were adjusted. According to the investigation's objectives, the conclusions are based on the hypothesised parameters. The assumption that underpins the connection between PE->BI, as well as EE->BI, and SI->BI, is that BI serves as both exogenous and endogenous variables. The use of ICT and behavioural intention are strongly connected.

The bootstrapped findings for the structural model evaluation are shown in Table 4. The significant level at 5%, PE -> BI shows $\beta = 0.216$, $t = 5.154$; EE -> BI shows $\beta = 0.364$, $t = 10.227$; SI -> BI shows $\beta = 0.207$, $t = 5.749$; FC -> PO shows $\beta = 0.201$, $t = 5.167$; and BI -> PO shows $\beta = 0.375$, $t = 8.593$ show a sign that each t value is statistically significant. The t-value threshold above 1.96, as established by Hair et al. (1998), is classified as statistically significant. These results support earlier studies that showed a significant link between behavioural intention, facilitating environments, performance expectation, effort expectation, and social interaction in the adoption of ICT (Venkatesh et al., 2003; Gupta & Gupta, 2008; AbuShanah, 2007; Dasgupta, 2008; Catherine et al., 2017). Each of the hypothesis has a p-value that is less than the projected 5% which affirm the rejection of the null hypothesis. The endogenous and exogenous variables are significantly linked to one another. The analysis clearly showed a significant correlation between employee productivity and ICT adoption in Ekiti State smart offices after fewer questions were asked while increasing the number of respondents. This contrasted with a previous study where a smaller sample size was investigated and many questions were asked (Abdurrahaman, Owusu, & Soladoye, 2018).

The null hypothesis Ho_1, Ho_2, Ho_3, Ho_4 & Ho_5 unambiguously demonstrate that the effect of ICT adoption on productivity is determined by the availability of a stimulating environment and also mediated between behavioural intention and the use of ICT. Employees are not allowed to act erratically while performing official tasks digitally. At the workplace, the code of conduct must be scrupulously enforced. In a smart office, employee behaviour must adhere to the secrecy principle.

The appropriate model fit measure for this study is presented in Table 6. A reasonable threshold for the R^2 is 0.10 to 0.15. In a model with more than one

predictor variable, the R^2 adjusted is considered. Whereas the Q^2 predicts the relationship between endogenous and exogenous variables, the RMSE is an absolute measure of fit (Grace-Martin, 2020). Since the results are above thresholds, the BI and PO show a robust connection with the independent variables.

This research examined worker productivity leveraging UTAUT model variables, which accurately captured each employee's attitude in the Ekiti State smart offices. Because employees are constrained by the concept of confidentiality and cannot disclose information for fun and frivolity, the comparison of the UTAUT2 model in this study would not fit into it. Although smart offices have just been implemented in the government offices of Ekiti State, we primarily use the UTAUT model to assess the impact of employee productivity. It has the potential to transform the educational system of a developing country, according to Oye, Iahad, & Nor (2012).

7. Conclusion

This study synthesised research on the previous adoption and examined how ICT was adopted in the Ekiti State civil service. E-government is becoming the best practice globally. Some selected ministries have adopted smart offices. Investigating ICT adoption concerning employee productivity is not a misplaced priority. The connection between independent and dependent variables has demonstrated that employees are willing to increase productivity under any conditions. Employers are responsible for inspiring workers to achieve this objective of better quality.

Limitations to this research span from lack of ICT experts in the selected ministries and the data analysed may not show a clear increase in employee productivity due to certain factors. These can be rectified by employing more employees with ICT expertise so that researchers can collect data from the increased population for further research. Since not all of the ministries within the Ekiti State government offices were examined in this study, a biased methodology might have constrained the research's findings. This can be rectified using various data collection techniques to measure the exogenous and endogenous factors in future studies.

The knowledge gained from this study shows that workers in the examined ministries are internet user-friendly. They have enthusiastically embraced innovation in smart offices. Paperless policies are now standard, which enhances the preservation of devastated forests. Document storage on microchips has replaced traditional document storage. With sufficient employee comprehension of internet usage for work-related activities, the gaps between the archaic office and the new smart office have been filled.

8. Recommendations

This study recommends as follows:

i. The extension of smart offices to all establishments of Ekiti State government to replicate employee productivity that is specified, measurable, achievable, reliable, and time-bound (SMART).
ii. Staff should be encouraged to use new technology that may have an impact on their job description and schedule.
iii. The provision of a conducive environment to the employee for effective service delivery should be prioritised.
iv. Motivating factors, which enhance performance and effort expectancies should be encouraged through the provision of incentives.

Future research will focus on using "self-efficacy" as an intervening variable to assess how well employees comprehend the intricacies of smart offices (Hayes, 2009). But early in the smart office phase, using intervening variables could make the data analysis illogical.

References

Abdurrahaman, D. T., Owusu, A., &Bakare, A. S. (2020). Evaluating Factors Affecting User Satisfaction in University Enterprise Content Management (ECM) Systems. *Electronic Journal of Information Systems Evaluation, 23(1), 1–16*. https://doi.org/10.34190/ejise.20.23.1.001.

Abdurrahaman, D. T., Owusu, A., Soladoye, B. A., &Kalimuthu, K. R. (2018). Celebrity-brand endorsement: A study on its impacts on Generation Y-ers in Nigeria. *Asian Journal of Scientific Research, 11(3), 415–427*. https://doi.org/10.3923/ajsr.2018.415.427.

Abushanab, E., & Pearson, J. M. (2007). Internet Banking in Jordan: The Unified Theory of Acceptance and Use of Technology (UTAUT) Perspective. *Journal of Systems and Information Technology, 9(1), 78–97*. https://doi.org/10.1108/13287260710817700.

Akande& Belle (2013). ICT Adoption in South Africa - Opportunities, Challenges and Implications for national development. IEEE International Conference on Electronics Technology and Industrial Development at Bali, Indonesia.

Attaran, M., Attaran, S., & Kirkland, D. (2019). The need for digital workplace: Increasing workforce productivity in the information age. *International Journal of Enterprise Information Systems, 15(1), 1–23*. https://doi.org/10.4018/IJEIS.2019010101.

Ajzen, I. (1985). From intentions to actions: A theory of planned behaviour. In J. Kuhl& J. Beckmann (Eds.), Action-control: From cognition to behaviour (pp. 1l-39). Heidelberg: Springer.

Batra, S., Huang, Z., Petrenko, A., Kumar, T., Molchanov, A., & Sukhatme, G.S. (2021). Decentralized Control of Quadrotor Swarms with End-to-end Deep Reinforcement Learning. CoRL.

Bhatt, B., Qureshi, I., Gupta, S., & Tiwari, A.A. (2020). Introduction to the Role of Information and Communication Technologies in Polarization. https://link.springer.com/chapter/10.1007/978-981-16-5268-4_1. Retrieved on 30/08/2022.

Catherine, B. N., Geofrey, K. M., Moya, M. B., &Aballo, G. (2017). Effort Expectancy, Performance Expectancy, Social Influence and Facilitating Conditions as Predictors of Behavioural Intentions to Use ATMS with Fingerprint Authentication in Ugandan Banks. *Global Journal of Computer Science and Technology: E Network, Web & Security, 17(5), 5–23.*

Cooper, B., & Zmud, R.W. (1990). Information Technology Implementation Research: A Technological Diffusion Approach. *Management Science, 36(2), 123–139*. doi:10.1287/mnsc.36.2.123.

Davis, F. (1989). *User Acceptance of Information Systems: The Technology Acceptance Model (TAM).* University of Michigan School of Business Administration. Ann Arbor Michigan 48109. Working paper #529.

Davis, F. D., Bagozzi, R. P., &Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35(8), 982–1003*. https://doi.org/10.1287/mnsc.35.8.982.

Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1992). *Extrinsic and Intrinsic Motivation to Use Computers in the Workplace., 22(14), 1111–1132.* doi:10.1111/j.1559-1816. 1992.tb00945.x.

DeLone, W.H., & McLean, E.R. (1992). Information Systems Success: The Quest for the Dependent Variable. *Information Systems Research, 3(1), 60–95.* doi:10.1287/isre.3.1.60.

Deranek, K., Hewitt, B., Gudi, A & McLeod, A. (2021) The impact of exercise motives on adolescents' sustained use of wearable technology. *Behaviour & Information Technology, 40:7, 691-705*, DOI: 10.1080/0144929X.2020.1720295.

Daú, G., Scavarda, A., Scavarda, L. F., & Portugal, V. J. T. (2019). The healthcare sustainable supply chain 4.0: The circular economy transition conceptual framework with the corporate social responsibility mirror. *Sustainability (Switzerland), 11(12).* https://doi.org/10.3390/su11123259.

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Information Systems Frontiers, 21(3), 719–734*. https://doi.org/10.1007/s10796-017-9774-y.

Grace-Martin, K. (2020). Assessing the Fit of Regression Models. *Cornell Statistical Consulting Unit* was created in *May 2005*.

Gupta, B., Dasgupta, S., & Gupta, A. (2008). Adoption of ICT in a Government Organization in a Developing Country: An Empirical Study. *Journal of Strategic Information Systems, 17(2), 140–154*. https://doi.org/10.1016/j.jsis.2007.12.004.

Hair, J.F., G.Tomas, M.H., Ringle, C.M., &Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM).* Sage Publications, Inc. 2455 Teller Road Thousand Oaks, California 91320. ISBN 978-1-4522-1744-4 (pbk.).

Hair, J. T., Anderson, R. E., Tatham, R. L., & Black, W. C. (1992). Multivariate Data Analysis with Readings, 3rd ed. New York: Macmillan.

Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76(4), 408–420*. https://doi.org/10.1080/03637750903310360.

Huang, H. M., & Liaw, S. S. (2005). Exploring users' attitudes and intentions toward the web as a survey tool. *Computers in Human Behavior, 21(5), 729–743*. https://doi.org/10.1016/j.chb.2004.02.020.

Igbaria, M., Parasuraman, S., & Baroudi, J.J. (1996). A Motivational Model of Microcomputer Usage. *Journal of Management Information Systems, 13(1), 127–143.* doi:10.1080/07421222.1996.11518115.

Khong, K. W. (2005). The perceived impact of successful outsourcing on customer service management. *Supply Chain Management, 10(5),* 402–411. https://doi.org/10.1108/13598540510624223.

Kárpáti, A. (2003). Promoting Equity Through ICT in Education: Projects, Problems, Prospects. *OECD/Hungary Workshop Budapest, Hungary, 12-13 June*.

Onyedika-Ugoeze, N. (2022). Nigeria Migrates to Paperless Govt in 2030. The Guardian. *https://guardian.ng/news/nigeria/national/nigeria-migrates-to-paperless-govt-in-2030/*

Oye, N.D., A.Iahad, N., & Nor, Z.A.R. (2012). The Impact of UTAUT Model and ICT Theoretical Framework on University Academic Staff: Focus on Adamawa State University, Nigeria. *International Journal of Computers & Technology, 2(2), April 2012*.ISSN: 2277–3061 (online).

Riff, D., Lacy, S., Fico, F., & Watson, B. (2019). Analyzing media messages: Using quantitative content analysis in research. New York: Routledge.

Rogers, E.M. (1995). Diffusion of Innovations: *Modifications of a Model for Telecommunications 25-38*.doi 10.1007/978-3-642-79868-9_2.

Sakenov, D. (2012). History of ICT (Information and Communications Technology. Retrieved from https://www.sutori.com/en/dias-sakenov, 2022.https://www150.statcan.gc.ca/n1/pub/11-402-x/2008/2256/ceb2256_000-eng.htm.

Sang, G., Valcke, M., Braak, J. van, & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers and Education,54(1),*103–112. https://doi.org/10.1016/j.compedu.2009.07.010.

Teo, T., Lee, C. B., Chai, C. S., & Wong, S. L. (2009). Assessing the intention to use technology among pre-service teachers in Singapore and Malaysia: A multigroup invariance analysis of the Technology Acceptance Model (TAM). *Computers and Education, 53(3), 1000–1009.* https://doi.org/10.1016/j.compedu.2009.05.017.

Teo, T., & Noyes, J. (2014). Explaining the Intention to Use Technology among Pre-Service Teachers: a Multi-group Analysis of the Unified Theory of Acceptance and Use of Technology. *Interactive Learning Environments, 22(1),51–66.* doi:10.1080/10494820.2011.641674.

Transfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing. Evidence-informed management. *British Journal of Management, 14, 207–222*.

Venkatesh, V., Davis, F.D., & Morris, M.G. (2007). "Dead or Alive? The Development, Trajectory and Future of Technology Adoption Research," *Journal of the AIS (8:4), 2007, 267-286.* https://doi.org/10.17705/1jais.00120.

Venkatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003). User Acceptance of Information Technology: Toward A Unified View. *MIS Quarterly, 27(3) (Sep., 2003), pp. 425-478.*

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Association for Information Systems Unified Theory of Acceptance and Use of Technology: *A Synthesis and the Road Ahead. Journal, 17(5), 328–376.*

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2016). Unified Theory of Acceptance and Use of Technology: A synthesis and the Road Ahead. *Journal of the Association for Information Systems, 17(5),* 328–376. https://doi.org/10.17705/1jais.00428.

Welch, R., Alade, T., & Nichol, L. (2020). Using the Unified Theory of Acceptance and Use of Technology (UTAUT) Model to Determine Factors Affecting Mobile Learning Adoption in the Workplace: A Study of the Science Museum Group. *Iadis International Journal on Computer Science and Information Systems, 15(1), 85–9*8. https://doi.org/10.33965/ijcsis_2020150107.

Wessing, B., Lettner, S., & Zechner, W. (2018). Guided Bone Regeneration with Collagen Membranes and Particulate Graft Materials: A Systematic Review and Meta-Analysis. *The International Journal of Oral & Maxillofacial Implants, 33(1), 87–100.* https://doi.org/10.11607/jomi.5461.

Williams, S. P., & Schubert, P. (2018). Designs for the digital workplace. *Procedia Computer Science, 138, 478–485*. https://doi.org/10.1016/j.procs.2018.10.066.

Zarmpou, T., Saprikis, V., Markos, A., & Vlachopoulou, M. (2012). Modeling users' acceptance of mobile services. *Electronic Commerce Research, 12(2), 225–248*. https://doi.org/10.1007/s10660-012-9092-x.