

# The Adoption of e-Government Services in Nigeria using UTUAT Model

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**Abstract-Electronic government implementation in many developing countries are still evolving and its realisation depends on government provisions and users' adoption of the electronic services. This work investigated Citizens' adoption of e-government services in Nigeria using the Unified Theory of Acceptance and Use of Technology model (UTUAT). A survey data was collected from 989 citizens of Nigeria from Public and Private sectors.**

**The empirical finding shows that effort expectancy; performance expectancy; and social influence determine citizens' behavioural intention. Additionally, facilitating conditions, effort expectancy and behavioural intentions determine citizens' use of e-government services. Suggestions for decision makers and areas for further research are also considered.**

**KEY Words: Adoption, Diffusion, E-government, UTUAT, Nigeria**

## I. INTRODUCTION

The importance of using information and communication technologies (ICTs) towards improving the productivity, accountability and transparency of government business process, improve service delivery, and reduce cost of governance through e-government system can never be overemphasized.

Electronic government systems requires a radical transformation in the entire public sector organisation, especially in the business process by using the ICT as an enabler for transformation in the government agencies. Citizens' requirements for e-government services are determined and employed while deciding the services to be provided by e-government system as against private choice made with limited consultation [9].

Efficient e-governance solution potentially transforms the traditional method of government and citizens' co-operation by provisioning new service delivery mechanism that poses more challenge on citizens' awareness and e-governance readiness in developing countries.

Hence, the implementation and adoption promote essential technological, cultural, social, citizen participation and organisational re-engineering which must be considered and handled wisely by any government considering e-government implementation, especially in developing countries. Prattipati [10] noted that electronic government effectiveness is centred on two reasons: – the capability of government to provide electronic services that meets the needs

of their citizens and the readiness of the citizens to adopt and use the e-government services.

Consequently, understanding the factors that influence the use of electronic services is highly essential for governments. Few study has been done investigating issues that influence the usage of electronic government in developing nations, especially in West Africa, and this study tends to cover this gap. This empirical work adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model to investigate electronic government adoption in among Nigeria citizens. The outcomes of this research will assist decision-makers to have better understanding of the factors that influence electronic government adoption.

## II. ELECTRONIC GOVERNMENT IN NIGERIA

National e-governance Strategies Ltd was created in 2004 to oversee the nationwide electronic government project. NeGST's was mandated to initiate and direct the development of Nigeria's e-governance systems, develop an achievable policy and plan to provide a roadmap to electronic government development with conventional standards, functional platforms and applications through different ministries and government organisations.

However, majority of the websites of Nigeria government are still in publishing stage, while a few are at transact stage. Like many other African countries, it is evident that problems exist which affects the implementation of electronic government in Nigeria [9]. Mostly, emerging nations predominantly African nations are lagging in electronic government development as compared to developed nations. According to the United Nations survey of 2012, African countries average at 0.253, this is below the world's average of 0.415. According to United nation Electronic government Survey 2018, only four countries among the 54 countries in Africa score higher than the world average E-government Development Index (EGDI) of 0.55, while 14 countries have very low EGDI scores below 0.25. Nigeria is still at the middle between 0.25 and 0.55 despite enormous resources invested on e-government since 2001 [15].

## III. LITERATURE REVIEW

The main visitor to e-government services are the citizens. Moreover, citizen can be other government staff,

NGOs, other public or private organisations, civil society organisations, media organisations, International organisations, donor agencies and many additional groups. Therefore, it can be difficult to understand citizens need as a customer. Prattipati [10] argued that the success of e-government is based on two reasons – Government capability to implement and provide electronic services based on citizens need and the ability and readiness of users to adopt and use the e-government services. Hence, it is important to determine those factors that influence citizens' behaviour to adopt the e-services.

User acceptance of Information Technology is said to be significant for effective implementation of ICT projects. User Acceptance is defined as "initial decision made by an individual to interact with the technology" [17]. Adoption of Information technology occurs after direct experience with the technology and it occurs after technology acceptance. Some studies have explored electronic government adoption in developed countries [13], while comparatively few studies have explored developing countries especially in the West African region. A number of studies are centred primarily on technology acceptance theories and models for example the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT model provides useful insight and implication for understanding people's intention to use e-government services [13].

Ajibade et al. [1] in their work used the Technology Acceptance Model (TAM) to investigate electronic government development and provision in Nigeria. They found that limited Infrastructure, Digital divide, Incessant Power failure, and Low IT skills, are challenges that affect the adoption and implementation of electronic-government in Nigeria [1]. They conclude that tackling the obstacles is key to achieving better public service delivery. However, in their work, they used only qualitative method and relied solely on secondary sources for data collection, and as such, no direct encounter with the citizens that are the primary users of e-services to ascertain those factors that influence their adoption of electronic government.

Dimitrova and Chen [7] examined the effects of sociopsychological factors on the adoption of e-government in the US by combining two theoretical perspectives, TAM and DOI. The researchers identified perceived usefulness, perceived uncertainty and civic-mindedness as adoption factors. The findings showed that perceived usefulness, perceived uncertainty and prior interest in government were associated with the adoption of e-government in the US [7].

According to Akman et al. [2] little e-government technology research has been conducted in developing nations. They examined the effect of gender and education in using electronic services in Turkey. In their finding, they argued that differences exist in gender, education and occupation in ICT usage and there are significant differences

in gender and education on e-services adoption. The researchers found that males use e-government services more than females, and interaction with e-government services increases with the level of education of survey participants increased.

In conclusion, whereas literature review identified many factors that influence the adoption of e-government services in developed countries, however, these factors cannot be applied developing nations. In order to address this gap, this study will investigate the factors that influence the adoption of e-government services in Nigeria.

#### IV. RESEARCH MODEL AND HYPOTHESES

The UTUAT model was adopted based on its inclusiveness, reliability and consistency User Acceptance and Technology adoption, and will be used to investigate the factors that influence the adoption of electronic government services in Nigeria

According to Venkatesh et al., [16] performance expectancy is the variable that most strongly affects a person's intention to use information systems. It has a positive influence on behavioural intention according to previous studies. This relationship means that the higher the level of a user's confidence that e-government system can improve their performance, the higher the intention to use the e-government. The measurement of Performance expectancy is based on the benefits of e-government services, such as: time-saving, cost-saving and effort, ease of communication with government, improve service delivery and by enabling equal opportunities for citizens to carry out their businesses with government.

Effort expectancy is the belief that using the e-government will be easy and effortless, and was measured by views on ease of use of e-government services and ease of learning how to use these services. The study predicts that the intention to use the e-government services will be higher if the use of the e-government services will be easy and effortless.

Social influence was measured by the degree to which family and friends can influence someone to use e-services; either positive or negative.

Facilitating conditions was measured by the view of the ability to access required e-government resources, and also to gain knowledge, and the necessary support needed to use e-government services. It is also influenced by the view of the technology fitting into the lifestyle of the user.

The measurement of behavioural intention encompasses the intention and predicted use of e-government services. As regards to those mentioned above and the theoretical context offered, figure-1 illustrate the research theory used in this study. In many occasions, policymakers may want to understand the reason behind different segments of the population using an e-government innovation more than others. The Unified Theory of the Acceptance and Use of Technology (UTAUT) reveals how certain individual-level factors influence whether or not a citizen will use an e-government site [16].

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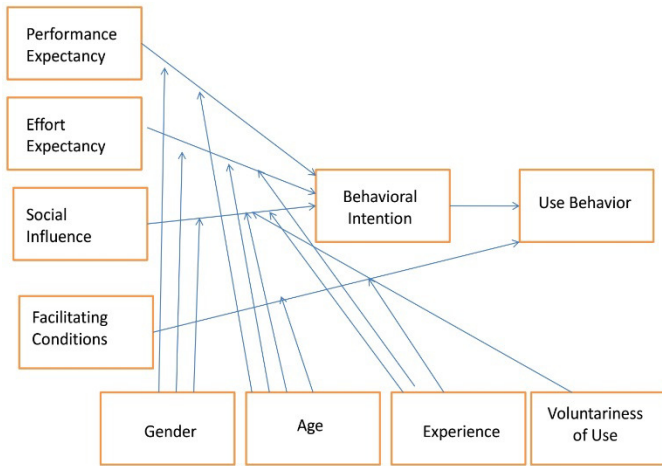


Figure 1. UTAUT model Venkatesh et al., [16]

The following hypothesised relationships were generated:

H1. There would be a substantial positive relationship between performance expectancy and behavioural intentions to use e-government services, and this relationship would be moderated by gender, age and Internet experience.

H2. There would be a substantial positive relationship between effort expectancy and behavioural intentions to use e-government services, and this relationship would be moderated by gender, age and Internet experience

H3. There would be a substantial positive relationship between social influence and behavioural intentions to use e-government services, and this relationship would be moderated by gender, age and Internet experience.

H4. There would be a significant positive relationship between facilitating conditions and use behaviour to use e-government services, and this relationship would be moderated by age and Internet experience.

H5. There would be a significant positive relationship between behavioural intention and use behaviour of e-government services.

V. METHODOLOGY

The survey questionnaire was distributed to a total of 1100 citizens in Nigeria between the period of August and

December 2016. From the 1100 questionnaires distributed, 1009 responses were received, and 20 questionnaires were discarded because either the respondents gave more than one answer to a question and/or many questions were unanswered. As a result, 989 were usable responses and were used for subsequent analysis in this study.

The data collection procedure followed is as follows: At first, the researcher approached senior managers and directors in 25 government agencies in Nigeria (both at National and State level) using his wide network of professional contacts to seek permission and assistance in administering the questionnaire to citizens. Then, the method of distributing and completing the questionnaire commenced in the premises of the agencies and was facilitated by the agencies' staff. The questionnaire presented a brief introduction to the aim of the study to the respondents. The participation was on a purely voluntary basis. The surveys were completed in a setting free from external influence and at the participants own pace. The questionnaires were collected after a period of around 15 minutes from the participants; the participants completed the questionnaire whilst waiting to complete their tasks within the respective government agency premises.

The total response rate achieved in this study was (89.8%), and it is considered a very good response rate in the field of Information Systems research.

From these 989 usable responses, the demographic background is given below:

As regards to the respondent's gender, 37.1% of the 989 respondents were females, whereas 62.9% of the total responses were male.

A. Data Analysis

The authors generated descriptive statistics (percentages and tables) and used Linear Regression analysis by using SPSS Version 23.0.

B. Analysis of the Research Findings

As regards to age, the result shows that the respondents with age group 30-44 has the highest percentage (40.1%), followed by age group 25-29 (22.2%), next is are age group 18-24 (20.0%), followed by age group 45 – 54 (11.3%), whilst age group less than 18 and above 54 has the lowest with 3.4% and 3.1% respectively.

For educational background, 65%of respondents hold bachelors or HND degrees, whilst 17% hold postgraduate degrees (Masters and PhD) and 18% hold secondary school certificate.

A regards to Internet experience, the result shows that majority of the respondents 58.7% have over 4 years of Internet experience, and by the internet experience group of 2-4 years 23.8%, and Internet experience group of 1-2 years, constituted 11.6%, whilst the least Internet experience group 1 -12 months constitute 5.9% of the total respondents .

As regards to Internet usage, the result shows that 52.3% of the respondents use Internet daily, followed by 32.6% of

respondents that uses the Internet weekly, whilst 15.1% of the respondents use the Internet monthly. The result also revealed that all the respondents use the Internet.

C. E-government Usage

The result shows that 27% of participants uses the Internet once a month to access electronic government services. Whilst 26% of the respondents uses the electronic services several times a month. And 18% of the respondents uses the Internet several times a week. Only 11% of the respondents uses the e-government services daily. In contrast, 18% of the total respondents revealed that they do not use the Internet to gather information from government websites.

Majority of respondents (55%) indicated that they had completed at least one service via the e-government website and the remaining 45% revealed that they have not completed any task through three-government system.

In conclusion, the key factors that influence e-government adoption as identified in the literature and the survey data were under six key factors: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Behavioural Intention (BI), demographic variables (age, gender and education level), and e-government adoption.

As established in this research, the average scores of respondents' for Performance Expectancy ranges from 3.29 and 4.07, which is reasonably high. Effort Expectancy ranged from 3.22 to 3.97.

D. Descriptive Statistics

Descriptive statistics indicated that these results are reasonably high. Regarding Social Influence, the score ranges from 4.08 to 4.25, signifying that the scale is high. Facilitating Conditions ranged from (3.51) to (4.20), which is also high.

Behavioural Intention to use e-government system, ranges from 3.96 to 4.04.

Descriptive statistics indicated that these scores are high. (The last score ranged from (3.94) to (3.97) for use behaviour, indicating that the scale is quite high.

E. Reliability Test

The research instrument was tested for its reliability and construct validity before presenting the findings. The reliability for each construct is illustrated in Table 1 below. A high Cronbach's value for all constructs implies that they are internally consistent and measure the same content of the construct.

TABLE I  
RELIABILITY TEST

	Number	Cronbach's	

Constructs	N	of items	Alpha (a)	Type
Performance Expectancy	983	6	0.884	High Reliability
Effort Expectancy	989	6	0.918	Excellent Reliability
Social Influence	969	5	0.794	High Reliability
Facilitating Conditions	955	6	0.745	High Reliability
Behavioural Intention to use	983	3	0.844	High Reliability
N = Sample Size				

F. Regression Analysis

A regression analysis was executed using Behavioural Intention as the dependent variable whilst Performance Expectancy, Effort Expectancy, Social Influence as the predictor variables.

A binary correlation test was performed to determine the relationship among Performance Expectancy (PE), Effort Expectation (EE), and Social Influence (SI) and Behavioural Intention to adopt e-government services. The outcome indicated that the correlation is significant to all the factors: Performance Expectancy at 0.470, Effort Expectancy at 0.923, and Social Influence at 0.443.

TABLE II  
CORRELATION

	Correlation	Behavioural Intention to Adopt E-government
Performance' Expectancy (PE)	Pearson Correlation Sig. (2-tailed) N	.470(**) .000 987
Effort Expectancy (EE)	Pearson Correlation Sig. (2-tailed) N	.923(**) .000 989
Social Influence	Pearson Correlation Sig. (2-tailed) N	.443(**) .000 989

\*\* Correlation is significant at the 0.01 level (2-tailed). \* Correlation is significant at the 0.05 level (2-tailed).

A regression analysis was performed with Behavioural Intention to adopt e-government as the dependent variable and Performance Expectancy, Effort Expectancy and Social Influence as the predictor variables.

A total of 989 cases were analysed. From the analysis, a significant model emerged ( $F(3, 989) = 2105.155, p < 0.001$ ) with the adjusted R square being 0.865. The significant variables include Effort Expectancy ( $\beta = .876, p < .001$ ) and Social Influence ( $\beta = .100, p < .001$ ) on Behavioural Intention to adopt e-government. In contrast, Performance Expectancy ( $\beta = .024, p = .111$ ) was not considered to be significant predictor in this model.

All the predictors have a higher tolerance value than (0.59). As a result, both the (VIF) and tolerance values suggest that the independent variables (Performance Expectancy, Effort Expectancy, and Social Influence) included in this test of study do not suffer from the problem of multi-collinearity. This means that:

(H1) There is significant positive relationship between Performance Expectancy and Behaviour Intentions to adopt e-government services. .

(H2) There is a significant relationship between Effort Expectancy and Behaviour Intentions to adopt e-government services.

(H3) There is a significant positive relationship between Social Influence and Behavioural Intentions to adopt e-government services.

(H6) There is a significant difference between the gender of the adopters and non-adopters.

(H7) There is a significant difference between the ages of the adopters and non-adopters.

(H8) There is a significant difference between the education levels of the adopters and non-adopters.

## VI. DISCUSSION

This paper has discussed the results of a survey towards adoption of e-government services Nigeria and it presents a descriptive account of the citizens' perceptions of the e-government services in Nigeria. E-government services are considered critical to the efficient and effective delivery of government services to citizens. In addition, the implementation of e-government will help minimise corruption in public agencies by increasing the transparency of government services. The significant and non-significant factors found in the study and their influences on practice are outlined below.

### A. Significant Factors

Of the adoption factors, performance expectancy, effort expectancy, social influence, Facilitating conditions, gender, age, and internet experience, all had a significant impact on behavioural intention to use the e-government services in Nigeria.

### B. Non-Significant Factors

All variables considered were found to be significant in terms of moderating the behavioural intention to use e-government services in Nigeria

### C. Implications for Practice

Citizens' use of e-government may benefit from the services and consequently encouraged to adopt e-government. If the government provides more benefits to its citizens in terms of convenient access and prompt services, when compared to the old and traditional means, then possibly this practice might spread the use of e-government services throughout the Nigeria society.

1) E-government developers in Nigeria must ensure that e-government is beneficial to its users in terms of time saving, money and effort, and also facilitate communication with government.

2) E-government developers in Nigeria should ensure that the good quality of government services centered on the needs of the users and also provide citizens with an equal basis on which to carry out their business with government.

3) Government need to urgently address security/privacy concerns of citizens in order to gain their trust since social influence has positive influence on behavioural intention. There should be a National Cybersecurity policy and framework that is embedded in e-government, as security concerns is one of the major challenges to citizen adoption of e-services according to the result.

4) Government should ensure good availability of Internet access as it will improve citizens' adoption of e-services.

5) Government should ensure that the e-government services are easy to use and as well as easy to learn how to use these services. There should be a feedback mechanism to ascertain these from the users.

6) The e-government literature has emphasised the fact that citizens who use e-government will benefit from the services and consequently be encouraged to adopt e-government as a regular method of accessing and interacting with public services. Empirically, this research has shown that if e-government provides more benefits to its citizens in terms of convenient access and prompt services, then more citizens will adopt the e-government services in Nigeria.

7) Empirical finding shows that social influence has positive influence on behavioural intention, therefore Nigeria government should improve the awareness of e-government in the society, which can be achieved through seminars, TV and social adverts.

8) Government should also ensure that citizens have access to required resources, and also obtain knowledge and

the necessary support needed to use e-government services. They should ensure that the e-government portal supports many device platforms and are backward compatible in terms of software and hardware.

## VII. CONCLUSION

Although research exists that explores citizen adoption of e-government services in many countries, the authors argue that currently there is no independent studies that examine e-government adoption in the Nigeria with high sample size.

This research presents an initial attempt towards understanding the adoption of the e-government services in Nigeria from citizen's perspective. This study applies presently amended UTAUT model on user acceptance and use of e-government services in Nigeria. Based on the data collected and the results of the analysis, it can be concluded that Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Condition have positive influences on user intention to use e-government services.

While the research findings are encouraging from a practical perspective for the Nigeria government, from a theoretical perspective these results reconfirm that technology acceptance is influenced by key constructs such as Performance Expectancy, Effort Expectancy, Social influence, and Facilitating conditions (factors) of the e-government services used. From a practical perspective however, one has to recognise the fact that although the survey results are encouraging, e-government has yet to mature in the state of Nigeria since its inception in 2001.

As our survey results reflect, some of the reasons for this can be attributed to the fact that citizens are still not fully aware of e-government services, are concerned about security and some are hindered by the lack of internet access. To the best of our knowledge, this research is the first study that addresses the issue of citizens' adoption of e-government services in Nigeria by utilizing the UTAUT model and with the high sample of number of surveyed citizens. In addition, it can be concluded that this study extends the knowledge in the area of citizens' adoption of e-government applications and services, as it tested the above-mentioned theories. Trust and Quality of the website can be added in future work.

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