The factors Affecting Citizens’ Adoption of E-government System in Developing Countries. Nigeria case Study

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Abstract

Among the many promises of the e-government evolution is its potential to strengthen social equality among citizens and make governments service oriented to the needs of their citizens. The purpose of using ICTs in government is to provide information and services online and also to support consultation processes that encourage active participation of citizens in governance. Citizen requirements are important part of e-government which is the desire to change the way businesses, citizens and tourist interact with government agencies (Mundy and Musa, 2010). It is therefore important to determine the expectations and desires of citizens from their government.

This paper presents an assessment of factors that affect the adoption of e-government system in Nigeria using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Out of the 1100 potential respondents, 989 were usable responses and were used for subsequent analysis.

The empirical data reveal that performance expectancy was considered an insignificant influence on the citizens’ behavioural intention to adopt e-government systems, while effort expectancy and social influence
factors have significant positive influence on citizens' behavioural intention to adopt e-government. Additionally, this study findings reveal that the facilitating conditions are insignificant to the citizens in adopting the e-government system. The implications for decision makers and suggestions for further research are also considered in this study.

ICT as a tool in the government agencies. Citizens' requirements for e-government services should be determined and utilised in making decisions over services to be provide via information Technology as against internal choice made with limited consultation (Mundy and Musa, 2010).

Efficient e-governance solution potentially transforms the traditional method of government and citizens' co-operation by creating a new virtual government and citizen interface which poses more challenge on citizens' awareness and e-governance readiness in developing countries.

Hence, the implementation and adoption promotes important
technological, cultural, social, citizen participation and organisational re-engineering which must be considered and handled carefully by any government considering its implementation especially in developing countries.

Thus, user awareness of these services, their willingness to use them, and ease of use all are important factors for the further development of e-government (CEC, 2003).

In addition to understanding how best to integrate various technologies to supply e-government services, government leaders also face a second challenge of meeting the demand for citizens that will use the e-government services. What are the typical behaviours of citizens online? Who is likely to go online to use government services? What types of barriers and obstacles turn people away from going online to use government services? What factors encourage users to feel comfortable with e-government services? Once a person makes a visit online, will they return? Will they encourage other people to use the site or not? Government leaders can only expect to realize the benefits from cost-savings or better service quality if the usage population grows.

Government organizations are entrusted with responsibilities to be good stewards of information and develop cost effectives means to capture, store, process, and communicate information for citizens irrespective of skills, language abilities, education level, demographic region, religion and income. According to Prattipati (2003), Successful e-government depends on two factors - the willingness of citizens to adopt and use the online service and the ability of the government to implement e-government to match the needs of the citizen and web visitor.
Government decision makers, therefore, need an understanding of the factors that would encourage use of electronic service delivery channels rather than more traditional service delivery methods. To date, there has been little research exploring factors that determine the adoption of e-government services by citizens in developing countries, especially in West Africa, and this research aim to address this gap. The study adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model to explore factors that determine the adoption of e-government services in Nigeria as an example of a developing country where e-government services are still being developed. The results of this study will help decision makers to gain a better understanding of the factors that determine citizens' adoption of e-government services.

2.0 E-government in Nigeria

Nigerian government is constantly making efforts at achieving the millennium development goals but lack of probity, accountability and transparency as well as lack of the basic infrastructure is a major hindrance. Thus, the global and continental ranking of Nigeria is abysmally low that smaller countries are high up on the ladder. It is thus obvious that the size of the country and her wealth had not translated to the well-being of the citizenry. However, the current efforts of government as contained in vision 2020 is a clear indication of her further commitment not only to eradicate poverty by 2020 but to have the nation listed among the top 20 economies of the world (Ayo, C. K. 2010).

Nigeria government has since 2001 taken noticeable steps to put the country on track in the area of ICT development and utilization in
governance. In March 2001, the Nigeria government launched her National information technology Policy and thereafter began the implementation with the establishment of National Information Technology Development Agency (NITDA). Furthermore, the private sector in Nigeria was not left behind in ICT integration. In demonstration of government recognition of private sector as partner in progress a joint venture known as National e-government Strategies Limited was formed. This agency was mandated to create a practical strategy and single architecture to guide the evolution of digital government solutions with consistent standards, operating platforms and applications across agencies and government systems.

In an effort to enhance e-governance in Nigeria, the National e-governance Strategies Ltd was created in 2004 to oversee the national e-governance project. It is a partnership between NITDA and the private sector, whose goal is to implement the backbone of the Nigerian e-governance infrastructure (PPP) as a special purpose vehicle. NeGST’s mandate is to drive the development of Nigeria’s e-governance initiatives, create a practical strategy and single architecture to guide the evolution of digital government solutions with consistent standards, operating platforms and applications across agencies and government systems.

The launching of the e-registration of teachers in Nigeria in May 2006 was the first project undertaken by NeGST (Adeyemo, 2011). Before 2011 different agencies were responsible for various aspects of ICT development in Nigeria. But recently, in 2011 Nigeria created a new Ministry of Communications Technology at the
Federal level. The ministry is charged with the responsibility of co-ordinating ICT development, and drive the nation's e-government agenda. It is noteworthy to state here that many government ministries and department now have websites even though most of this websites are simply at publishing stage which rarely gets updated.

Some other components of e-governance have already commenced in Nigeria e.g. the Nigerian Customs Assycuda Programme, the computerization Resident Permit by the Nigerian Immigration Service, computerization of land and Certificate of Occupancy in the Federal Capital Territory Administration (FCTA). The payroll of some organizations are also being computerized i.e. (e-Payment), online checking of West Africa Examination Council (WAEC), National Examination Council (NECO) and Joint Admission and Matriculation Board (JAMB) result as well as National Youth Service Corps (NYSC) postings are part of real time and cost effective services which are part of e-government. There is therefore the need to consolidate and spread it to other services that have not been incorporated as well as to the rural areas in Nigeria. NITDA maintained that e-governance reduces waste, saves time and encourages simple, moral, accountable, responsive and transparent conduct in the delivery of government services.

Despite the huge amount of resources that been channelled to the development of e-government in Nigeria since 2001, there is little evidence or research to suggest that a clear framework for the adoption of e-government is being followed. According to (Yusuf, 2006), e-government activity in Nigeria is low. Most government websites are in the publish stage and a few government
organisations are at the transact stage. Like many other African nations, there are some clear problems which influence the implementation of e-government in Nigeria (Mundy, D., & Musa, B. 2010).

African Countries are far behind the rest of the world in e-government readiness. The major challenge for the e-government development in Africa according to United Nation report (2012) remains the widespread of lack of adequate infrastructure and functional literacy. Despite recent expansion in mobile telephony: most countries in Africa remain at the tail end of the digital divide.

United Nations e-government Survey for 2012, states Nigeria has dropped in e-government global development index from 0.2687 in 2010 to 0.2676 in 2012, which indicates a decrease in the level of the acceptance by both government and private individuals in the country (UN, 2012).

3.0 Literature Review

The major visitor is the citizen. And citizen can be other government employees, private businesses, civil society organizations, non-governmental organizations, media organizations, the international donor community and many additional sub-groups. It is difficult to understand the needs of the citizen as a “customer.” Additionally governments are different from commercial organizations and must provide services to all of its citizens instead of to certain privileged individuals or group. Government organizations are entrusted with responsibilities to be good stewards of information and develop cost effective means to capture, store, process, and communicate information for citizens irrespective of skills, language abilities, education level, demographic region, religion
According to Prattipati (2003), successful e-government depends on two factors - the willingness of citizens to adopt and use the online service; and the ability of the government to implement e-government to match the needs of the citizen and web visitor. It is therefore, important to understand the factors that influence citizens' adoption of e-government services.

User acceptance of IT is deemed a necessary condition for the effective implementation of any IT project. User acceptance is defined as an "initial decision made by the individual to interact with the technology" (Venkatesh et al., 2004). Adoption comes after direct experience with the technology and after an individual has decided to accept the technology. A number of studies have investigated the adoption of e-government services in developed countries (Titah and Barki, 2006), whereas relatively little has been undertaken in developing countries especially in West African region. Many prior studies are based mainly on technology acceptance theories and models such as 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), which provide useful insights and implications for understanding an individual's intention of using e-government services (Titah and Barki, 2006).

Ajibade et al (2017) investigated e-government implementation and public service delivery in Nigeria using Technology Acceptance Model (TAM). They found that infrastructural deficit, digital divide, incessant power failure, and low IT professional manpower, are the obstacles that hinder the
adoption and effective implementation of e-governance that would have engendered qualitative service delivery in public sector organisations in Nigeria (Ajibade, Ibitian and Ayelabola, 2017). They concludes that tackling the obstacles to e-governance adoption, implementation is key to the achievement of better public service delivery. They recommends that the sensitization of public servants on the importance and benefits of adopting and implementing e-governance in their administrative and organizational processes that will ultimately lead to improved service delivery in Nigeria among others (Ajibade, Ibitian and Ayelabola, 2017). 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 who are the main users of e-government services to ascertain the factors that influence their adoption of e-government.

Carter and Belanger (2003), surveyed 140 students in the US to investigate factors that influence citizens' adoption of e-government services. They adopted the DOI and examined what they thought were the most relevant constructs, namely, relative advantage, compatibility, ease of use and image, which affect the intention of citizens to use e-government services. The findings showed that higher levels of relative advantage, compatibility and image are significantly associated with an increased intention to adopt e-government services. In another study, Carter and Belanger (2003) studied citizens' adoption of e-government services based on an integrated model that incorporated constructs from the TAM and DOI theories, and from the Web trust model. In a pilot study, a
questionnaire was administered to 140 undergraduate students in the US. The findings revealed that perceived usefulness, relative advantage, and compatibility were significant in increasing citizens' intention to use e-government services.

However, in the main study, in which another group of adults aged 14 to 83 years was surveyed, Carter and Belanger (2005) found that perceived ease of use, compatibility and trustworthiness were significant indicators of citizens' intentions to use e-government services. A comparison of the findings of the pilot study with those of the main study showed that there were differences in the determinants of intention to use e-government services. Citizens' demographic attributes had a strong impact on the factors indicating intention. For example, the findings of the pilot study were influenced by students' Internet and computer experience, whereas, in the actual study, the familiarity of respondents with the e-services on which the questionnaire questions were based had an influence on the findings.

Another study, based on technology adoption theories, was undertaken by Hung, Chang and Yu (2006), they investigated the public's acceptance of the online tax filing and payment system (OTFPS), an e-government service in Taiwan. Based on TPB, the researchers proposed a comprehensive model to elicit users' salient attitudes towards e-government services using an e-mail questionnaire survey. The study found that perceived usefulness, ease of use, perceived risk, trust, compatibility, external influence, interpersonal influence, self-efficacy and facilitating conditions were critical factors in the adoption of OTFPS (Hung, Chang and Yu, 2006).
Dimitrova and Chen (2006) examined the effects of socio-psychological 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. An online questionnaire was posted to a census-balanced sample of Internet users in the United States. The findings showed that perceived usefulness, perceived uncertainty and prior interest in government were associated with the adoption of e-government in the US (Dimitrova and Chen, 2006).

According to Akman et al (2005), fewer e-government technology studies have been undertaken in developing countries (Akman et al., 2005). They investigated the impact of gender and education in the use of e-government services in Turkey. The researchers argue that there are differences in gender, education and occupation between people using ICT. Different groups of people were surveyed in the public and private sectors. The findings showed that differences in gender and education had a significant impact on the adoption of e-government services. The researchers found that males used e-government information and services more than females, and as the level of education of survey participants increased, the interaction with e-government also increased.

In conclusion, while the literature review has identified a number of factors that determine the adoption of e-government services in developed countries, such as usefulness, ease of use, perceived risk, trustworthiness, compatibility, external influence, Internet safety, interpersonal influence, relative advantage, image and facilitating conditions, relatively little is known...
about whether these factors apply to developing countries. To address this gap, this study aimed to investigate the factors that influence the adoption of e-government services in Nigeria.

4.0 Research Model: The Diffusion of Innovations model

The Diffusion of Innovations model examines how the use of an innovation such as the Internet to access government services, spreads among a population of users over time. Typically this model distinguishes the general population based on whether an individual decides to use e-government when a service is first introduced or after it has become very popular (Venkatesh et al., 2003). Early adopters tend to be risk takers and also have the means to be the first to use an e-government service. Late adopters tend to be very risk averse and may also lack the means to use an e-government service. This model is effective to understand how fast different segments of the population are choosing to use an innovation.

![Figure 1. UTUAT model (Venkatesh et al., 2003)](image)

In many instances, policy makers would like to understand why there are different segments of the population using an e-government innovation. To help policy makers and government leaders understand more about its citizens, 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 (Venkatesh et al., 2003). These theories suggest that among many factors such characteristics as age, gender, income and education play a role in explaining whether web visitor will use an e-government service depending on the extent to which he or she feels comfortable based on:

- How likely that using the e-government service will help an individual to meet their needs (Performance Expectancy);
- How easy the site is to use, how motivated they are to use the site versus using other means such as accessing a service in-person (Effort Expectancy);
- How much family, friends, and others influence his or desire to use e-government (Social Influence);
- How accessible ICTs and Internet access is to each person for using the online service (Facilitating Conditions).

These factors are more former conceptualized as Performance Expectancy, Effort Expectancy, Social Influence and Facilitating Conditions.

4.1 Research Method

The survey questionnaire was distributed to a total of 1100 citizens between the period of August and December 2016. From 1100 questionnaires distributed, 1009 responses were received. Of the 1009 received responses, 20 questionnaires were discarded because either the respondents gave more than one answer to a question and/or many questions were unanswered. This meant that, from the final sample of 1009 questionnaires, 989 were usable responses and were used for subsequent analysis. The total response rate obtained in this research was (89.8%), which is considered a very good response rate within the field of IS research.
Of these 989 usable respondents, the demographic background is as follows:
Relating to the respondent's gender, (37.1%) of the 989 usable responses were females, while (62.9%) of the total respondents were male.

4.2 Factor Analysis
In order to verify the construct validity, a factor analysis was conducted utilising Principal Component Analysis (PCA) with the varimax rotation method.

4.3 Factor Loading
The factor loading for the six constructs that are loaded. All the items loaded above (0.40), which is the minimum recommended value in IS research (Straub, 2004; Dwivedi et al., 2016). Moreover, cross-loading of the items was not found above (0.40).

5.0 Research Analysis
5.1 Performance Expectancy
Performance expectancy describes the extent to which an individual believes that using a system will help him or her attain gains in his or hers human development. Does using the system improve opportunities to obtain a job or perform well in his or her job, find and participate in educational activities, and otherwise increase the freedom of users to participate in processes that deeply affect their lives (Walsham 2007)?
Findings from this study provide evidence that the performance expectancy factor was considered an insignificant influence on the behavioural intention to adopt e-government systems. This clearly suggests that efforts are required from the e-government officials and implementers to develop the content of the system to be more useful to citizens.
5.2 Effort Expectancy

Effort expectancy is defined as the degree of ease of using the system. This is based on whether the individual user feels as if a great deal of learning is necessary for using the system, how complex the system functions are, and other issues related to literacy and the use of ICTs.

If the effort expectancy factor toward e-government adoption of behaviour factor is positive, then citizens are likely to perform online activities (Venkatesh et al., 2003; Al-Gahtani et al., 2007). Findings from this study suggest that the effort expectancy factor has a significant positive influence on the behavioural intention to adopt e-government. The survey findings are consistent with the UTAUT model, which suggests that the presence of constraints might inhibit the behavioural intention to adopt e-government (Venkatesh et al., 2003). This also suggests that there is a need to train citizens with the skills to use computers, the internet, and the e-government system.

5.3 Social Influence

Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system. It is awareness messages that are produced and gained via mass media, such as television and newspapers, friends, families are considered to have an effect that is likely to influence citizens’ intentions to adopt or refuse technology (Rogers, 1995; Venkatesh and Brown, 2001; Dwivedi et al., 2006). In terms of this research, social influence has a positive influence on explaining citizens’ behavioural intention to adopt e-government, and on those who have already adopted e-government but are not satisfied with the project quality.

Thus, governments should encourage citizens to influence their family and
relatives who are yet to adopted the e-government system. In addition, there is need to increase the advertisement and awareness campaigns on television, newspapers and government agencies websites and in different dialects, to convince the citizens to adopt e-government systems. The aforementioned theoretical argument was justified and supported by the findings derived from the research. The results show that social influence has a positive influence on the perceived behavioural intention to adopt e-government. Also, social influences are assumed to be important in the early stage of individual’s experience.

5.4 Facilitating Conditions
Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. Facilitating conditions is considered to be directly related to usage behaviour (Venkatesh et al., 2003). The inclusion of the aspects of technological and organisational environment that are meant to minimise the challenges and barriers that hinder the system use, directly adds to this relation. Examples of these technological and organisational environment aspects include compatibility to the specification of e-government systems and other software and hardware, integration amongst public agencies that would provide full resources to citizens, legislation that would support the citizens using the e-government system, government commitment that would ensure the sustainability of the project and its continuation, and security and privacy mechanisms that increase citizen participation and maximise their trust and usage. Therefore, it is expected that if these items are perceived as high,
then e-government adoption will be high.

This study findings suggest that the facilitating conditions are insignificant to the citizens in adopting the e-government system. This might be due to lack of availability of online services; and challenges in accessibility channels, high cost of broadband, lack of trust and security to the system, poor government commitment and support, and therefore the government should think about more citizen-centric services instead of business services.

6.0 Discussion and Conclusion

The empirical study from Nigerian citizens' indicate the importance of government website support systems and citizen awareness about e-government systems as significant determinants of the adoption of e-government services by citizens in Nigeria. As identified in this study, lack of technical support for government's websites; non-availability of online services; challenges in accessibility channels, high cost of broadband, lack of trust and security to the e-government system, poor government commitment and support, are among strong barriers against the adoption of e-government services. Thus, addressing these challenges in addition to provision of fast and accurate technical support service will positively influence citizens' adoption of e-government services. Citizens may be, understandably, easily deterred by technical failures, so it is very important to have a professional team to detect and respond to technical issues and to help users as soon as possible.

The study result indicates that a lack of awareness and knowledge about e-government services as a significant barrier from the
perspective of citizens and IT staff. Therefore, more information about e-government systems and a better understanding of the benefits needs to be provided to Nigeria citizens in order to increase the adoption level of e-government services.

The empirical study also reveal that slow and intermittent disconnected Internet services, and lack of steady power supply were major concern raised by the majority of the citizens. The provision of high speed Internet services by Galaxy Backbone and other ICT providers at a reasonable cost will improve the level of e-government adoption.

References


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