

# Methodological Process for Evaluation of E-government Services base on the Federal Republic of Nigerian Citizen's E-government Services usage

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## Abstract

**Background/Objectives:** e-government covers wide range of areas in research, however all the effort did not come with single consensus towards e-government, although users prospective was seems to have less concerns. **Methods/Statistical Analysis:** the importance of this matters is to have the ability to come up with the systematic and valid approach for the evaluating the e-government services, it is also considered in this research to view the bigger rang of theoretical view of point, which will help in collecting almost all required perimeters that are needed for the executing methodological process in regards to e-government services in consideration of the users' protective's. **Findings:** This research have done much in this fields and have conducted to highlighted the inadequacy of the current method used in the providing the e-government services, this is in ration to the current -government services provided by the government, on the other hand the study take the advantages of the current deficiency to come with the better and adequate method. This paper has proposed the standard model for evaluating the e-government services particularly in the federal republic of Nigeria. **Application/ Improvements:** In consideration to the obtained results in this research, more variable have been discover to improve the current situation and are fitted to be used in the evaluation of the e-government services.

**Keywords:** Evaluation, Information, Methodology, Model, Technology, Theory

## 1. Introduction

Electronic services offered by government are minimally affected by aspects and limitations of time and distance, and enable stakeholders to retrieve required information regarding policies and associated regulations towards enabling them to efficiently fulfill day-to-day functions. Besides, e-government initiatives also contribute to greater transparency, making government functionaries more accountable for their actions<sup>1-3</sup>.

The widespread success and accomplishment with e-government processes is also determined to the extent which the installed systems are ultimately

used and accessed by end users. In this regard multiple governments worldwide are facing diverse challenges in encouraging their citizens to accept and utilize the processes installed<sup>4-12</sup> since there is seemingly difficulties in getting the projects to be actually utilized successfully. Al-Shehry<sup>13-15</sup> is of the opinion that some 35% of projects initiated are concluded to be significantly off-the-mark, with an additional 50% of initiatives undertaken having gone significantly off-track. To conclude, the researcher concludes that just 15% of projects undertaken seem to have been successful. Such a high and rate of failure in the projects has called for a thorough review of the processes initiated with regard to e-commerce. A major reason

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concluded in this regard relates to shortcomings in the quality of electronic services adopted, i.e. the e-service quality, which in turn has hindered the success of multiple initiatives undertaken<sup>16-19</sup>.

The value as well as the importance of services in e-government provided to the populace is measured by evaluating the reliability and the dependability of the website when used by the public, related businesses and associated agencies<sup>20</sup>. Service quality is judged by the users in consideration of the quality of services they come across in trying to use the systems<sup>21</sup>. Therefore, if the users have greater expectations from the systems installed in comparison to what is actually delivered, the system would be perceived not to have met expectations<sup>22</sup>. Most users of e-government services have very high expectations of the systems and processes installed<sup>23</sup> and when the actual level of services delivered or provided is unable to align with the expectations, the system is considered to be riddled with shortcomings and in-competencies. This treatise therefore evaluates e-government services in consideration of how end-users provide a clearer snapshot of what the public desires from the overall system.

## 2. Related Work

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Internet based electronic services (e-services) have been widely utilized worldwide to rationalize operating costs of various processes instituted, towards enhancing the degree and extent of services provided to the general public and the private sector. The widespread acceptance of new amenities normally delivered is a function of the service level, and should there be major shortcomings observed in this regard there is every possibility of the processes instituted to be considered a failure<sup>17,18,24</sup>. The quality of services provided would determine the extent of qualitative advantage accrued by the system, and would be measured and reflected to the degree to which it contributes towards enhancing productivity and improving relationships amongst multiple stakeholders. Strategically, this would contribute towards enhanced levels of customer satisfaction and trust within users<sup>24</sup>.

While various researchers have all focused on the primary aspects associated with e-service quality<sup>25</sup>, standardizing the various aspects globally is a major challenge in consideration of the changing dynamics of the entire industry and its associated paradigms<sup>26</sup>.

An initial assessment of the extent of e-services

provided within the Federal Republic of Nigeria, conducted by<sup>27-30</sup>, a technology research corporation, concluded that in consideration of the fact that the standards of online services delivered differed amongst various countries, the corresponding plans towards developing the same also differed which made it harder to design a standardized system for all countries involved.

Had earlier<sup>31,32</sup> researched and evaluated the standards of e-government services in Thailand, which is an upcoming developing economy, this treatise has focused on various other countries in Africa and the Middle East, particularly Nigeria. While there seems to have been an exponential increase in the extent and prevalence of Internet services within the country as a whole, the same is not necessarily reflected within the series of services offered by e-government<sup>33-35</sup>. In evaluating the factors which would contribute to the implementation of a successful system in this regard, the researchers are of the perspective that the service quality would be a major determinant in this regard<sup>36</sup>. Is also of the perspective that service usage is generally a function of the extent to which online services can resolve the end-users requirements.

The egovrtd2020 consortium recommended a thorough review of the existing ICT processes, comparing the processes prevalent with those already in operation in comparable European countries<sup>37,38</sup>. Such a comparison would enable a better perspective on the desires and expectations of the end users<sup>39</sup> was of the perspective that aspects related to socio-cognizant parameters, which are both secure and constitute an expansive range are of specific importance in considering models for most developing economies.

Some of the associated models and hypothesis presented in this regard has tried examining and lining up the numerous innovations accrued in this regard. These studies have summarized and highlighted the innumerable difficulties encountered by users in accessing multiple electronic services offered by the government and online administrative systems. Consequently, Unified Theory of Acceptance and Use of Technology (UTAUT) related to the hypothesis incorporating some 8 prevailing technology acceptance models<sup>40</sup>. On a related note<sup>41</sup> used the UTAUT model towards concluding and presenting relevant recreation analysis which evaluates the impact of e-government initiatives, and the exact system which should be worked upon by individual governments.

Nevertheless, implementing e-government processes

entail multiple challenges at times which are periodically highlighted by various governmental agencies. These include aspects related to the supporting infrastructure, problems of security as well as the privacy, and premium services availability<sup>5,9,10,42</sup>

There are not many experimental studies conducted with regard to e-government processes within Asia<sup>43,44</sup> has correspondingly highlighted this aspect.

The perspective<sup>34,45,46</sup> that the protocols enable various state agencies in maintaining greater accountability and transparency in the operations. This contributes to arranging for an administrative system which is smoother; enabling the various government departments to be of more service to the public in consideration of the latter's needs and requirements<sup>40,47-51</sup>.

The basic aim of implementing electronic government processes relates to ensure efficient conveyance of information and associated services, encouraging multiple associated stakeholders in successfully concluding issues<sup>52-55</sup>. Al-Tourki, El-Sofany<sup>56</sup> concludes that e-government processes contribute towards interaction amongst citizens and within the private sector. It is further explained that the process enables the public sector to automate multiple processes, eliminating needless paperwork and associated printing costs. Based on<sup>9,57</sup> have concluded various studies in multiple global locales towards summarizing the benefits of e-government processes.

Irani, Kamal<sup>34</sup> are of the perspective that changes, progress and developments in e-government functions is a gradual process, encompassing multiple stages and phases. Individual stages reflect unique service characteristics and associated functions<sup>9,57</sup>. He is also of the conclusion that different researchers and scholars have varyingly discussed e-government transformation processes.

In accordance with<sup>58,59</sup>, theory of reasoned action provides groundwork related to eminently utilized model as it is a conceptual model founded on the determinants of intended behaviour discriminating the behaviour, beliefs, attitudes, and intentions<sup>13-15</sup>. This theory studies the behavioural intentions on individual basis through various subject norms and attitudes.

The authors<sup>60,61</sup> carried forward one limitation of the theory of reasoned action i.e. individual behaviour regulated by volitional control but this does not happen every time. On this ground, theory of reasoned action was

further researched in addition to transformed into theory of planned behaviour after summing up a significant predictor i.e. perceived behavioural control<sup>59,62</sup>. This theory was partially rejected by<sup>63</sup> with a few exclusions.

A fresh model, UTAUT was established after assimilating eight 8 relevant models and theories that concerns the information technology<sup>64-66</sup>. This model holds great significance for the managers for its functional tool that can assist in evaluating the probability of accomplishment for any new technology and the elements that can assist in evaluating the new technology acceptance. Based on<sup>67-69</sup> claimed that the evaluation of user technology acceptance is convenient within the companies' context but its implementation is not that much convenient. The UTAUT was transformed into UTAUT 2 after summing up the components of habit, price value, and hedonic motivation so that admitted by users and consumer's utilisation of technology can be studied<sup>70,71</sup>.

Services offered by the e-government' implementation through numerous technology acceptance approaches and models is indicated in the present studies. These include: Technology Acceptance Model, Theory of Reasoned Action, UTAUT, Diffusion of Innovation, as well as Theory of Planned Behaviour<sup>67,72-74</sup>. Services offered by the e-government' implementation through numerous technology acceptance approaches and models is indicated in the present studies.

In the public sector, the e-services have been given a clear direction after the revolution and extensive utilisation of internet and making higher success rates for e-business in the private sector<sup>75,76</sup>. Likewise,<sup>77</sup> demonstrated the presence of an international trend that emerged with the widely acceptance of Information Technology (IT) and Information and Communication Technologies (ICT) concerning the public sector that created quite big space for the existence of e-government and its implementation in more countries.

Considering the developing countries, a very few pragmatic research have already developed with regards the context of electronic government but existing studies give an idea of the e-government acceptance models. In<sup>78-81</sup> evaluated certain programs of e-government's implementation but the scarcity of the framework of information technology and political determination did not give this opportunity and served as the main obstacles held in this road to progress.

UTAUT theory was implemented in Kuwait to evaluate the e-government's implementation and the data evaluation was completed with the logistic regression<sup>41,67,73</sup>. The behavioural intention of residents relating to the e-government's adoption by various individuals of the country in the area of Kuwait was analysed by means of the factors of peer influence, exertion expectancy and operation expectancy. Focus group approach and found elements (value of the services offered by the e-government) are utilised for the analysis of the Kuwait residents' attitudes and thoughts in regard with the e-service<sup>67,73</sup>. The appropriate interpretation of the convenience of services offered by the e-government will enable residents to get their work done rapidly and efficiently. The adoption of the services offered by the e-government by the individuals will become convenient when they will overlook government bureaucracy.

E-government will merely act as a social economic divide tool if the major proportion of citizens will not utilise it<sup>82-84</sup>. When the admitted by users of a fresh technology is analysed, constant focus cannot be laid on the technology acceptance model. Therefore, the services offered by the e-government in Malaysia were indicated by<sup>85-88</sup> with the Technology Acceptance Model (TAM) in contemplation of interpreting the attitudes of citizens in regard with the e-government. The data collected was further investigated by the Structural Equation Model (SEM) with the outcomes of external impact, self-efficiency, attitude, perceived usefulness, perceived behavioural control, user accessibility, subjective norms, compatibility and perceived expediency. It was further assumed that the residents' behavioural intentions are affected by the aforementioned outcomes regarding the inclusion of e-government.

### 3. Methodology

This section of the paper comprises the process used to archive completing this paper, it started from information gathering through literature review, to extracting the relevant and the most recommended and high quality articles. Second how this information is transforming to the collect the suitable data. The third is how the data was used and analyzed in the studies.

The Figure 1 presents the structure of the methodology in this article.



Figure 1. Structure of the paper methodology.

### 4. Results and Discussions

In this section, the basic means of developing a theoretical model is to be discussed, as well as the theoretical frameworks with respect to some of the features of these theories / models of technology acceptance. The main factors within the theoretical model that would have the greatest likelihood of affecting usage behaviour of Nigerians are going to be discussed in the paper. Furthermore, it will also discuss the moderators that would possibly regulate the impact of the key factors. Figure 2 presents how the research model is formed based on five theories / models.

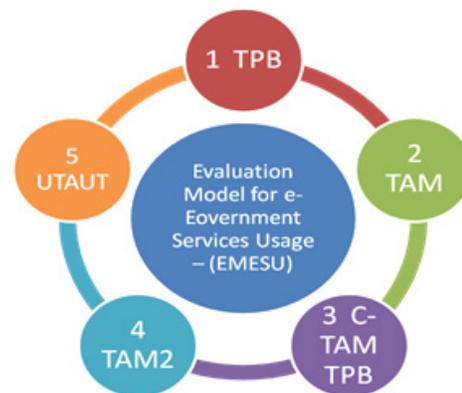


Figure 2. Research Model Formation – Evaluation Model for the e-government Usage – (EMESU) Based on five Theories/Models.

The research model, which is the conceptual framework, suggested comprises of three significant types of variables shown in Figure 3:

- The five (5) main constructs include: Perceived Ease Of Use (PEOU), Perceived Usefulness (PU), Social Influence (SI), Self-Efficacy/perceived ability (SE) and Facilitating Conditions (FC). These key variables are needed to facilitate usage behaviour in society (SOCIE) in addition to other factors (OFACT).
- Usage behaviour in society (SOCIE) as well as other factor (OFACT) and behaviour intention in society (BITSOCIE) as well as other factor (BIOFACT) are the two dependent variables. It is expected that the utilization behaviours in society along with other factor would have an impact on behaviour intention both in factors.
- There are two significant groups that include seven moderating variables. The first group pertains to individual attributes: age, education, gender, position as well as experience, while the second group pertains to certain cultural features like reading, writing and language. These moderations are needed so that the way key constructs affect usage behaviour is influenced, and also the way utilization behaviour affects behaviour intention.

On the basis of the research model suggested, various hypotheses are going to be evaluated:

- If these determinants (i.e. PU, PEOU, SI, FC, as well as SE) significantly affect utilization behaviour (SOCIE as well as OFACT).

- If utilization behaviour (SOCIE in addition to OFACT) significantly affect behaviour intent (BITSOCIE as well as BIFACT).
- If these moderators have a significant effect on the impact of these determinants (PU, PEOU, SI, FC, as well as SE) with respect to utilization behaviour (SOCIE in addition to OFACT).

If these moderators significantly affect the impact of user behaviour with respect to behaviour intention.

The Item utilized in measurement of the research model with regards to the five key core constructs (determinants) which are based on<sup>64,66,89-92</sup> are presented in Table 1. The measuring scales used in this study are presented in Table 2.

## 5. Data Editing and Coding

In this regard, SPSS software version 23.0.0 was employed. The obtained data was reviewed to edit it and eliminate the potential errors if any. Legibility, readability and consistency of the data were also tested. The data was presented through 'frequency distribution' facilitated by SPSS. Character symbols were assigned to respective categories of coded data before subjecting it to SPSS. Every questions or component of the questionnaire was represented by a distinguishable variable title which in some cases clearly represented the respective information like gender, age as well as position.

SPSS was employed to produce data sheets similar to

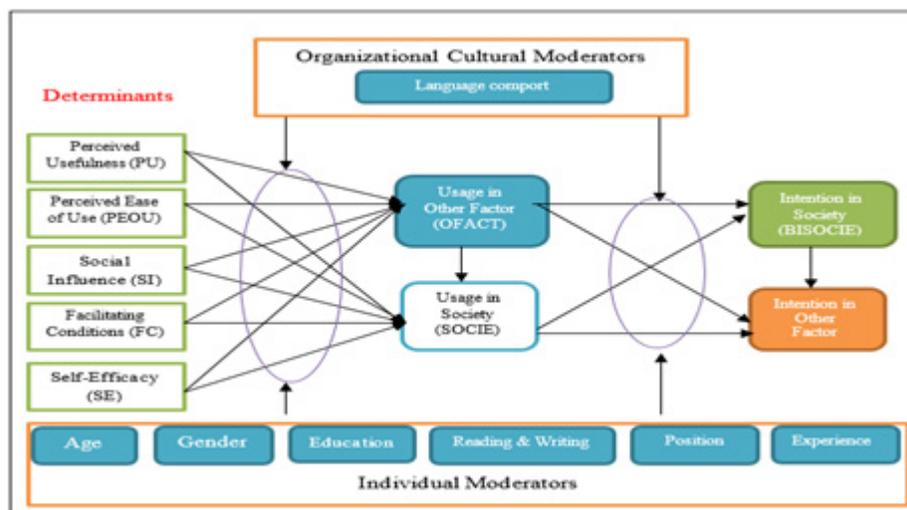


Figure 3. The Research Model suggested.

**Table 1.** Item Utilized in Measurement of the Research Model for Five Key Core Constructs (Determinants)

<p>PERCEIVED USEFULNESS (PU) with respect to the use of e-government services.</p> <ul style="list-style-type: none"> <li>I am able to fulfil tasks more rapidly when I use the e-government services.</li> <li>The quality of my work/life improves when in I use the e-government services.</li> <li>I am able to perform tasks more easily when I use the e-government services.</li> <li>I am of the view that e-government services significantly affect my work and life.</li> </ul> <p>PERCEIVED EASE OF USE (PEOU) regarding the use of e-government services.</p> <ul style="list-style-type: none"> <li>Using e-government services is easy.</li> <li>Utilizing e-government services is easy for completing my tasks.</li> <li>Improving my skills in using e-government services is easy.</li> <li>E-government services can be used easily.</li> </ul> <p>SOCIAL INFLUENCE (SI) regarding the use the e-government services.</p> <ul style="list-style-type: none"> <li>My peers are of the view that I should utilize e-government services.</li> <li>My friends and family are of the view that I should utilize e-government services.</li> <li>My colleague/students opine that I should deploy e-government services.</li> <li>The management of my community center holds the view that I should utilize e-government services. My community generally backs the use of e-government services.</li> </ul> <p>FACILITATING CONDITIONS (FC) in the community with respect to the use of e-government services.</p> <ul style="list-style-type: none"> <li>The required resources (like the latest computer hardware as well as software, communication networks etc.) are present because of which it is easy for me to utilize e-government services successfully.</li> <li>I get to access to e-government services rapidly.</li> <li>I have access to the directions to utilize e-government services effectively.</li> <li>A certain individual (or group) exists for helping in overcoming the difficulties of e-government services.</li> </ul> <p>SELF-EFFICACY (PERCEIVED ABILITY) (SE) with respect to the use of e-government services.</p> <ul style="list-style-type: none"> <li>I do not face any discomfort when utilizing e-government services on my own.</li> <li>I can use the e-government services even in the absence of a professional who would guide me on its usage.</li> <li>I can finish my tasks with the help of e-government services if I can refer to someone for help.</li> <li>I can finish my task when using the e-government services when I have ample time.</li> </ul>
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Based on<sup>64,66,89-93</sup>

**Table 2.** Concepts (Main Constructs), Measurement Items (Indicators) as well as the Measurement Scales

Concept	Code of Item / Indicator	Measurement Scales
Perceived (PU)	Usefulness pu1-pu4	Respondents chose the responses that were the closest to their personal views. This was done with the help of a 7 point-Likert scale: 1 = Strongly Disagree, 2 = Quite Disagree, 3 = Slightly Disagree, 4 = Neutral, 5 = Slightly Agree 6 = Quite Agree, 7 = Strongly Agree.
Perceived Ease of Use (PEOU)	peou1- peou4	7 point - Likert scale was used
Social Influence (SI)	si1-si5	7 point - Likert scale was used
Facilitating Conditions (FC)	fc1-fc4	7 point - Likert scale was used
Self-Efficacy/ Perceived Ability (SE)	se1-se4	7 point - Likert scale was used

**Table 3.** Summary of the Data Files in SPSS 23.0.0

Data Files in SPSS	File1 (cases)	File 2 (cases)	File 3 (cases)
Original data file	490		
Gender	262 - male	228 - female	
Age	386 - younger	104 - older	
Education	Level 161 - bachelor	189 - master	140- doctoral
Position	244 - low	246 - higher	
Experience	136 - low exp	230 - moderate exp	124-high exp
Level of Reading and Writing	458 Level of reading and writing is not an obstacle	32 Level of reading and writing is an obstacle	
Language	457 language is not an obstacle	33 Language is an obstacle	

the original file (490 cases). Moreover, twelve official data files will be produced to enable the usage of different files at different stages of information analysis. For examples, these files included two documents for gender (men as well as women), two file for age (youth as well as elders), three file for education (bachelor degree subjects, master degree subjects as well as doctorate degree subjects) in addition two files for positions (low subjects as well as high position subjects). These are presented in Table 3.

## 6. The Data Analysis

The process of data analysis has divided in two stages;

- First stage involved investigating the reliability (inter-item consistency reliability) as well as validity related to the measurement (convergent validity), descriptive statistics such as frequency, maximum, minimum, mean, percent, skewness, Pearson correlation, kurtosis, standard deviation, in addition to T-tests by using SPSS version 23.0.0.
- Second stage involved appraising the validity related to the measurement model by evaluating the discriminant validity as well as examining data by Structural Equation Modeling by employing AMOS.

Owing to these characteristics, SEM is considered as an effective method to test the study model by employing the data which will facilitate the development of model within the study. In this regard, three major strategic frameworks are employed which are as following<sup>94-98</sup>:

- Strictly Confirmatory (SC)
- Alternative Model (AM)
- Model Generating (MG)

## 7. Conclusions

This paper present and discussed aspect of the

e-government services and its evaluation process in deep literature and methodology involved in addition to procedures employed in this study which include preliminary information gathering, the expansion, pre-tests, pilot study, reliability as well as validity related to the instrument (questionnaire), data collection as well as data analysis process. The study instrument has been subjected to evaluation for twice. The pilot study was conducted in Federal Republic of Nigeria. It was observed that the employed instrument is reliable as well as it validates with the pilot study.

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