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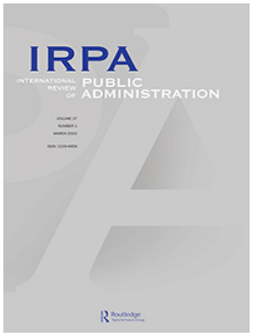
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Does e-government impact e-participation? The influence of trust in e-government

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ABSTRACT

In Nigeria, the introduction of ICT in the early 2000s propelled e-participation to create more opportunities for citizens to participate in the democratic processes and bridge the public trust deficit gap. This study examines the mediating effect of trust in e-government on the relationship between e-government quality and e-participation using PLS-SEM. We collected data through a structured questionnaire from 369 experienced e-government users. The result shows that the quality of e-government is unrelated to e-participation, while trust in e-government fully mediates the relationship. The implication of these findings suggests that public service managers are to be responsive and transparent in their interactions with the citizens to have greater confidence in the system.

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e-Participation; trust in e-government; information quality; system quality; user satisfaction

Introduction

Information and communication technology (ICT) has been used to help change the relationship between the government and the citizens. It has enabled public sector organizations to become more effective, transparent, and user-oriented, delivering essential public services and facilitating two-way interactions between the government and the citizens (United Nations, 2020). The Nigerian government embraced technology in the early 2000s to provide public services, disseminate information, and enhance trust and public participation through a digital interaction known as the electronic government. Over time, a range of government services, investments, and initiatives have been deployed to accelerate the participatory process in decision-making, which is one of the core benefits of e-government development. Participation in decision-making has been emphasized as the collaboration between the citizens and the government to deepen democratic values such as openness, transparency, accountability, and responsiveness. Recent literature has advanced that citizens are customers in the public service delivery eco-system, and collaborators to promote democratic norms and principles (Baldwin et al., 2012). Participation could

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take different forms; some can be passive such as information seeking, while others can be more in-depth, like consultation and deliberation in decision making (Gauld et al., 2010).

Governments are using technology to facilitate more interactions and collaborations through electronic feedback systems, online budget presentations and deliberations, and virtual town hall meetings. Carter and Bélanger (2005) and Waller (2017) noted that these processes could increase a government's transparency, responsiveness, and accountability. However, the use of this medium by the citizens can only be effective if they adjudge it to be trustworthy. Trust is a significant factor in the use of e-government (Carter, 2007; Sulistyowati et al., 2020; United Nations, 2018) and, by extension, influences citizens' participation in decision-making processes (Demirdoven et al., 2020; Horsburgh et al., 2011). It serves as a key element in the citizens' decision whether or not to use e-government, also, the relevance of trust in online services is one factor that plays a significant role in the overall success of e-government (Agbabiaka, 2018; Alzahrani et al., 2018).

There is already significant e-government literature that examines the effectiveness of e-government implementation by governments and their influence on participation (Hsieh et al., 2013). However, there is still limited empirical evidence to support this assertion in a developing country like Nigeria. The Nigerian government has spent a significant amount of resources on information technology and its usage by the Ministries, Department, and Agencies (MDAs) to fast track service delivery and engage more citizens in collaboration and participation (BudgITng, 2020). However, the United Nations E-government Development Index (UNEGDI) ranked Nigeria 117 and 114 in the e-participation index for the 2018 and 2020 surveys, respectively. These ranks depict a low level of citizens' engagement in the e-government and policy development activities. It is therefore, based on this background that the following research questions are formulated to guide this study (1) what is the influence of e-government quality on e-participation? and (2) how does trust in e-government mediates the relationship between e-government quality and e-participation?

To answer the research questions, we surveyed 369 e-government users in Nigeria, mainly experienced users, using structural equating modeling to assess the relationship among the interrelated constructs. The e-government quality, which comprises the information quality, system quality, and service quality, serves as the main independent variable and is treated as a reflective-formative construct in the study's model. Trust in e-government is composed of trust in government, and trust in technology is treated as the mediator and a reflective-formative construct. E-participation serves as the key-dependent construct.

Theoretical background and hypotheses formation

DeLone and McLean information system success model

DeLone & McLean IS Success Model is one of the most popular IS success models used to evaluate IS quality impact on e-government success. This model is designed to provide a broader and more in-depth understanding of the IS system's efficacy by defining, explaining, and systematizing the relationships between the different quality dimensions. The model

also establishes the standard for defining and justifying the dependent variable's measurement in IS study. It provides a valuable context for determining IS performance's multidimensionality (DeLone & McLean, 2003). The model was designed to address the problem of measuring IS performance. Initially when it was published in 1992, six factors were proposed to make IS success components: system quality, information quality, usage, user satisfaction, individual impacts, and organizational impacts. It was later revised in 2003 (Petter et al., 2012) to include service quality as another measure of success due to several observations that followed the original model and the evolving nature of IS. Another change to the initial model was the combination of individual impact and organizational impact to IS net benefits to meet the various IS stakeholders' different peculiarities (DeLone & McLean, 2003; Pitt et al., 1995). The revised model defines the interrelationships between the quality dimensions (quality of information, quality of system, and quality of service), actual usage or intention to use, user satisfaction, and net benefits (DeLone & McLean, 2004).

The model maintains that the IS project or programme's performance and efficacy are predicted by the combined or independent impact of the quality dimensions (information, system, and service qualities) on the actual use or intention to use, user satisfaction, and net benefits. Furthermore, the model claims that the information quality depends on the degree of accuracy, completeness, relevance, and ease of comprehension of the information available on the web portals. Also, system quality is determined by the technical design of the system portal, such as navigation, ease of use, privacy and security. The quality of service depends on the responsiveness, reliability, and responsiveness of the web portals. Different studies have also established the efficacy of these three quality dimensions in predicting the use and satisfaction with e-government.

Over the years, due to the model's usefulness, different studies have applied it to study various IS projects such as e-banking, online shopping, e-health, e-commerce, and e-government (Veeramootoo et al., 2018; Widiyanto et al., 2016). However, due to the development and dynamic nature of IS, especially in the public sector, there are calls for further extension and revalidation of the model (DeLone & McLean, 2016). In response to these calls, this study and the nature of e-government, we replaced 'use' with trust in e-government. Trust in e-government is assumed to be a better construct due to the political nature of the study and the problematic nature of use as a construct in the Delone and McLean IS success model. Also, we restrict the net benefit of e-government to e-participation instead of applying the whole net benefits of e-government to achieve the objectives of this study. Therefore, we assume that information quality, system quality, and service quality form the quality dimensions of e-government. Also, trust in government and trust in technology form trust in e-government as mediators. Accordingly, quality dimensions of e-government will predict the trust in e-government and user satisfaction. Also, trust in e-government will predict e-participation and mediate the relationship between the quality dimensions of e-government and e-participation.

Hypotheses formation

E-government quality dimensions

According to the DeLone and McLean (2003) IS success model, the three IS success dimensions (the quality of the information, system, and services) influence the use and user satisfaction with IS. E-government services are intangible goods that users cannot

feel or see physically; they only know the worth through details of the government's available information. For instance, the service description for e-government services provides the marketing tool and inspiration for the users to trust. The relationship between the quality of government services and trust in the government website is essential to its success. Citizens tend to trust an organization that provides timely, comprehensive, and accurate information about a particular service. As such, the quality of the information displayed will boost their faith and confidence in the e-government platform. A few studies have investigated this relationship (Alzahrani et al., 2017; Chen et al., 2015; Nulhusna et al., 2017b).

Similarly, when the citizens' needs can be met due to the system's multiple and flexible functionalities, such as the e-government portal, they tend to have faith and confidence in such portals. This assumption is particularly motivating if services obtained from these portals are perceived to be seamless with minimum problems encountered in the usage process. Using an e-government portal where citizens can be assured of getting efficient services will boost citizens' confidence to rely on e-services rather than the traditional face-to-face service delivery (Teo et al., 2008). In essence, the higher the system efficiency, the higher the trust in e-government websites. Chen et al., (2015) and Teo et al., (2008) found the relationship between service quality and trust in e-government to be positive.

More so, the quality-of-service delivery often defines the kind of relationship between the citizens and the government. Therefore, the confidence and trust citizens have in government websites tend to improve with service quality experienced. Service quality in this study is characterized by how service providers like government agencies meet the citizens' needs with empathy, responsiveness, and reliability (DeLone & McLean, 2003). Therefore, high confidence levels in e-government websites often indicate that people have positive desires and experiences of service quality, and often affect how they judge the services (Chen et al., 2015; Khayun & Ractham, 2011).

The perceived emphasis on citizens' use of the e-government system involves the main factors impacting service use expectations or nonuse. In the IS success model, satisfaction is described as the level at which IS users are fulfilled with the level of privacy, navigability, content, accuracy, completeness, and usefulness of the information provided on the e-government platform grounded on the setting of this study. Also, it depicts the level of fulfillment with the system's effectiveness in terms of its functionalities and ability to deliver required services based on the users' requests (DeLone & McLean, 2003). Information quality, service quality, and system quality have all been found to be useful in determining the user satisfaction of IS in different ways, such as in e-commerce (Wang, 2008) online tax filing (Chen et al., 2015; Floropoulos et al., 2010), e-learning (Mtebe & Raphael, 2018; Yakubu & Dasuki, 2018) and e-government system (Agbabiaka, 2018; Al-Haddad et al., 2011; Wang & Liao, 2008). Therefore, we hypothesized thus:

H1: The e-government quality dimensions will influence trust in e-government.

H2: The e-government quality dimensions will influence user satisfaction.

H3: The e-government quality dimensions will influence e-participation.

Trust in e-government

Trust is an essential factor in the determinant of e-government use and success. E-government is implemented to create values, one of which is promoting the participation of citizens in democratic decision-making. According to Kelly et al. (2002), trust is an essential aspect of e-government, especially concerning services relating to the citizens' privacy and security when they use online services. Trust in e-government helps the government boost citizens' confidence in the governance process and the enabling technologies (Carter & Bélanger, 2005). Ultimately, the failure of trust-building between the government and the people would lead to a loss of interest in providing the government with constructive feedbacks (Kelly et al., 2002). Therefore, the formation of public trust depends on people's experience with the qualities of e-government services deployed and the effects on the use of such services (Seltsikas & O'Keefe, 2010). According to Colesca (2009), people need to trust government agencies' technological and managerial capabilities to introduce a safe system, where citizens can voluntarily give their data to government agencies when they interact, thus instilling confidence in using the e-government initiatives.

Several studies have explored the impact of trust in e-government and its influence on e-participation. Alsaghier et al. (2009), for instance, found that citizens' trust in e-government is affected by citizens' disposition to trust through government-enabled services and applicable technologies such as the internet. Also, Reddick (2011) found that citizens' trust primarily influences e-participation in e-government. Similarly, Lee and Kim (2014) also noted that trust in government is one of the significant factors that actively propel citizens to engage in e-participation platforms. Therefore, we hypothesized thus:

H4: Trust in e-government will influence e-participation.

H5: Trust in e-government will mediate the relationship between e-government quality dimensions and e-participation.

User satisfaction

Different studies have observed satisfaction as a commonly used determinant of an IS's performance (Gong et al., 2018; Ma & Zheng, 2019). The feeling of satisfaction is generated by using an online service, typically driven by the system's degree of attractiveness, reliability, and willingness to use it (Agbabiaka, 2018; Wang & Chen, 2010). In e-government initiatives, citizens use e-government to access services and interact with the government. Therefore, they express fulfillment based on the availability of information, the quality of services, and the degree of choice available (Kearns, 2004). Citizens' satisfaction defines the degree to which the overall use of e-government for engagement is usually fulfilled (Zaidi et al., 2017). Therefore, when the e-government platform is satisfactory, they can use it for online engagement with the government based on the IS success model (Hsu & Chiu, 2004; Li & Shang, 2019) (Figure 1). Therefore, we hypothesized thus:

H6: User satisfaction with e-government will influence e-participation.

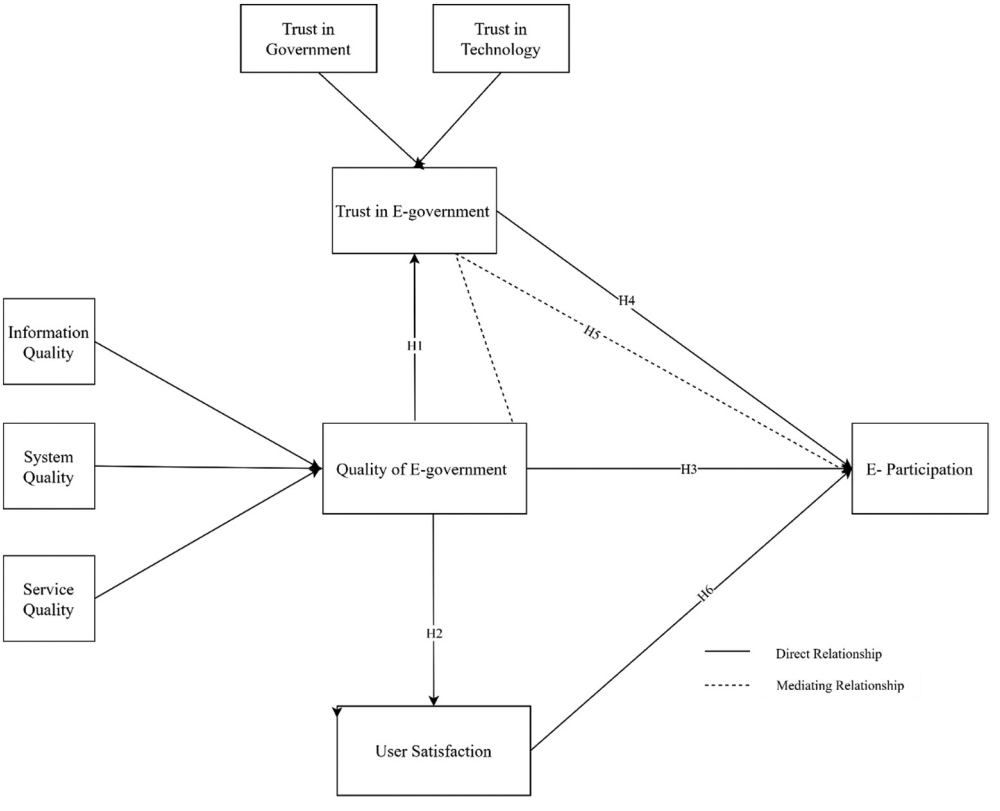


Figure 1. Research model.

Methodology

We collected data from a survey of e-government users in Nigeria through a purposive sampling technique. Our selection criteria were based on previous experience with the use of e-government. We collected information on the respondents' demographic details, such as gender, age, level of education, years of using e-government, and access to ICT. We estimated the minimum sample size with a predictive power of .95 using the G*power software (Alzahrani et al., 2019). The minimum required sample size was 115 based on three predictors and an effect size of .15, significant at $p < 0.05$. To give room for errors and reach a reasonable number of respondents due to the study's peculiarity, we distributed 450 questionnaires, out of which 369 were usable, 81 were discarded due to incomplete responses, and some were not returned.

We carried out the questionnaire's content validity using six experts to assess the degree of representativeness and adequateness of the items and the constructs (Sekaran & Bougie, 2016). The experts are in the field of public administration (2), management sciences (2), and information communications (2). The experts were tasked with assessing whether the items' contents adequately measured all the dimensions of the constructs and their level of representativeness within the public administration and IT domains (Moore & Benbasat, 1991). Secondly, to review the consistency of items with

conceptual and practical definitions (McKenzie et al., 1999). Moreover, to carry out an overall assessment of the entire instrument and qualitatively assess completeness, ease of comprehension, and adequacy (Lynn, 1986; McKenzie et al., 1999).

We used the statistical package for social sciences (SPSS) Version 24 for initial data coding and preliminary analysis. We further used SmartPLS 3.3.3 for the structural equation modeling partial least squares (SEM-PLS) to carry out a confirmatory factor analysis by evaluating the measurement and the structural models.

Scale and measurement of variables

The survey included items used for the measurement of various constructs adopted for the study. The Likert scale adopted was the agreement scale of 1 to 5 (Strongly Disagree to Strongly Agree), as shown in Table 1. To measure the quality dimensions (information quality, system quality, and service quality), we adopted the DeLone and McLean (2003) and Urbach and Müller (2012) survey items. Also, we adopted the items from were adapted from Chen et al. (2015) to measure trust in e-government. Satisfaction with e-government service was measured using the Spreng et al. (1996) measurement items. We adopted items from Deng et al. (2018) and Scott et al. (2016) to measure e-participation.

Table 1. Demographic description of the respondents.

Demographic Profile	Frequency (N = 369)	Percentage (%)
Have you ever used e-government		
Yes	369	88.7
No	47	11.3
Total	416	100
Gender		
Male	246	66.7
Female	123	33.3
Total	369	100
Education		
NCE/OND	10	2.7
HND or Bachelor Degree	86	23.3
Masters Degree	165	44.7
PhD	101	27.5
Others	7	2
Total	369	100
Age		
16–20 years	12	3.3
21–35 years	128	34.7
36–45 years	128	34.7
46–60 years	89	24
61 and Above	12	3.3
Total	369	100
Last Used E-government		
Within the last 3 months	186	50.4
Within the last 6 months	90	24.4
Above 6 months	93	25.2
Total	369	100
Access to ICT		
Regular	244	66.1
Often	76	20.6
Occasionally	49	13.3
Total	369	100

Data analysis

Common method bias test

The only instrument used to collect data in this study was a survey questionnaire. In the survey design, multiple measures were used to avoid common method bias. We asked respondents to answer questions using a five-point Likert scale. Also, we checked the common method bias through a full collinearity test procedure (Kock, 2017). All constructs were regressed against a common variable, and if the variance inflation factor (VIF) is less than or equal to 3.3, then there is no bias in the single data source. As shown in Table 1, the constructs' values yielded a VIF lower than 3.3, and therefore, common method bias was not a significant problem in our study.

Profile of respondents

This survey generated responses from 246 males and 123 females. One hundred and sixty-five of the respondents had a Master's degree, 101 had a PhD degree, 86 had a Bachelor's degree, 86 had Ordinary National Diploma (OND) and National Certificate of Education (NCE) while, 7 had other forms of education. There are 128 respondents between the ages of 21–35 years, the same as those within the age of 36–45. In addition, there are 89 respondents between the ages of 46–60; 12 respondents are 16–20 and 46 and above. One hundred eighty-six of the total respondents last used e-government within the last three (3) months, 90 and 93 of the respondents used it in the last six (6) months and beyond six months, respectively. The response indicates that the experience of the respondents is useful to validate the response from the questionnaire. The majority (244) of the respondents have regular access to the internet, while only 76 and 49 use the internet often and occasionally, respectively.

Measurement model

The research model involves the combination of both reflective and second-order formative constructs. Information quality, system quality, service quality, trust in government, trust in technology, and participation were lower-order reflective constructs. In contrast, the quality of e-government and trust in e-government are higher-order formative constructs formed by their lower-order reflective components. Therefore, given this kind of model, a hierarchical component modeling (HCM) technique was employed (Sarstedt et al., 2019). We adopted the extended repeated indicator approach, also known as the total effect approach to estimate the reflective-formative higher-order constructs. This approach allows for the specification of relationships between antecedent constructs and the lower-order components. The researchers, in this respect, analyzed the total effect of the antecedent constructs instead of the direct relationship between the antecedent constructs and the higher-order components. The total effect in this regard sums the direct and indirect effects of the lower-order and the higher-order components. This process allows the researcher to get the accurate value of the antecedent constructs' relationship with the higher-order components (Becker et al., 2012).

For the reflective constructs, we assessed them based on the traditional PLS-SEM criteria using the items' loadings, average variance extracted (AVE), and composite reliability (CR) (Hair et al., 2010). The results are shown in Table 2. The formative constructs were assessed using the convergent validity, collinearity assessment, and the

Table 2. Results of the reflective construct's measurement model.

Constructs	Description	Source	Loadings
Information Quality	Information on the government website is easy to understand	DeLone and McLean (2003) and Urbach and Müller (2012)	0.844
CR = 0.888	Information on the government website is up to date		0.747
AVE = 0.614	Information on the government website is accurate		0.784
VIF = 1.34	Information on the government website is relevant		0.838
	Information on the government website is complete		0.694
Service Quality	Service delivered on the government website is assuring	DeLone and McLean (2003) and Urbach and Müller (2012)	0.620
CR = 0.903	Service delivered on the government website is reliable		0.862
AVE = 0.611	Service delivered on the government website is tangible		0.785
VIF = 1.73	Service delivered on the government website is responsive		0.680
	Service delivered on the government website is dependable		0.847
	Service delivered on the government website is timely		0.862
System Quality	The e-government website is secure	DeLone and McLean (2003) and Urbach and Müller (2012)	0.720
CR = 0.900	The e-government website is well organized		0.869
AVE = 0.645	The e-government website is easy to navigate		0.891
VIF = 1.56	The e-government website is easy to use		0.794
	The e-government website address is simple and easy to remember		0.727
E-Participation	E-government makes me get informed of upcoming policies for inputs	Deng et al. (2018) and Scott et al. (2016)	0.742
CR = 0.897	E-government allows opportunities for me to participate in public discussions		0.878
AVE = 0.687	E-government allows my views for consideration in decision making		0.842
VIF = 1.70	E-government allows me to have avenue to post issues for public consideration		0.848
User Satisfaction	I feel more satisfied with the performance of the e-government website	Spreng et al. (1996)	0.761
CR = 0.893	I feel more fulfilled with the experience of using e-government		0.868
AVE = 0.674	I am satisfied with the quality of information		0.836
VIF = 2.21	I am satisfied with the quality of e-service delivery		0.814
Trust in Government	I feel government agencies are trustworthy	Chen et al. (2015)	0.771
CR = 0.910	I feel citizens personal data are secure with the government		0.893
AVE = 0.717	I feel government organizations handle citizens requests with priorities		0.905
VIF = 1.77	Generally, government officials can be trusted		0.812
Trust in Technology	I feel services delivered through the internet are trustworthy	Chen et al. (2015)	0.736
CR = 0.869	I feel there are policies that protects personal data of citizens on the internet		0.863
AVE = 0.689	I feel information from the government websites can be		0.884
VIF = 1.87	trusted		

significance and relevance of the constructs' weight assessment. The results are presented in Tables 3–5. The assessment result showed that the reflective constructs' indicator loadings and CRs were greater than .5 and .7 required thresholds, respectively. The AVE was also above the minimum .50 thresholds.

For the formative constructs, we examined the convergent validity using the redundancy analysis with single global items for quality of e-government and trust in e-government. The result showed that the quality of e-government and trust in e-government had significant relationships with their respective global items with loading above .7.

Table 3. Redundancy analysis.

Relationship	Beta Value
Quality of E-government -> Global Item	0.787
Trust in E-government -> Global Item	0.821

Table 4. Result of the collinearity test (VIF).

Construct	VIF
Information quality	1.284
Service quality	1.245
System quality	1.482
Trust in government	1.459
Trust in technology	1.344

Table 5. Formative construct significance and relevance.

Relationships	Weight	t-Value	*p*-value
System Quality -> Quality of E-gov	0.410	5.094	0.000
Service quality -> Quality of E-Gov	0.590	8.659	0.000
Information Quality -> Quality of E-gov	0.258	3.671	0.000
Trust in Technology -> Trust in E-government	0.791	14.363	0.000
Trust in Government -> Trust in E-government	0.363	4.406	0.000

Also, the collinearity assessment was assessed through the variance inflation factor. All constructs were below the 3.3 thresholds. Similarly, the significance and relevance of the formative constructs' weights showed that all LOCs were significant at $p < 0.001$.

Discriminant validity was also tested to assess the degree to which the constructs vary empirically from one another in the same model (Henseler et al., 2015). We used the Heterotrait-Monotrait ratio (HTMT) to assess discriminant validity. The constructs are different if the HTMT value is below .85. As seen in Table 6, the HTMT values are lower than .85, so the discriminant validity was confirmed.

Structural model

After the measurement model assessment, we assessed the structural model, we reported the path-coefficients and *t*-statistics for all paths using a subsample of 5000 bootstraps. In addition, based on Hahn and Ang's (2017) criticism, a combination of parameters such as p-values, confidence intervals, and effect sizes was used, arguing that p-values alone are not adequate to determine the significance of hypotheses as shown in Table 6 and Figure 2.

Table 6. Discriminant validity.

	1	2	3	4	5	6	7
1							
2	0.286						
3	0.479	0.803					
4	0.296	0.424	0.649				
5	0.537	0.322	0.592	0.474			
6	0.264	0.522	0.327	0.240	0.741		
7	0.350	0.737	0.478	0.524	0.400	0.489	

1= Information quality 2 = Participation 3 = User satisfaction 4 = Service quality 5 = System quality 6= Trust in government 7 = Trust in Technology.

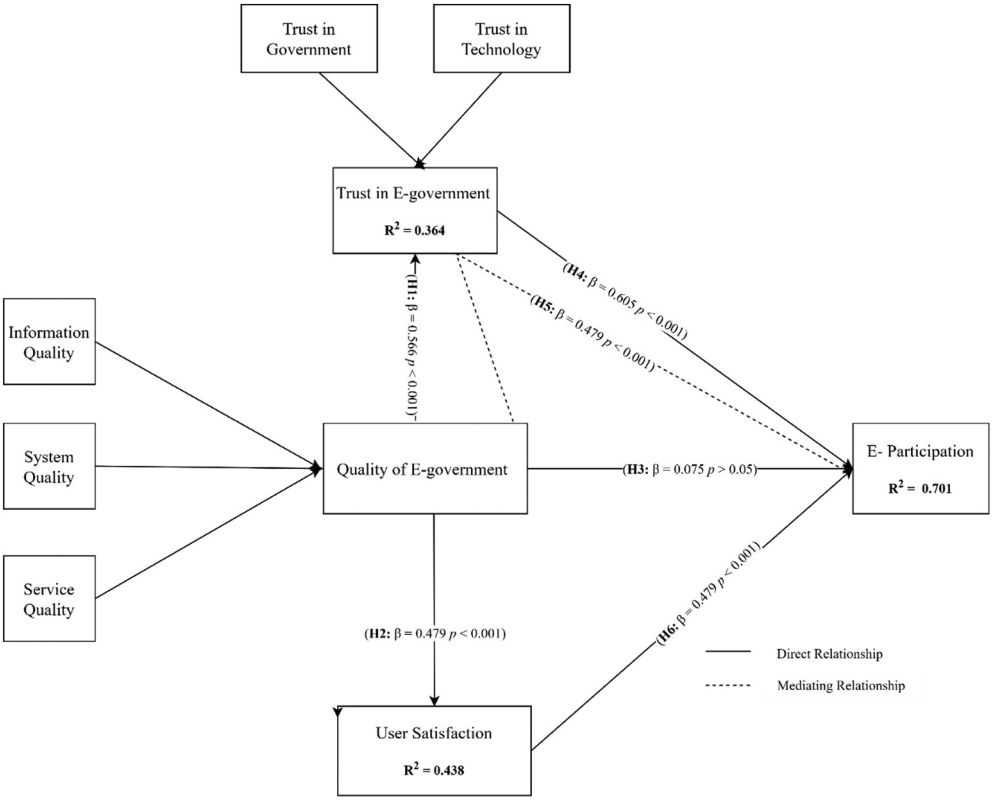


Figure 2. Result of the structural model.

The result of the structural model showed that the quality of e-government, trust in e-government, and user satisfaction explain 70% of the total variance of e-participation ($R^2 = 0.701$). Also, the quality of e-government explains 44% ($R^2 = 0.438$) and 36.4% ($R^2 = 0.364$) of the total variances for user satisfaction with e-government and trust in e-government, respectively. For the main model, five of the six hypothesized paths were supported, except the relationship between quality of e-government and e-participation (**H3**: $\beta = 0.075$ $p > 0.05$) which was unsupported by the data. Trust contributes mostly to participation (**H4**: $\beta = 0.605$ $p < 0.001$). User satisfaction with e-government has a strong relationship with e-participation (**H6**: $\beta = 0.479$ $p < 0.001$). Quality of e-government has a significant and strong relationship with trust in e-government (**H1**: $\beta = 0.566$ $p < 0.001$) and user satisfaction (**H2**: $\beta = 0.479$ $p < 0.001$). The mediating relationship also shows that trust in e-government partially mediates the relationship between the quality of e-government and e-participation (**H5**: $\beta = 0.479$ $p < 0.001$). For the strength of the mediator, we observed the relationship between the quality of e-government and e-participation without trust.

Based on the results, user satisfaction has the largest effect on e-participation ($f^2 = 0.568$), followed by the relationship between quality of e-government and user satisfaction. Similarly, quality of e-government has a medium effect on trust ($f^2 =$

Table 7. Hypotheses result.

					Confidence interval		
	Beta	Std Error	T -value	P-Value	5%	95.%	f^2
H1	0.566	0.054	10.569	0.000	0.445	0.635	0.465
H2	0.479	0.056	8.592	0.000	0.398	0.575	0.482
H3	0.075	0.059	1.278	0.101	–.018	0.163	0.005
H4	0.605	0.052	11.672	0.000	0.508	0.682	0.407
H5	0.417	0.056	7.414	0.000	0.294	0.485	
H6	0.479	0.058	8.296	0.000	0.385	0.570	0.568

Table 8. PLS-Predict result.

Items	PLS	LM	PLS-LM
PART1	0.795	0.819	**–.024**
PART2	0.829	0.832	**–.003**
PART3	0.931	0.922	0.009
PART4	0.795	0.794	0.001

0.465), also, trust has a medium effect on e-participation ($f^2 = 0.463$). While there is no effect between the quality of e-government and e-participation ($f^2 = 0.005$). We applied PLSpredict as proposed by Shmueli et al. (2019) to validate the predictive relevance of the study. As our data was not asymmetrical, we applied the MAE criterion instead of the RSME. The result, as shown in Tables 7 and 8, showed that our model has moderate predictive power.

Discussion

The study's objective was to investigate the influence of e-government on citizens' e-participation using trust in e-government as a mediator. ICT development has brought about innovations and changes to governance activities, in addition to the interaction between the government and the citizens. ICT has been adjudged to play a significant role in changing interaction dynamics, enjoining more citizens to participate in political and policy processes through the e-government platoforms. It aims to drive an all-inclusive governance system from the bottom to the top. This study examined the efficacy of e-government qualities (information, system, and service) and their influence on e-participation through trust in e-government.

Firstly, we examined the effect of quality of e-government on trust in e-government, user satisfaction with e-government, and e-participation. The hypotheses were significant, except for e-participation. When citizens use e-government services, it will provide values like efficiency, effectiveness, cost reductions, and time savings. These values move them closer to the government and consequently increase their trust and satisfaction with government services and technologies. E-government users find pleasure in the use of e-government when they derive optimum benefits from the usage. Quality e-government is meant to serve the citizens by providing values driven services (Li & Shang, 2020). Different studies have also confirmed these relationships, where services, information, and system quality dimensions of e-government have a significant relationship with trust in e-government and user satisfaction with e-government services (Nulhusna et al., 2017a).

The idea of incorporating ICT into governance was informed based on the efficacy of ICT to drive citizens' participation in public and political policymaking. Naturally, the citizens should be able to use ICT as a communication medium, seek feedback from their representatives, and be a part of the governance structure. The hypothesis is, however, not supported due to the level of e-government and e-participation in Nigeria. For instance, according to the United Nations E-government Development Index (EGDI), e-government development is yet to translate into e-participation. Nigeria was ranked 118, 117, and 114, having scored . 35,593, .4831, and .4881 for 2016, 2018, and 2020, respectively. These scores are below the global average of 0567 (United Nations, 2016, 2018, 2020). Similarly, policy making dynamics of Nigeria as a developing country is still a top-down approach; therefore, the level of citizens' inclusiveness in the policymaking arena is low due to the country's political climate.

Moreover, the study also examined trust in e-government and user satisfaction and their influence on e-participation. The two hypotheses were supported. In this study, trust in e-government and user satisfaction with e-government contribute the most significant to citizens' e-participation. Citizens participate in policymaking through electronic feedback, chats, online interactions with decision-makers and e-town hall meetings (Manoharan & Mossey, 2019). Therefore, citizens must trust the system and the government before they use the e-participation platforms (Boudjelida & Mellouli, 2016; Manoharan & Mossey, 2019).

Similarly, user satisfaction with e-government is an essential element in the performance of e-government (Veeramootoo et al., 2018). This study has demonstrated the power of user satisfaction as important in determining citizens' e-participation. Citizens who use e-government services must be satisfied by the quality of the service and system to use it for social interaction with the government.

Also, we investigate the mediating effect of trust in e-government on the relationship between the quality of e-government and citizens' e-participation. This study further confirmed the hypothesized path to be positive, significant, and supported. The ability of the citizens to participate in public policymaking is one of the benefits and intangible values of e-government implementation (Scott et al., 2016). However, this study further proves that in a developing country like Nigeria, where e-government quality and development is still lower than in the advanced economies, citizens' trust in e-government is a critical element in the dynamics of the link between e-government and e-participation. The mediating effect is a full mediation where the relationship between e-government quality and citizens' e-participation is significant only through the mediating influence of trust in e-government.

Theoretical implications

This paper sets out to investigate the influence of e-government on e-participation, with trust in e-government as a mediator. Theoretically, this study has further confirmed the Delone and McLean IS success model as a well-established model to investigate the success of e-government. For this research, the benefit of e-government is expressed as citizens' participation in policymaking as a core value of e-government implementation. Although different studies have applied this model to assess the e-government phenomenon, this study further enhances research by using the model to examine citizens'

e-participation as one of the contributions of this study. Citizens' e-participation is seldom treated as a benefit of e-government in assessing e-government development, especially in an emerging democracy.

Trust in e-government as a mediator for this study has further proven the efficacy of trust in the governance process as an essential enabler of e-participation. Trust is an expression of faith and confidence in a process or system. Therefore, based on the research model for this study, for the citizens to trust the e-government system, there must be quality information, system, and services in place. Also, the e-government system must be trusted as safe to transact and keep citizens' personal information secret. Therefore, trust becomes the interlink between the quality of e-government and e-participation.

Similarly, the study's outcome suggested that the quality dimensions significantly influenced trust in e-government and user satisfaction with e-government. It implies that a useful and quality e-government platform through simplified ease of use, responsive and interactive websites, and adequate and easy-to-understand information will contribute to citizens' trust in e-government. Also, an improved service delivery interface would ensure more use and satisfaction of the citizens within the digital network, rather than switching to the conventional mode of service delivery.

Practical and policy implications

The government implemented e-government as an avenue to create efficient service delivery, increase transparency and facilitate a two-way interaction between the government and the citizens. Citizens can use the ICT platform to communicate and give the government feedbacks on service delivery quality. Trust in e-government is an important driver for all aspects of government performance. The finding is relevant in a developing country like Nigeria, where public trust is declining (Omotoso, 2014). The government should therefore leverage trust in e-government to promote e-participation. Where values such as public participation are missing, the citizens will be reluctant to use the e-government services.

The e-government platform is expected to minimize or eliminate the bureaucracies and inefficiencies in delivering public services. Therefore, device breakdowns and downtimes might negatively affect the quality of the system and service expectations. This study will guide the government and respective agencies in assessing important quality factors. It is suggested that system administrators allocate more budgets to upgrade the obsolete technological infrastructure to enhance citizen participation and trust in government.

Also, it has been proven in different studies that citizens' use of ICT is subject to the level of trust in the system and the government. Therefore, the government needs to make e-government services more accessible to the citizens in a more transparent and user-friendly manner. When citizens trust the e-government system, they have the sense of participating in the democratic process. It affords the government to get constructive feedback on services delivered.

This study provides a realistic reference point for MDAs preparing for ways to enhance the quality of services, systems, and information. It will help them understand the factors that are crucial to improving e-governments value development. The need for

policymakers to ensure that e-government platforms are designed to facilitate public involvement and interest in matters that affect them is a significant assumption for this research.

Consequently, the government can have first-hand knowledge of services offered and improve on them. Citizens with higher levels of trust in the government and technology will be more motivated to use e-participation tools such as chat box, e-deliberation, and e-consultation. The lack of trust in the e-government system provides a considerable risk of uncertainties in the success of the e-government. Users with no trust or a low level of trust will prefer the traditional engagement model, often identified as slow, unproductive, and less transparent.

Limitations and future studies

Despite the interesting findings and the results generated from the study, there are some limitations to its generalization. The study is carried out in a developing country- Nigeria. Due to the low level of Nigeria's e-government performance and the level of participation and trust, generalization from the findings might only apply to developing countries. The use of a targeted sample and the resulting small sample size is one of the limitations of the analysis that may influence the variables' relationships' relevance. Although the total number of e-government users in Nigeria cannot be ascertained, the sample level compared to the level of Teledencity shows that the study has a small sample size. Despite the study's small sample, using experienced users gave credence to this study through higher response rates than using a random selection of citizens. Also, using experienced users provides the government with an accurate estimation of the expectation of the citizens in the use of e-government. Future studies can focus on a more general and diverse population with a large sample size to further investigate the performance of e-government in other developing countries.

Nigeria is an example of a developing world where the implementation of e-government is yet to fully matured (United Nations, 2018). However, given the nature of the bureaucratic and administrative structure, coupled with the demographics of the populations, other variables of concern beyond the research model, particularly as to how government rules, policies, and regulations influence trust and e-participation which the model of this study cannot fully address. Future studies can incorporate more constructs such as access to ICT facilities, self-efficacy, and other individual characteristics to explore a more in-depth analysis of e-government.

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