



Empirical study of user acceptance of online political participation: Integrating Civic Voluntarism Model and Theory of Reasoned Action



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ABSTRACT

Factors affecting e-democracy adoption were identified using Civic Voluntarism Model (CVM) and Theory of Reasoned Action (TRA) which incorporated political culture and perceived e-democracy outcome. Survey instrument was designed based on these theories and was administered to a convenient and randomly selected sample in Nigeria. The variance-based Structural Equation Modeling (SEM) approach was used to evaluate the measurement and structural models. Partial Least Square Algorithm (PLS-Algorithm) and bootstrapping were executed to estimate the significance and test the validity of the SEM components. Findings reveal the imperative of democratic political culture orientation of ordinary citizens in developing positive attitude towards the acceptance and use of e-democracy system while political awareness, political efficacy, and recruitment networks are found to be significant predictors of intention to use e-democracy. These predictors can be stimulated through dedicated massive political orientation programs and enlightenment campaigns by the government in partnership with civil society organizations, religious associations, academic institutions, interest groups, the media and traditional institutions on the benefits of e-democracy to a country's political system.

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1. Introduction

The pivot of democracy is collective participation. A successful democracy is constituted by an engaged and informed citizenry (Caldow, 2004). In time past, elected representative was a sufficient means for citizens to participate in government. This has changed for reasons such as diversity of citizens' cultural heritages, values, needs, apathy, lack of openness and accountability, and mistrust (Smith, 2003). The desire for a more responsive government has however, led to citizen's greater political participation (Tolbert, McNeal, & Smith, 2003; Hobolt & Klemmensen, 2005). Citizens now want other and broader, more accessible and direct pathways of involving in governance and policy decisions. But this could not be achievable through the platforms offered by the traditional models of political engagement.

The use of Information and Communications Technology (ICT) to enhance citizens' political participation has been identified as a solution to the problems of representative democracy, particularly, the disconnection between representatives and citizens and the decline of political interest among the populace (Kang & Dugdale, 2010; Coleman & Gotze,

2001). Electronic participation (e-participation) is the use of Internet and mobile technologies to enhance democratic governance (Zissis, Lekkas, & Papadopoulou, 2009). E-democracy is the use of information and communications technologies (ICTs) and strategies by "democratic sectors" within the political processes of local communities, states/regions, nations and on the global stage (Clift, 2004). Macintosh (2004) defines e-democracy as the use of ICTs to engage citizens, support the democratic decision-making processes and to strengthen representative democracy. The essence of e-democracy is to provide wider access for dissemination of information and to promote communication and deliberation among the democratic actors. Series of technological innovative tools have been put in place to foster citizens' participation in political issues and most especially in policy-making (Coleman & Gotze, 2001; OECD, 2003a; Demo-net, 2006). These among others include: e-Panels, e-Deliberative polling, e-consultation, e-opinion poll, e-referenda, e-petitioning, etc. Distinct benefits that government can derive in making use of electronic techniques for public participation are discussed by Smith (2003) and Clift (2004).

The growth and use of Internet and mobile technology have continued unabated across the globe within the last decade (Leston-Bandeira, 2007; United Nations, 2012). Most countries have leveraged on these exponential growth and have continued to find ways of utilizing ICT tools to enhance their democratic practices. In Africa, Nigeria has been referred to as the fastest growing telecommunication country. There

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were 200,000 Internet users in Nigeria in the year 2000 i.e., 0.1% of the country's population. By June 2011, the number had grown to 45,039,711 i.e., 26.5% of the country's population. In 2013, the number of Internet users was 57,735,862 and by June 2015, the number has hit 92,699,924 (51.1% of the country's population) (Internet World Stats, 2016).

Despite the expeditious means of reaching political decision-makers that online political participation or e-democracy offer, the sustainability and users' acceptance of online public participation remains a difficult task notwithstanding the numerous cases of e-participation project initiated by different actors in different context (Sæbø, Rose, & Flak, 2008; Panagiotopoulos & Al-Debei, 2010). Furthermore, previous authors have argued that the problem of digital divide resulting from citizens' unequal access, lack of proper infrastructure and low adoption of technology have been argued to limit the perceived benefits of e-participation in developing countries (Rheingold, 2000; OECD, 2001; OECD, 2003b; Rodousakis & Mendes dos Santos, 2008). The question now is, what are the factors influencing citizen's intention and actual use of e-democracy platforms?

This paper investigates inherent individual (attitude) enablers and barriers to participation in e-democracy. A research model was developed using a combination of information system (IS) theory and political participation theory. The Theory of Reasoned Action (TRA) from the IS domain and Civic Voluntarism Model (CVM) from political participation domain are found appropriate to the study of individual's intention to adopt e-democracy in resource poor setting. TRA helps to predict user's behavioral intention and CVM helps to identify the socioeconomic factors underlining civic engagement. Political ideology variable was introduced into the model to have a conclusive individual's behavioral factors.

The rest of this paper is organized as follows; Section 2 provides the theoretical background, research model and hypotheses of the research. Section 3 presents the research method and Section 4 reports the analysis of data and research findings. Section 5 includes some discussion and implication for practice while Section 6, conclusions and limitations of the study.

2. Literature review

The study of citizens' political participation has, over the years, remained germane in political discourse and scholars of political participation have developed several theories with the intention of explaining why some individuals participate in politics whereas others do not (Sanchez, 2006; Fung, 2015). Some of these theories include civic culture, Robert Dahl's Theory of Polyarchal Democracy, the standard model of political participation originated by Verba and Nie (1972), rational actor theory (Verba, Schlozman, & Brady, 2000), Civic Voluntarism Model (Verba, Schlozman, & Brady, 1995), etc.

In the same vein, numerous research works have been conducted to study users' acceptance of e-government application, though most of them focus on e-government services. In their attempt to consider effective communication among democratic actors, Maher and Krimmer (2005) proposed a Social Media Politics (SMP) model which accounts for continuous cycle of political communication between democratic actors, and the media in the political sphere. Carter (2006) developed a framework of technology enabled political participation to investigate the adoption of Internet voting (i-voting) in the U.S. The study however, did not provide in-depth consideration of political participation theories which is where political behavior is rooted. Kollmann and Kayser (2010) investigated factors accounting for citizen engagement in innovative e-democracy in Germany using a combination of information system acceptance theory and political participation theory.

The above literature reveal that gaps still exist as to what factors influence users' acceptance and use of technology in participatory democracy especially in the developing nations of the world. Most existing works available in literature were carried out in developed nations

like Germany, Canada, USA, etc., where technology is more available and democratic system is more stable than in the African nations. Furthermore, prior studies have not examined the influence of political culture on the acceptance and use of e-participation. The objective of this study, therefore, is to evaluate the inherent individual (attitude) enablers and barriers to participate in e-democracy in developing countries. In the next section, we present a review of theories that form theoretical foundation for investigating factors that inhibit or enable e-democracy using Nigeria as a case study. While reviewing the models, hypotheses were formulated based on these theories to validate proposed theoretical assumptions.

2.1. Theory of Reason Action (TRA)

The Theory of Reasoned Action (TRA) is one of the most influential theories used by information system (IS) researchers to study users' acceptance behavior and to identify critical factors in deriving the full benefits of information technology (Venkatesh, Morris, Davis, & Davis, 2003). The theory suggests that the attitude towards behavior and subjective norms will determine intention to perform behavior thus, making it to be behavioral intention, rather than attitudes, that determines actual behavior. TRA is intended to predict the behavior in situation(s) where an individual controls his own behavior and he is thoughtful about it. Bagozzi (1982) describes TRA as an intuitive, parsimonious, and insightful model having ability to explain behavior. TRA proposes that individual behavior is influenced by the tendency towards that behavior (Behavioral Intention, BI) whereby BI is formed through a combination of two variables: attitude towards behavior (Attitude, A) and Subjective Norm (SN). TRA, in addition, has been used to predict different behaviors (Sheppard, Hartwick, & Warshaw, 1988).

The TRA is a general model and as such, does not specify the beliefs that are operative for a particular behavior (Davis, 1989) unlike Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB). Thus, a researcher using the TRA must first identify the beliefs that are salient for participants regarding the behavior under investigation. This gives the researcher the opportunity to really dig deep into the research domain for potential factors influencing users' behavioral attitude in the domain. A fundamental requirement of the TRA is that behavior must be under volitional control (Yousafzai, Foxall, & Pallister, 2010). TRA is therefore good for prediction. Based on these justifications, TRA becomes our first choice model for this research. Section 3 considers the variables of TRA in detail.

2.2. The Civic Voluntarism Model

A theory that is widely used in political behavior research is the theory of Civic Voluntarism Model (CVM) proposed by Verba, Schlozman, & Brady (1995). The focus of CVM is to establish certain "pre-requisites" of civic participation, i.e. to understand why people want to engage in political participation. In order to achieve its focus, CVM probed into the empirically validated socio-economic status (SES) model by Verba and Nie (1972) and combines it with the tenets of rational choice theory (Verba et al., 2000).

Verba et al. (1995) argue that the SES model is relatively weak in its theoretical underpinnings, because it does not provide a rationale for the connection between socio-economic variables and participation. On the other hand, rational choice theory has not been a good predictor of political participation though its basic logic that the decision to participate is dependent on a self-interested cost and benefit calculation cannot be neglected completely since they are real costs to participation (Verba et al., 1995). Civic Voluntarism Model provides a more comprehensive approach and insight to understanding why people engage in political participation by incorporating the resource variables. Verba et al. (1995) argue that available resources are coherent theoretical explanation of the connection of socio-economic status and participation.

CVM expounds three motivating factors of political participation: (1) resources, (2) psychological engagement with politics, and (3) recruitment networks (Verba et al., 1995).

2.3. Research model and hypotheses

Attitude towards the behavior is defined as “an individual's positive or negative feelings about performing a behavior” (Fishbein & Ajzen, 1975). Attitude has been empirically validated, severally, as an essential construct in models and theories of technology adoption across different domains of technology related application (Hung, Chang, & Kuo, 2013; Akinyemi, Asani, & Adigun, 2013; Jahangir & Begum, 2007; Adesina & Ayo, 2010).

TRA posits that attitude is a function of beliefs but did not specify the beliefs that are operative for a particular behavior (Yousafzai et al., 2010; Davis, Bagozzi, & Warshaw, 1989). Davis et al. (1989) proposed the determinant of attitude: perceived ease of use and perceived usefulness. These determinants especially the perceived usefulness have been overly empirically validated to have significant effect on user's acceptance of technology. In view of the description by Fishbein and Ajzen's (1975) of attitude and the research domain (e-participation), attitude can be related to individual's belief about politics, the value of participating in democratic process, perception of the value of the Internet and wireless technologies in reducing the efforts to participate in the democratic process, the outcome of e-participatory democracy and the desirability of the outcome. It is therefore proposed that individual's salient beliefs about politics (political culture) and perception of e-democracy outcome will determine attitude towards e-democracy.

Political culture is the distinguishing beliefs, values, attitude, habits, and behavioral patterns that characterized a political community (Almond & Verba, 1963; Matlosa, 2003). It is the common perception of the right and obligations of citizens and rules for participating in political process. Mizrahi and Vigoda-Godat (2009) emphasizes the importance of culture and social characters for effective public participation. Citizens' participation in public decision-making (PDM) process will have positive result in terms of performance and trust only when there are available channels to influence policy outcomes and democratic participatory behavior (Mizrahi & Vigoda-Godat, 2009). A citizen who sees political participation as his expected way of life and responsibility will have a positive attitude towards e-democracy and hence acceptance of the expeditious means of political participation that it offers. Such individual holds a belief, perception and attitudes that support political participation. This participatory type of political culture has also been referred to as democratic political culture and is recognized as essential for healthy and sustainable democracy (Almond & Verba, 1963; Inglehart & Baker, 2000; Tessler & Gao, 2008; Mizrahi & Vigoda-Godat, 2009; Loveless, 2013). We therefore hypothesized that:

Hypothesis 1. Democratic political culture orientation has a positive effect on attitude towards e-democracy.

Based on the description of attitude by Fishbein and Ajzen (1975), as the assessment of individual's salient beliefs regarding the consequences arising from the behavior and an evaluation of the desirability of these consequences, we propose another determinant of attitude called “perception of e-participation outcome”. Outcome expectation is the belief about the consequences of a behavior. Outcome expectations are the results of intentional actions which individuals choose to engage (Bandura, 2001). Three sources of outcomes are identified by Bandura (1977, 1986). The first source is through symbolically thinking about what could happen given a course of action, the second source is through experiences and similar behaviors that produce valued outcome and the third source is through the definite motivating value of the outcome or consequence (positive or negative) of the action. Pattie, Seyd, and Whiteley (2003) found that outcome incentives

promote both total and contact activism. In this context, outcome expectation is operationalized as the individual's belief that e-participation will produce an improved democratic system. A positive attitude towards e-democracy may follow user's belief about favorable outcome of e-engagement. Thus, the following hypothesis is tested:

Hypothesis 2. Perception of a desirable outcome has a positive effect on attitude towards e-democracy.

Having established the determinants of attitude for the research, this study further examined the relationship between individual attitude and intention to use e-democracy. Prior research have found that attitude is a significant predictor of user acceptance of information system (Taylor & Todd, 1995; Karjaluoto, Mattila, & Pento, 2002; Davis, 1989), behavioral intention (Ajzen, 2001) and e-government services (Hung et al., 2013). To further advance literature on the relationship between attitude and behavioral intention, this study tests the following hypothesis:

Hypothesis 3. A positive attitude has a positive effect on behavioral intention to use e-democracy.

Subjective norm refers to the perceived social pressure to perform or not to perform the behavior. It is also one's perception about other people's force of influence (social pressure of some sort) to perform or not to perform the behavior (Fishbein & Ajzen, 1975). In e-participation, one may consider this as pressure from among journalists to use blogs and other social media (directly or indirectly) to communicate information that promote democracy. Pressure may also stem from social referents like peers and family members. In TRA model, subjective norm like attitude is generally found to significantly predict behavioral intentions (Fishbein & Ajzen, 1975). Prior studies using TRA and TPB (Ajzen, 2001) also found support for this assertion, validating the significant influence of subjective norm to behavioral intention to use new information system (Hung et al., 2013; Akinyemi et al., 2013; Taylor & Todd, 1995; Ajzen, 1991). Although it has been widely recognized that subjective norm is a significant predictor of intention to use in various domains, the relationship between the two factors has not been clarified in online political participation. Accordingly, it is therefore hypothesized that:

Hypothesis 4. A higher level of subjective norm has a positive influence on intention to use e-democracy.

The concept of resources goes beyond the traditional research that equates resources to simply mean money and time. CVM expounds on three types of resources: time, money, and civic skills. That is, money and time are important, but not adequate to translate to effective civic participation. When citizens have the necessary skills and resources to participate, they become effective participants (Verba & Nie, 1972; Verba et al., 1995; Beaumont, 2011). Civic skills, according to Verba et al. (1995) means the communication and organizational skills necessary to engage in political participation. Communication skills involved with traditional methods of participation are skills and activities such as those related to writing a letter, verbal communication and public speaking. Organization skills on the other hand, are those required to perform tasks such as ability to marshal individuals to taking action, organizing and conducting meetings. Civic skills however, take on a new meaning within the realm of online participation.

With online participation, additional set of civic skills such as Internet browsing skills becomes important. Online participation requires familiarity with computers and basic Web browsing skills such as logging on to a website, posting comments on a blog, uploading documents on the Web, etc. Online civic skills can therefore, be said to have a great impact on the time factor involved in Verba's CVM theory. Proficiency in Internet skills will let a citizen save time and make online political participation more attractive. It therefore, connotes that for an individual to be part of e-participation, the individual must possess the necessary technology usage skill and have adequate time and financial/material resources to

log on to the Internet and participate in political related activities. The concept of civic skill as hypothesized by Verba et al. (1995) can be modified towards online political participation computer and Internet skills.

Prior studies have found support for positive relationship between civic skills and individuals ability to execute course of action using information system and behavioral intention (Kollmann & Kayser, 2010; Reid & Levy, 2008). On this basis, the following hypotheses are proposed to establish relationship between CVM resource variables and behavioral intention:

Hypothesis 5a. Availability of adequate financial resources has a positive effect on intention to use e-democracy.

Hypothesis 5b. Adequate time to engage in online activity has a positive effect on intention to use e-democracy.

Hypothesis 5c. Computer and Internet browsing skills have positive effect on intention to use e-democracy.

The second component of CVM is psychological engagement of citizens with politics. There are different reasons why citizens participate in politics. These reasons include, among other, a sense of duty to be involved in the political affairs, a sense of political efficacy that offers a sense of contribution and the ability to make a difference in politics, and attachment or interest to certain political party, issues and/or policies (Milbrath & Goel, 1977). Measures of psychological engagement according to Verba et al. (1995), include interest in political issues, political efficacy, political information, partisanship, and external influences.

Each of these factors has the potential to individually impact on online participation. Supposing that citizens are proficient in online civic skills, the psychological motivation to participate will be stimulated when an online “user” finds other users on the Web who share the same political interests, issues, concerns. Online participation accords citizens to form and identify with an Internet community which then augments a psychological attachment to participation. Even when people are resource-rich, have plenty of free time, and proficient in Internet usage, they may still fail to participate if they are unaware of the importance of their involvement or are not interested in participating in political matters.

Prior studies have shown that individual's political efficacy or competence or confidence, is important to form political participation behavior (Almond & Verba, 1963; Bandura, 1977; Beaumont, 2011; Morrell, 2003). Political efficacy represents individual's assessment of his/her ability to meaningfully and competently participate in political process. Following Verba and Nie (1972), this study assesses political efficacy as a single construct and makes no distinction between internal and external political efficacy.

Prior research works have also emphasized the importance of political information in forming political behavior. Claassen and Highton (2009) stated that the politically aware in the mass public are more politically engaged and derive pleasure from following politics. Following the argument of Claassen (2011) that lack of political knowledge may prevent a large portion of the population from active political participation, it is believed that political information and interest in politics will influence individual behavior intention to engage in online political participation. Thus, this study proposes the following four hypotheses:

Hypothesis 6a. Political efficacy has a positive effect on intention to use e-democracy.

Hypothesis 6b. Partisanship has a positive effect on intention to use e-democracy.

Hypothesis 6c. Political information has a positive effect on intention to use e-democracy.

Hypothesis 6d. Political interest has a positive effect on intention to use e-democracy.

Verba et al. (1995) operationalized recruitment network as membership in social networks in which people are asked to get politically active. It is referred to as citizen's request to participate in politics that result from their place of work, family, peers, relatives, church, and other social networks or organizations. These “networks” according to CVM play an integral role in mobilizing citizens towards political participation (Rosenstone & Hansen, 1993). In the light of this finding, we make the following hypothesis regarding e-democracy acceptance:

Hypothesis 7. Recruitment network has a positive effect on intention to use e-democracy.

A user's behavior is determined by behavioral intentions. TRA posits that behaviors of social relevance are under volitional control and are predictable from intention (Fishbein & Ajzen, 1975). TRA and TPB extensively describe positive relationship between behavior and actual use (Ajzen, 1991; Fishbein & Ajzen, 1975). Ryan & Bonfield (1980) support behavioral intentions as the determinants of the behavior as they demonstrate predictive validity and external validity of the theory's model in real world marketing applications. TRA in addition has been used to predict different behaviors (Pavlou, 2003; Sheppard et al., 1988). It is believed that the stronger an individual's intention to engage in a behavior, the more likely he or she will perform it. Thus this study proposes the following hypothesis:

Hypothesis 8. Behavioral intention positively influences actual use of e-democracy.

Fig. 1 presents the theoretical model.

3. Research method

3.1. Instrument development and data collection procedure

The research instrument was developed from existing measurement items in information systems and political science and modified to fit the research domain (i.e. e-participation). The instrument was divided into two parts: 1) theory-based items from information system adoption and political participation variables and 2) demographic variables, technology usage of respondents as it relates to online political participation, and reasons for or for not adopting e-democracy system.

Items measuring attitude towards e-democracy were adapted from Reid and Levy (2008) and Malhotra and Galletta (1999). Items measuring subjective norm were adapted from Kollmann & Kayser (2010). Items measuring political belief were adapted from Mizrahi and Vigoda-Godat (2009). Items measuring perceived e-democracy outcome were adapted from Wójcicki, White, and McAuley (2009). All items measuring political interest, party involvement, political awareness, and political efficacy were adapted from Morrell (2003), Carter (2006), Ritter (2008) and Kollmann and Kayser (2010). Items measuring technology skill were adapted from Cheung and Haug (2005) and Reid and Levy (2008). Items for recruitment networks were adapted from Verba et al. (1995) and Ritter (2008). Measurement items for intention to use were adapted from Pavlou (2003), Reid and Levy (2008), Kollmann and Kayser (2010) and Ayo, Adewoye, and Oni (2011). Lastly, items of actual use were adapted from Kollmann and Kayser (2010), Pavlou (2003), Klopping and McKinney (2004) and Cheung and Haug (2005), see Appendix A. All items for these constructs were measured on a Likert scale from 1, Strongly Disagree to 5, Strongly Agree.

Survey, a principal research method in information system was adopted for this study. To aid respondents' understanding of the survey, a brief description of the objective of the survey was given. E-democracy was defined in the survey as “the use of electronic systems such as e-opinion poll, e-forum, e-referenda, wikis, blogs, e-petitions, e-voting, e-panel, e-consultation, etc. to participate in opinion-making process” to ensure that the respondent correctly understand the concept. Each

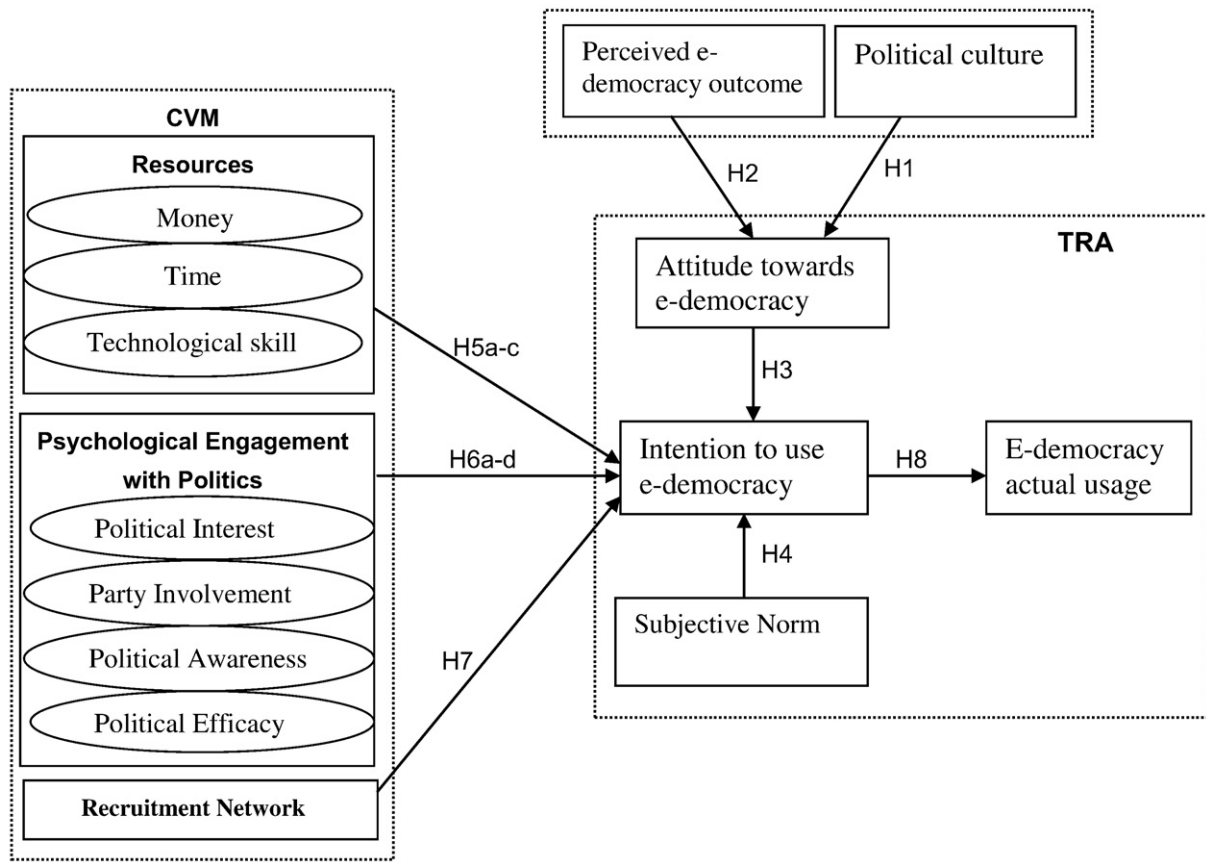


Fig. 1. Overall model of e-democracy adoption factors.

set of items were given explicit, short, and simple caption to enable every respondent know exactly what each set of the questions is testing.

The survey was first given to two experts in information system research to evaluate its conformity to standard. A pilot study was then conducted using undergraduate class of 90 students. The average time for completing the survey was checked as well as the reliability and validity. Finally, the survey was self-administered to a diverse group of citizens above eighteen (18) years of age irrespective of other demographic characteristics: such as, gender, socio-economic status, and technology experience. Appendix A lists items in the final survey instrument and their respective sources.

Only paper-based questionnaire was used to facilitate quick response. The survey was administered in academic environments, offices in both public and private institutions, and religious institutions within Lagos and Ogun States. The administration of the survey spans a period of three months in 2013. The fact that these two states are among the earliest politically civilized and vibrant states in Nigeria makes them appropriate for the study. Also, geographical proximity and accessibility which the two states portends for three of the authors makes it convenient for the authors. Copies of the questionnaire were distributed to a randomly approached individual members of the institutions visited. Visitors to those institutions were excluded because they might not have enough time to complete the questionnaire. Excluding visitors was also to enhance easy and high retrieval of completed questionnaire. Respondents from academic environments are randomly selected faculty, non-academic staff and students. 437 survey instruments were administered, 387 were received, 60 were incomplete and rendered invalid for the analysis. The remaining 327 were used to test the reliability and validity of the model and the research hypotheses.

3.2. Statistical analysis

Several factors that could influence users' behavior towards e-democracy were identified in the literature. Hypothetical interaction among the factors resulted into a complex model as shown in Fig. 1. A statistical technique that can test complex models that feature interactions and multiple-cause effects will offer the best approach to confirm the theoretical hypotheses through analysis of empirical data. Structural equation model (SEM) lends itself to this demand. Unlike regression-based methods, SEM allows simultaneous modeling of relationships among multiple independent and dependent constructs (Urbach & Ahlemann, 2010; Chin, 1998). With SEM, one no longer distinguishes between dependent and independent variable but between the exogenous and endogenous latent variables (Haenlein & Kaplan, 2004). Furthermore, it allows for explicit modeling of measurement error for the observed variable (Haenlein & Kaplan, 2004). Specifically, this study adopts the variance-based SEM approach called "Partial Least Square" (PLS). The PLS is more appropriate in exploratory research and when the underlying model is fairly new and untested such as this. PLS takes a non-parametric distribution-free approach and makes no such demand of a normally distributed data. SmartPLS software was used for all the analysis in this study.

4. Results

4.1. Respondents' profile

The gender statistics of respondents was evenly distributed. The age range of respondents was 18–60 years. About half of the respondents

Table 1
Demographic profile of respondents.

Variable		Count	Percentage %
Gender	Male	168	51.4
	Female	159	48.6
Age	18–20 years old	58	17.7
	21–30 years old	176	53.8
	30–40 years old	61	18.7
	>40 years old	32	9.8
Education	High school	67	20.5
	B.Sc./HND degree	174	53.2
	Post-graduate	58	17.7
	Others	28	8.6
Monthly income	<₦50,000	123	37.6
	₦50,000–₦100,000	51	15.6
	₦100,000–150,000	127	38.9
	>₦150,000	26	7.9

are within ages 21–30 (53.8%). About half of the respondents (53.2%) have university degree. Tables 1 display the distribution for each of the demographic variables.

4.2. Testing the measurement (outer) model: reliability and validity

The psychometric properties of the measurement model was assessed using composite reliability, confirmatory factor analysis and discriminant validity. Table 2 reports the construct reliability (composite reliability, r_c), items factor loading and average variance extracted (AVE) for the research instrument. According to Chin (1998), for an item to be retained for further analysis after the initial run, it should have standardized loading not <0.707 on its respective latent construct. Only nine measurement items have factor loading below the minimum limit and were dropped from further analysis. Based on a bootstrap with 1000 resample, the factor loadings for the remaining 47 items were statistical significant at $p \leq 0.01$. Although the factor loading of the first item of PA falls below 0.707 at the second run, it was also found to be statistically significant at $p \leq 0.01$ with T-statistics of 9.7936. There was noticeable improvement in the convergent validity and construct reliability of the constructs when the nine items were removed. Table 2 presents the result of factor analysis of the refined instrument. The minimum r_c recommended for PLS is 0.8. Using SmartPLS 3.0, all the constructs satisfied the construct reliability of 0.8 except for partisanship (PP) which has composite reliability of 0.796. AVE value for all of the constructs exceeded the minimum threshold of 0.5 and is also presented in Table 2.

Table 2
Result of the reliability and validity analysis.

Variables	No. of items	AVE	Composite reliability	Cronbach's alpha	Factor loading
Attitude (AT)	5	0.567	0.867	0.809	0.717–0.772
Actual use (AU)	2	0.739	0.849	0.648	0.835–0.882
Computer and Internet skill (CIS)	4	0.727	0.914	0.874	0.800–0.852
Behavioral intention (BI)	4	0.655	0.904	0.865	0.748–0.879
Money	2	0.824	0.904	0.787	0.892–0.923
Political awareness (PA)	3	0.591	0.811	0.655	0.702–0.874
Political culture (PC)	4	0.693	0.918	0.888	0.719–0.984
Political efficacy (PE)	2	0.718	0.835	0.607	0.845–0.849
Political interest (PI)	4	0.721	0.911	0.873	0.816–0.893
Outcome expectation (OE)	3	0.679	0.863	0.764	0.774–0.854
Partisanship (PP)	2	0.663	0.796	0.499	0.702–0.754
Recruitment networks (RN)	4	0.683	0.896	0.847	0.759–0.893
Subjective norm (SN)	4	0.63	0.871	0.818	0.704–0.900
Time	2	0.743	0.896	0.841	0.903–0.930

Cross loading was used to examine the convergent validity of measurement items. The result showed that no measurement item loaded more on any construct other than its theoretically assigned construct. The discriminant validity was examined by comparing the square root of the AVE of each construct with the correlation score (i.e. ϕ matrix) of each pair of latent variables. The AVE square root of each construct must be greater than its ϕ matrix with all other constructs. In no case was any ϕ matrix greater than the square root of AVE of any construct in our model. The AVE square root of the entire model construct was also >0.70 (See Table 3). These two criteria indicate that all constructs share more variance with their measurement items than with another construct.

4.3. Testing the structural (inner) model and hypotheses

The first test on the inner model to predict the hypothesized relationships in the research model is the coefficient of determination (R^2). R^2 is the measure of the percentage of a construct's variation that the model explains. All the exogenous factors in the model explained 31.8% of the variation of intention to use e-democracy. E-democracy outcome expectation and political culture explained 34.4% of attitude towards the use of e-democracy, and intention to use explained 18.2% of Actual use of e-democracy. From the above figures, intention to use did not adequately explain actual use. According to Urbach and Ahlemann (2010), R^2 values of 0.190 and lower are weak variance.

The second assessment carried out on the inner model is the path coefficient which shows the degree of relationship between constructs (Wixom & Watson, 2001). To calculate the path coefficient, we ran a bootstrapping with 1000 re-samples. The path coefficient of all the hypothesized paths in the model is displayed in Table 4.

The significance of the coefficient path was to assess the t-statistics. T-value 1.8–2.39 is significant at 0.1 level of significance, t-value 2.4–2.9 is significant at 0.05 level of significance and t-value 3.0 and above is significant at 0.01 significance level. Fig. 2 shows the structural path diagram with coefficient of paths that were statistically significant. The effect size (f^2) of the overall model was tested using Cofen's f^2 .

$$f^2 = \frac{R^2}{1 - R^2}$$

The effect size values for the three endogenous variables with their respective R^2 are shown in Table 4. The result shows that democratic political culture and expected outcome of e-democracy have large effect on their endogenous LV which in turn, together with the other variables (political awareness, political efficacy, and recruitment networks) have large effect on the endogenous LV intention to use.

Eight of the thirteen hypotheses were supported. First, the hypothesized attitudinal constructs – democratic political culture and perceived e-democracy had a significant impact on attitude. Second, TRA constructs – attitude towards behavior and subjective norm had a significant impact on intention to use which also had a strong significant effect on e-democracy actual usage. Third, psychological engagement variable – political awareness, political efficacy and recruitment network are weak significant predictors of intention to use e-democracy. Resource variables (money, time, technological skill) and psychological variables (political interest, and party involvement) are non-significant predictors of intention to use e-democracy.

5. Discussion

In this study, democratic political culture and perceived e-democracy outcome were included as predictors of attitude towards e-democracy. Previous study identified the importance of democratic participatory behavior for effective public participation. As predicted, democratic political culture and perceived e-democracy outcome had significant impact on attitude towards the use of e-democracy. Democratic political

Table 3
Correlation between latent constructs (φ matrix) and square root of AVE.

	AVE	AT	AU	CSE	BI	Money	PA	PC	OE	PI	PO	PP	RN	SN	Time
AT	0.567	0.752													
AU	0.738	0.119	0.859												
CSE	0.724	0.412	0.111	0.852											
BI	0.703	0.354	0.423	0.182	0.838										
Money	0.812	0.344	-0.012	0.568	0.073	0.908									
PA	0.590	0.163	0.306	0.084	0.328	0.052	0.768								
PC	0.693	0.479	0.190	0.410	0.319	0.235	0.210	0.832							
PE	0.717	0.206	0.276	0.198	0.399	0.112	0.431	0.428	0.847						
PI	0.721	0.375	0.262	0.211	0.366	0.149	0.418	0.344	0.394	0.849					
OE	0.679	0.466	0.170	0.109	0.247	0.208	0.180	0.297	0.093	0.237	0.824				
PP	0.662	-0.087	0.327	-0.157	0.147	0.012	0.200	-0.167	0.097	0.216	0.088	0.814			
RN	0.683	0.117	0.360	0.162	0.296	0.155	0.199	0.229	0.306	0.285	0.075	0.319	0.826		
SN	0.628	0.177	0.272	0.065	0.303	0.060	0.121	0.073	0.231	0.258	0.244	0.241	0.251	0.794	
Time	0.737	0.104	0.229	0.142	0.190	0.115	0.199	0.098	0.205	0.312	0.231	0.303	0.244	0.361	0.862

culture has significant influence on the individual's attitude towards e-democracy (H1) with a path coefficient of 0.374, the highest significant value in the model. Individuals who see political participation as right and obligation are likely to participate in e-democracy. Perceived e-democracy outcome significantly influences attitude towards e-democracy (H2) use with a significant path of 0.354. Individuals who are optimistic about the outcome of e-democracy are more likely to participate in e-democracy. In the study, 73.7% of the participants believed that adoption of e-democracy will help improve democratic system, 78% believed e-democracy will improve citizens' political participation and 71% believed online deliberation between elected representatives will increase the quality of policy outcome. These findings are consistent with existing literature. Increase in democratic political culture will increase online political participation. The success of e-democracy therefore requires a democratic political culture orientation of ordinary citizens. Also, the belief that online political participation will yield a better democratic society will influence citizens' online engagement.

In the light of the significance of democratic political culture and perceived outcome of e-democracy to attitude, political organizations should increase their efforts on civic education and enlightenment on the individuals' right and benefit of political participation. Mizrahi and Vigoda-Godat (2009) asserted that participation in public decision making will yield positive result when there are channels to influence policy outcomes and democratic participatory behavior. Extensive public dialogue, deliberation and discussion on common problems through the use of Internet and mobile technology will provide not just another channel for participation but also has the potential of building a

responsive government. Thus, the use of Internet and mobile technology has the potential to increase political participation and produce a better democratic society. It can also be used to blaze the interest of the political indifferent individuals.

Attitude is an essential construct in the models of technology adoption across different domains of technology related applications. Attitude is the driver of user's utility and reveals individual's preference (Jahangir & Begum, 2007; Adesina & Ayo, 2010). As predicted, attitude has significant influence on intention to use e-democracy (H3) with a path coefficient of 0.245. Individuals who believe that e-democracy is a positive, wise and beneficial step towards improving a democratic society will engage in e-democracy. This shows that citizens will be more enthusiastic to engage in the use of e-democracy system when they see it as a platform to air their opinion on issues of public concern and that their contributions to public decision making process count. If e-democracy produces improved democratic system, citizens who are not initially in support of it will be motivated to participate in the process.

Subjective norm construct was included in the research because existing literature identified it as proximal determinants of behavior (Compeau & Higgins, 1995). Subjective norm also has a significant impact on intention to use e-democracy (H4) with path coefficient of 0.148. This finding is consistent with existing literature. It thus shows that the influence of reference group will be a motivating factor for individuals who ordinarily will not engage the online political participation.

In the light of the relationship between subjective norm and intention to use e-democracy, e-democracy system should include platforms for online interactions among citizens and integrate social networking platforms to attract more participation. Through the use of discussion forum, chat sessions, web blogs, etc., people can interact and spark the interest of others who otherwise, would be indifferent. Interfacing online political discussion forums with social networking platforms will also increase publicity and motivate non politically active individuals to join their peers online.

It was hypothesized that political awareness would positively influence individual intention to use e-democracy. This hypothesized relationship was supported by this study. Political interest has a significant impact on intention to use e-democracy (H6c) with path coefficient of 0.124. According to Crotty (1991) individuals with minimal political information are least likely to participate in political activity. Mobile and Internet technology will enable government and political groups to intensively publicize political activities and disseminate important information. Also, government, using technology to publicize its commitment to open and transparent governance, will engender citizens to participate. Increasing avenues for disseminating political information would increase political awareness which, in turn would increase political participation. Thus, e-democracy can spark the politically indifferent individuals to be politically active.

Political efficacy is another psychological engagement variable that has a positive significant impact on intention to use e-democracy.

Table 4
Path coefficient and R² for overall model.

Predictor construct		Predicted constructs	Path	t
Expected outcome	→	Attitude	0.354***	5.364
Political culture	→	Attitude	0.374***	5.012
Attitude	→	Intention to use	0.245***	3.416
Subjective norm	→	Intention to use	0.148**	2.509
Internet skill	→	Intention to use	0.063	0.936
Financial resource	→	Intention to use	-0.115	1.604
Time	→	Intention to use	-0.017	0.275
Political awareness	→	Intention to use	0.124*	2.017
Political efficacy	→	Intention to use	0.192**	2.945
Political interest	→	Intention to use	0.074	1.106
Recruitment network	→	Intention to use	0.120**	2.258
Political involvement	→	Intention to use	0.052	0.840
Intention to use	→	Actual use	0.427***	8.775
			R ²	F ²
		Attitude	0.344	0.524
		Intention to use	0.318	0.466
		Actual use	0.182	0.222

* Indication of level of significance which represents 10%.
** Indication of level of significance which represents 5%.
*** Indication of level of significance which represents 1%.

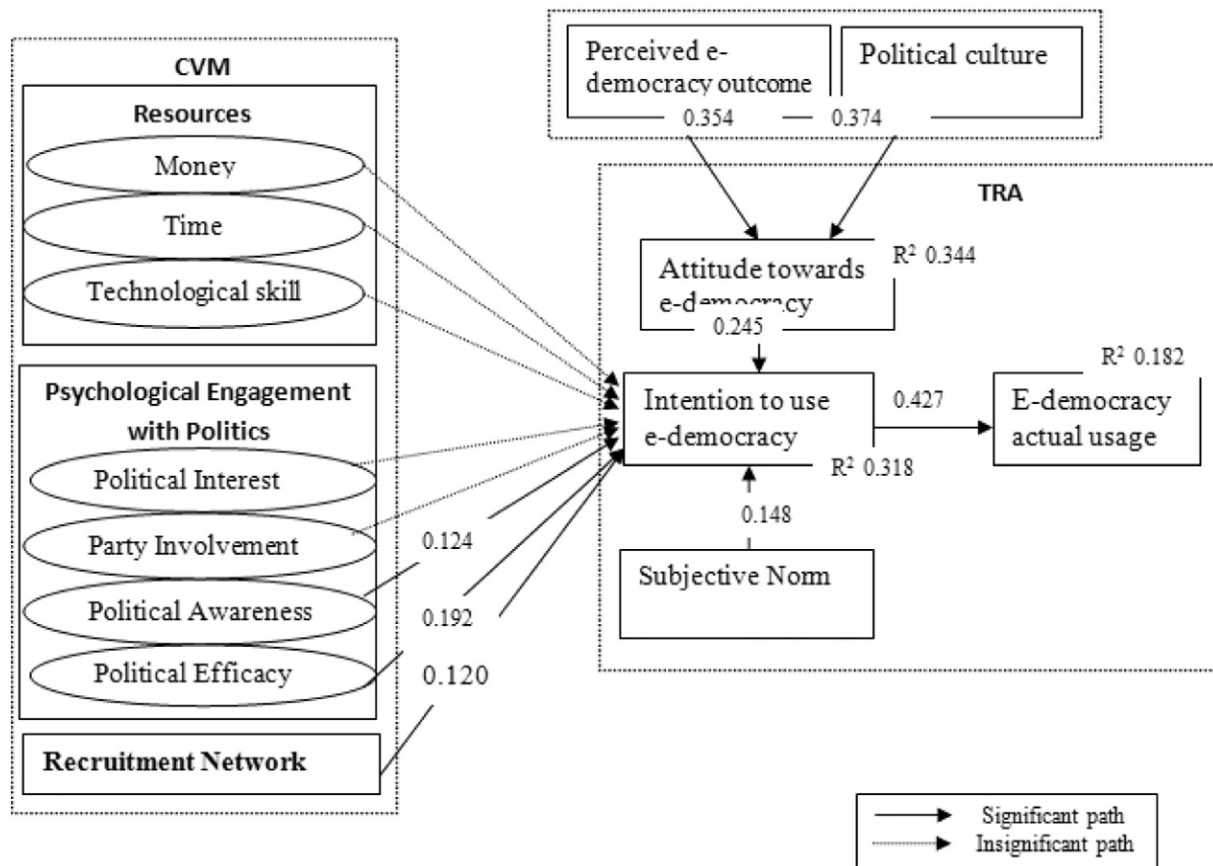


Fig. 2. Overall model of e-democracy acceptance factors with coefficient of significant paths.

Political efficacy is an individual's belief in his or her ability to influence the political system. The hypothesized relationship was significant with path coefficient of 0.192. The finding on political efficacy in this study is consistent with literature. Analysis revealed that having good understanding of important political issues facing Nigeria is the respondents' strongest political efficacy measure. Individuals who have pretty good understanding of issues of discourse in the political system are more likely to use e-democracy. It thus shows that when citizens are given adequate information on political issues, they will be more willing to participate. Maintaining open and transparent government system by giving citizens' access to necessary information will increase citizens' political efficacy and in turn increase political participation.

Recruitment networks play an integral role in mobilizing citizens towards political participation (Rosenstone & Hansen, 1993; Verba et al., 1995). Positive significant relationship was hypothesized between recruitment networks and intention to use e-democracy. This hypothesized relation was confirmed with path coefficient of 0.120. Though this is not a strong significant relationship, it however, suggests that social network organizations, civil society groups, religious institutions, organizations and families are sources of motivation for citizens to get involved in online political participation.

In addition to inferences made from the significant findings, it is important to consider the implications of the non-significant hypothesized paths. Two factors under the resources of CVM (money and time) were found to have high non significant impact on intention to use e-democracy. The level of insignificance that the third factor i.e., technological skill, has on the intention to use e-democracy was however, not as high as that of money and time. Two variables of the psychological engagement with politics, political interest and party involvement had no significant impact on intention to use e-democracy.

As illustrated in the literature reviewed, CVM resources factors is composed of three components: free time, money and civic skill.

According to Verba et al. (1995), these three variables provide citizens with means and ability to actively participate in politics. People with high socioeconomic status are more likely to be politically active than people with lower socioeconomic status. The result of this study however, negates this suggestion in the literature. These three resource factors have no significant effect on citizens' intention to use e-democracy.

This result is inconsistent with existing literature despite the fact that the mean score of items for the three variables ranged from 3.089 to 4.318. The non-significant effect of time on intention to use e-democracy may be a function of sample. Most of the survey participants (62%) do not engage in political activities as part of their schedule though 55% of them agreed to the fact that their jobs afford them time to engage in e-democracy.

The non-significant effect of financial resource (money) on intention to use e-democracy may be a function of the measurement items used to capture the construct. Only two measurement items were used to capture respondents' opinion on this. Future research should increase the number of measurement items for diverse opinion.

Internet browsing skill had no significant effect on intention to use e-democracy system. The construct represents ability to proficiently use the Internet for political activities. >75% of the sample is familiar with the use of computer. Respondents in this category rated themselves as having high Internet browsing skill and could participate in political discussion online. Hence, for most of the participants, the Internet is accessible and quite simple to use. A sample that includes more diversity in Internet accessibility and proficiency may yield a different result.

Another reason that may be responsible for the non-significance of these variables is that IS research does not typically include them as predictors of intention to use an information system. Their direct involvement in political participation is well documented in political science research. They were included in the research model for this study in order to see how many factors from offline political participation

would influence online political participation. These findings show that though resources factors are significant determinant of citizens' political participation, they may not be as importance as adoption factors especially for sample with high educational qualifications.

It means that the fact that people are proficient in Internet usage may not automatically culminate into engaging in online political participation. Another possibility for the non-significance of these factors is that the demographic characteristics of the survey sample are not as diverse as that of the population. The educational qualifications, occupation and age distribution of the survey participants are not representative of Nigeria population. 53.2% of the sample have at least first degree and 17.7% have post graduate degree. Also only 9.5% sample are above 40 years.

Political interest and party involvement were not significant predictors of intention to use e-democracy. It is not surprising that these two related constructs are not significant predictor of intention to use e-democracy considering the weak significant effect of political awareness and political efficacy. The psychological factors, according to Verba et al. (1995), Ritter (2008) and several other scholars are strong predictors of political participation. Carter (2006) also found political interest and party mobilization as significant predictors of Internet voting adoption. The inconsistency between the literature and this finding may be a result of present poor political participation ravaging the society as many of the participants are only interested in voting.

5.1. Implications for practice

There is a clear consensus in literature that citizens' perception of a desirable outcome positively influences their attitudes towards participating in an event. Findings of this study revealed that this factor will consequently influence citizens' attitude towards engagement in e-democracy. The non-significance of political interest and party involvement to intention to use e-democracy, as revealed in this study, support the capability of e-democracy in reducing citizens' political apathy. Citizens will be favorably disposed to engage in e-democracy if they are optimistic of its outcome despite their apathy towards party involvement and other forms of political activities. It is imperative that government ensures that the outcome of citizens' engagement in e-democracy counts. Building citizen's trust in the democratic process is therefore very vital. In this regard, political institutions and government agencies, should consistently work to build citizens' trust in the democratic process. They should promote, ensure and enhance transparency, accountability, responsiveness and public values in order to build citizens' trust in the government. Furthermore, attitude significantly influences the intention to use e-democracy, it is thus, important for practitioners to understand that attitude is a matter of motivation. E-democracy must always deliver its expectation for people to keep being motivated to engage in it.

Recruitment network has a positive effect on intention to use e-democracy. This requires the use of various forms of citizens' networking to enlist their involvement. Government should partner with civil society organizations, religious associations, academic institutions, interest groups, the media and traditional institutions to embark on dedicated, massive and multilayered campaigns and orientation programs to stimulate citizens' interests in engaging online democratic activities.

ICT, however, can lead to mistakes, irregularities, and complaints and thus undermine citizens' interest and trust if they do not understand how to engage technological platforms for political participation. This requires that the general public be giving proper education and training on how to engage in e-democratic system. Government should therefore organize nation-wide enlightenment and training programs to ensure that the vast majority of citizens are adequately trained on e-democracy usage. This will also require the provision of adequate human and financial resources by the government for the exercise.

Since political information has a positive effect on citizens' intention to use e-democracy, government should ensure that information on

items under consideration are adequately, widely and extensively published. In addition to this, e-democracy should encompass a wide range of public issues, including among others, legislation, opinion polls, meetings, voting, management and sharing of information and knowledge collection.

6. Conclusions and limitations of the study

This study contributes both to information system and political science theory and e-participation research at local and international levels. The study integrates constructs from both information systems and political science into a comprehensive model of e-democracy adoption in Nigeria/tested using Nigeria as a case study. This integration is a contribution to both fields of study. This study was conducted using existing empirically validated measures from literature (Verba et al., 1995; Pavlou, 2003; Carter, 2006; Cheung & Haung, 2005; Reid & Levy, 2008; Ritter, 2008; Kollmann & Kayser, 2010). Results indicate that existing online adoption measures, subjective norm, outcome expectancy, and attitude are also applicable to e-democracy.

This study deviates from existing studies on the use of over-flooded empirically tested perceived usefulness and perceived ease of use as antecedents of attitude. The study tested two new belief constructs: expected outcome and political belief as antecedents of attitude. Though political belief is domain specific, it is, as well, a good predictor of attitude. Post-hoc analysis however, shows that these variables have no direct significant impact on intention to use. This finding contributes to the Theory of Reasoned Action by presenting domain-specific antecedents of attitude.

This study also fills the gap existing in e-participation research. Few studies that have investigated factors influencing individuals' adoption of e-participatory democracy were conducted in countries such as Norway and Germany, among other countries. Thus, a dearth of information exists on e-participatory democracy in resource poor countries particularly, African countries. It contributes to existing literature on factors affecting the adoption of e-democracy in developing nations specifically, Nigeria.

The second objective of the study is to evaluate the inherent individual (attitude) enablers and barriers to participating in e-democracy in developing countries. Asking only one respondent to present a view on behalf of their organization may be problematic. The empirical findings from this study cannot be generalized for the whole of developing countries given that only Nigeria was sampled. Data from other nations may be different from what is reported in this study.

Demographic variables added to the survey instrument include: age, education, and income, occupational sector. Analysis showed that 53.2% of the respondents are within ages 20–30 years. Also statistical distribution of the educational qualifications of the respondents showed that 70.9% of the respondents have at least a university degree. Due to the level of education of the respondents, computer and Internet usage may not be a barrier. These demographic characteristics of the respondents may account for technological skill not having a significant impact on intention to use e-democracy. Future studies should seek to collect data from individuals with diverse educational backgrounds and target getting more data from older people between 40 and 70 years; an ideal sample would include those who have a high school diploma and those who do not.

Appendix A. Items in final survey instrument with source from literature

Wording in final instrument	Source of items
<i>Your perception of the outcomes of e-democracy</i>	Wójcicki et al. (2009)
Adoption of e-democracy will help improve democratic system	
Adoption of e-democracy will improve	

Appendix A. (continued)

Wording in final instrument	Source of items
citizens' political participation Adoption of e-democracy will enable the masses to participate in public decision making process Online deliberation between citizens and elected representatives will increase the quality of policy outcome	
<i>Democratic political culture</i> I believe that my participation in public decision making process will positively influence policy outcome I believe that allowing the public to be involved in public decision making process such as public hearing, citizens governing board and citizens conference will increase public sector performance and increase trust in government I believe that I should participate in public decision making process I believe in identifying with a political party of my choice I believe that elected representatives should thoroughly harness citizens' opinion on every policy issue	Mizrahi & Vigoda-Godat (2009)
<i>Your attitude towards the use of e-democracy</i> In my opinion, it is desirable to use e-democracy systems Online participation of citizens in public decision making is acceptable It is wise to harvest citizens opinion on public issues through the use of Internet and mobile phones Using the Web/mobile phone to participate in public decision making is a good idea Online citizens participation in public decision making will be beneficial	Reid & Levy (2008), Malhotra & Gelleta (1999)
<i>Subjective norm</i> People who are important to me think I should use e-democracy system It is expected that people like me use e-democracy system People I look up to expect that I use e-democracy system The people in my life whose opinion I value would approve my use of e-democracy systems It is expected of me that I interact with people on public issues	Kollmann & Kayser (2010)
<i>Time</i> I have free time to engage in e-democracy system My job gives me time to engage in e-democracy system Time to engage in political participation is part of my schedule	Verba et al. (1995)
<i>Money</i> I have access to the Internet I can afford the cost of Internet access to use e-democracy system when needed	Verba et al. (1995)
<i>Your experience with the use of computer and internet browsing</i> I am familiar with the use of computer I would rate my Internet browsing skills high I can successfully log on to participate in political discussion when required I can easily post comment online on any political issue	Cheung & Haung (2005), Reid & Levy (2008)
<i>Information on your political interest</i> I like to participate in the discussion of	Carter (2006) Ritter (2008), Kollmann & Kayser (2010)

(continued)

Wording in final instrument	Source of items
political issues of my state and local government I like to give my opinion on political issues at the national level I love to discuss political issues with friends/people around me I am generally interested in political issues	
<i>Your involvement in political party</i> I am more interested in the ruling political party I am a member of one of the political parties in Nigeria I only participate in voting exercise	Carter (2006)
<i>Your level of political awareness</i> I have adequate knowledge of Nigerian politics I am familiar with current issues in Nigerian politics I know the numbers of wards in my local government I know the number of constituencies in my state I know the number of legislators in the National Assembly	Ritter (2008), Kollmann & Kayser (2010)
<i>Your political efficacy</i> I feel I have a pretty good understanding of the important political issues facing our country I consider myself to be well qualified to participate in politics I believe that I am well informed about political issues around me	Ritter (2008)
<i>Your recruitment networks</i> Colleague(s) in my working place do persuade me to participate in politics My church/Mosque member encourages to engage in political actions My friends do encourage me to be involved in politics in one way or the other Members of my family do encourage me to participate in politics	Verba et al. (1995), Ritter (2008)
<i>Your intention to use e-democracy applications</i> I will engage in online participation if I have access to internet facilities I will use the mobile phone to participate in policy if have such phone I intent to use the Web/mobile phone to participate in public decision making process Interacting with public officials through the Web/mobile phone is something that I will do It is likely that I will participate in public decision making process through the use of internet/mobile phone in the near future Overall, I will like to use the Internet/mobile phone for democratic decision making	Pavlou (2003), Reid & Levy (2008), Kollmann & Kayser (2010), Ayo et al. (2011)
<i>Your actual usage of e-democracy applications</i> I use the Internet political participation very intensively (>2 h per day) I use the Internet/WEB very frequently (a few times per day) I use a diversity of tools on the Internet for political participation (e-opinion poll, e-Forum, e-referenda, blogs, e-petition, e-consultation)	Kollmann & Kayser (2010), Pavlou (2003), Klopping & McKinney (2004), Cheung & Haung (2005)

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