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e-Voting intent: A comparison of young and elderly voters

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ABSTRACT

The ability to vote online has the potential to increase voter turnout for elections due to increased convenience over traditional voting polls. This study examines factors that can affect a citizen's intent to vote online. Survey subjects came from two different age groups: young adults, 18–25 years of age; and senior citizens, ages 60 plus. Using the Unified Theory of Acceptance and Use of Technology (UTAUT), the study found that performance expectancy, effort expectancy, social influence, trust in the internet, and computer anxiety were significantly related to intent to use online voting. Trust in the government was insignificant. Performance expectancy, social influence, and computer anxiety were related to intent to vote online for both young adults and seniors. Effort expectancy was related to intent to vote for the seniors but not young adults, and trust in the internet was related to intent to vote for young adults but not seniors.

1. Introduction

Exercising the right to vote has always been viewed as both a privilege and obligation of the citizenry of democratic countries. Indeed, televised news reports showing formerly disenfranchised voters forming long lines and waiting patiently to cast ballots are quite sobering and remarkable.

Unfortunately, voter turnout in many countries, including the U.S., is on the decline. While our school systems teach the importance of voting, the obligation is ignored by many, especially in the younger age group. Low voter turnout is often viewed as a social problem reflecting voter apathy. Consider the percentage of U.S. voter turnout figures given in Table 1. Some fifty years ago in 1960 over 63% of eligible voters exercised their voting privileges. Contrast this with the 1996 election where less than one out of every two eligible voters (about 49%) participated in the election process.

Additionally, voter apathy in the U.S. is even more severe in non-presidential voting years. In those years, federal elections are held to choose 100% of the members of the House of Representatives and 33% of the members of the Senate, yet voter turnout is considerably lower for these "off-year" elections. Although not shown in Table 1, voter turnout since 1974 for these off-year elections ranged from about 36.4% to 39.8% — fewer than two out of five eligible voters cast ballots.

Within the U.S., voter apathy varies across different age groups. Only about 35% of the eligible voters in the 18-to-25 age group turn out, while older citizens turn out in much larger numbers. In fact, about 70% of citizens over the age of 60 tend to participate in voting (Jamieson, Shin, & Day, 2002). This raises the question of why this difference exists. Are older citizens voting in larger numbers because they have the time available? Is it part of their age group's culture? Perhaps more importantly, there is the question as to whether additional efforts or methods that make it easier to vote will improve voting participation in general, and especially for the age groups that tend to participate in lower numbers.

This research examines whether a specific effort, online voting, has the potential to improve voter turnout. Voter opinions are gathered through the use of a survey that was administered to two groups of voters — young adults and senior citizens. The next section provides additional background on the voter turnout problem and emphasizes the importance and contribution of this research. Section 3 reviews the relevant literature on voter turnout and the theoretical basis for the adoption of technology, such as online voting. Sections 4 and 5 detail the research model and hypotheses tested as well as the methodology for data collection. The remaining sections provide the data analysis, results, and a discussion along with conclusions drawn from this research.

2. Background

The popular press often decries low voter turnout. Part of the problem can be attributed to the voting process within the U.S. Voters in the various states must register to vote, often well ahead of the actual voting date. Although polling station locations are published in the local press, voters are often ignorant as to where they are supposed to go to vote. Additionally, concern about whether one's vote counts for much may generate a certain level of apathy. It is also possible that some citizens make a rational decision about voting based

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Table 1
National voter turnout for U.S. federal elections — 1960 to 2008.

Year	Eligible to register	Registered voters	Voter turnout	Percentage of turnout
2008[a]	231,229,580	NA	132,618,580[a]	56.8%
2004	221,256,931	174,800,000	122,294,978	55.3
2000	205,815,000	156,421,311	105,586,274	51.3
1996	196,511,000	146,211,960	96,456,345	49.1
1992	189,529,000	133,821,178	104,405,155	55.1
1988	182,778,000	126,379,628	91,594,693	50.1
1984	174,466,000	124,150,614	92,652,680	53.1
1980	164,597,000	113,043,734	86,515,221	52.6
1976	152,309,190	105,037,986	81,555,789	53.6
1972	140,776,000	97,328,541	77,718,554	55.2
1968	120,328,186	81,658,180	73,211,875	60.8
1964	114,090,000	73,715,818	70,644,592	61.9
1960	109,159,000	64,833,096	68,838,204	63.1

[a] Source: 2008 election results: http://elections.gmu.edu/Turnout_2008G.html. Source: Federal Election Commission. Data are drawn from Congressional Research Service reports, Election Data Services Inc., and State Election Offices. Information Please® Database, © 2008 Pearson Education, Inc. All rights reserved.

on the perceived costs of participation, i.e., the time required to participate in the normal voting process or the need to secure an absentee ballot when one is traveling away from home.

One argument in favor of providing alternative voting options is the potential to reduce the perceived costs of voting. Presumably turnout will increase if costs are lowered (Rallings & Thrasher, 2007). Within the U.S., this view has caused both the federal and numerous state governments to put forth various efforts to increase voter turnout. Voter registration opportunities are increased by setting up registration booths at local banks, at local and state fairs, and other locations where people may gather. Actual voting opportunities have been expanded by making it easier to obtain *in absentia* ballots, and by setting up "early voting" booths that extend the voting period beyond the traditional one-day voting approach.

With the increase in numerous technical innovations, the number of online services provided by government has increased. e-Democracy refers to the use of information and communication technologies (ICTs) in democratic processes in government (van der Graft & Svensson, 2006). Two broad components of e-democracy include e-participation and e-voting (Macintosh & Whyte, 2008). e-Participation is defined as "the use of ICTs to support information provision and 'top-down' engagement, i.e. government-led initiatives, or 'ground-up' efforts to empower citizens, civil society organizations and other democratically constituted groups to gain the support of their elected representatives" (Macintosh & Whyte, 2008, p.16). Examples include online grant application systems, Veterans Affairs information systems, job application systems, Social Security Administration assistance, electronic forums for discussing area issues, and the like.

With the increased interest in e-voting, it is natural that attention has been given to the potential for implementing *online voting* via the internet. Online voting refers to the ability of a citizen to logon and access a secure government internet site that supports voting in either (or all) local, state, and federal elections. Access that is available through both residential and non-residential internet connections would best facilitate the goal of convenience. Convenience is the principal argument favoring online voting since presumably this approach would be more convenient than the use of traditional voting polls. Additionally, online voting would enable the automation of vote tallying with an associated quicker turnaround of election results. Online voting would also seem to (almost) eliminate the need for absentee ballots since individuals can access the internet from almost any place to which they travel. Individuals who forget to secure an absentee ballot in advance can still exercise their voting privilege.

Research has shown that individuals in the 18-to-25 age group are more likely to use computers on a daily basis, having used computers for much of their life (Martin, Stewart, & Hillison, 2001). The convenience of online voting may improve voter turnout for these individuals. An important question is how will older citizens, particularly those in the 60+ age group, respond to online voting? These older individuals (60+ age group) have been shown to have higher levels of computer anxiety than younger individuals. Older individuals may completely lack training in computer use (Martin et al., 2001). Will the 60+ crowd perceive online voting to be a hindrance to the voting patterns they have adopted throughout their life? Government would want to avoid the implementation of online voting if it increases participation in one sector of the citizenry only to affect adversely another sector. However, the use of both online voting and traditional polling places would seem to provide a "win–win" scenario.

This research provides evidence regarding the improved convenience argument and the effect that the availability of online voting may have on the intent of citizens to vote. Specifically, this research reports on the key differences found to exist between two age groups, 18-to-25 and 60+ with regard to online voter acceptance. We examine several relevant questions. Since voter turnout is low for the 18-to-25 age group, we examine whether online voting will increase voting intent for this age group. Since citizens in older age groups, such as the 60+ group may have computer anxiety, we examine whether online voting may decrease voting intent for this age group. Since trust in the security of the internet is a potential issue, we examine differences in voter perceptions regarding this particular issue.

3. Literature review

3.1. Online voting

Secure Electronic Registration and Voting Experiment (SERVE) is one of the most notable online voting systems used in the U.S.A. SERVE was developed by Accenture Limited, Corp. and was funded by the Federal Voting Assistance Program of the U.S. Department of Defense (Jefferson, Rubin, Simons, & Wagner, 2004). SERVE's intent was to allow overseas military families to register to vote and vote online. Security was the project's major concern and was the primary reason Accenture's final product was not cleared to be used in the 2008 U.S. Presidential election. Insider attacks, lack of voter-verified audit trails, DOS attacks, spoofing, tampering, fabricated user accounts, and non open-source code were just some of the security concerns identified (Jefferson et al., 2004). Other articles have also pointed out technical and security vulnerabilities in e-voting systems. Security was not found to be a part of the design of two e-voting systems and security features were just added in an ad-hoc manner resulting in numerous vulnerabilities in the systems (Balzarotti et al., 2010). Similarly, security gaps in technology were found in online voting pilots in the UK (Xenakis & MacIntosh, 2008). Other technical and security factors that hinder e-voting systems include lack of transparency (Bishop & Wagner, 2007), potential for accidental or intentional errors in the recording of votes (Dill, Schneier, & Simons, 2003), programming errors, potential for tampering, and inability to recover (Moynihan, 2004).

Articles on online voting have also investigated voter resistance and how this resistance may limit the adoption of online voting. In one study investigating acceptance of online voting, socio-cultural similarities between the voter and government agency were found to impact both trust and perceived usefulness (Gefen, Rose, Warkentin, & Pavlou, 2005). In another study, trust, compatibility, and ease of use were all found to be significantly related to intent to use e-government services (Carter & Belanger, 2005). While the latter study did not include e-voting, similarities between e-government and e-voting imply that the same factors may be relevant when looking at resistance to e-voting. A study that specifically examined intent to vote online by college students found that perceived usefulness, compatibility, and trust were all significant variables (Schaupp & Carter, 2005). Trust was again the central

focus in a study that found those with high trust of e-voting were more likely to be innovators or early adopters of online voting (Lippert & Ojumu, 2008).

Despite technical flaws and resistance from some voters, it is very possible that the technologically savvy college age generation of both present and future voting generations will strongly demand the convenience of voting online. A common reason given for e-voting is the potential to increase voter turnout, particularly in the younger age group. However, studies have found mixed results. The UK had only a slight increase in voter turnout when online voting was made available (Henry, 2003). Most of those who voted online were already regular voters. e-Voting had a small, positive effect on voter turnout in Dutch elections, but only the first time the e-voting option was offered. The permanent effect of e-voting on voter turnout was not significant (Allers & Kooreman, 2009). While the younger generation may embrace e-voting, non-white, unemployed, and rural residents are less likely to vote online (Alvarez & Nagler, 2001), as are the elderly (Alvarez & Nagler, 2001; Yurong & Murphy, 2007; Yurong, Okoli, Houson, & Watson, 2006/2007). While one can argue that traditional forms of voting can be maintained for those not inclined to vote online, traditional polls are more difficult to get to, thereby potentially increasing the odds that certain populations will be under-represented.

3.2. Adoption model

The adoption and use of information technology (IT) innovations within an organization are critical to deriving the benefits of IT, yet many innovations are underused or never used. Several theoretical perspectives have been used to analyze individual behavior regarding ITusage. The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed as a unified model to incorporate eight prominent models in the technology acceptance literature. Empirical validation found that UTAUT explains up to 70% of the variance in the intention to use a new technology. Performance expectancy (perceived usefulness, relative advantage), effort expectancy (perceived ease of use), and social influence (subjective norms, social factors) were found to have a significant, direct relationship to behavioral intent (Venkatesh, Morris, Davis, & Davis, 2003). Because UTAUT incorporates the major models and theories of user acceptance, we have used UTAUT as a base model for this study. As needed, constructs have been added or removed for this study.

4. Research model and hypotheses

This research uses three of the antecedents of the UTAUT model (performance expectancy, effort expectancy, and social influence). It also adds three additional constructs: computer anxiety, trust in the internet and trust in the government. In this section we develop the hypotheses examined by this research.

Performance expectancy is defined as "the degree to which an individual believes that using the system will help him or her attain gains in … performance" (Venkatesh et al., 2003, p. 447). It can also be thought of as expected usefulness, i.e., will citizens find online voting to be useful? It was found to be positively related to intent to use new technology (Venkatesh et al., 2003). In other studies using the UTAUT model, performance expectancy was positively related to adoption of business-to-business Electronic Marketplaces (Wang, Archer, & Zheng, 2006) and acceptance of tablet PCs (Anderson, Schwager, & Kerns, 2006).

H1. Higher levels of performance expectancy will increase intent to use an online voting system.

The effort expectancy construct is defined as "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450). Items from ease-of-use constructs in other models were used to create the items for effort expectancy. Effort expectancy has been found to be positively related to intent to use (Venkatesh et al., 2003; Wang et al., 2006); if citizens believe that voting online will be easy to do or learn, they are more likely to indicate an intention to do so. Higher levels of effort expectancy relate to higher perceptions of ease of use.

H2. Higher levels of effort expectancy will increase intent to use an online voting system.

Social image is defined as "the degree to which an individual perceives that important others believe he or she should use the new system," (Venkatesh et al., 2003, p. 451). This construct assumes that significant others in the voter's life will impact his or her decision to vote online. If a citizen sees others voting online and feels an expectation to do the same, he/she may be more likely to vote online.

H3. Higher levels of social influence will increase intent to use an online voting system.

In addition to the constructs identified in UTAUT, we also incorporated trust in the internet, trust in the government, and computer anxiety into the model. Security problems with the internet abound. The real and perceived security concerns surrounding the SERVE system were a major reason for its eventual failure (Jefferson et al., 2004). Security risks such as viruses, spyware, and theft of information are also growing exponentially. Eighteen months ago it took, on average, 45–55 min before a PC was attacked by something. Today, it takes just 4–5 min (Consumer Reports, 2005). Most individuals are aware of the potential security problems that arise from doing business of any type over the internet.

Some individuals may also view the political world as corrupt and deceitful. Some voters may fear that political elites could somehow sabotage an online vote in their favor; therefore, trust in the government and trust in the internet will likely affect a person's intent to use an online voting system. Both of these constructs have been used in prior research about the adoption of web-based technologies (Carter & Belanger, 2005; Gefen et al., 2005; Schaupp & Carter, 2005). In addition, trust has been examined in its relation to the use of e-commerce, and results have shown that trust in e-commerce is positively related to intent to use e-commerce (Gao & Wu, 2010).

H4. Higher levels of trust in the internet will increase intent to use an online voting system.

H5. Higher levels of trust in the government will increase intent to use an online voting system.

Our last model variable examines whether an individual's fear of incorrectly using technology will discourage them from using it. It is assumed that most people will be very unwavering in their belief that their vote must be accurately recorded; therefore, the fear of accidentally misusing the online voting system could be correlated with the intent to use the technology. In addition, some older voters have not used computers on a daily basis, if at all. They may have some trepidation to using a computer for anything, let alone voting.

H6. Lower levels of computer anxiety will increase intent to use an online voting system.

Finally, it has been found that with younger age comes a greater likelihood of technology adoption and use of the internet (Porter & Donthu, 2006). Young adults are more likely to have grown up with technology and use the internet on a regular basis. In addition, numerous research studies have found a gender difference in computer usage and anxiety with females being more computer anxious and less likely to use computers than males (Cooper, 2006). Therefore, we examined both age and gender as potential moderating variables in the model.

H7. Young adults will indicate greater intention to use online voting than senior citizens.

H8. Males will indicate greater intention to use online voting than females.

Fig. 1 shows the hypotheses of this study.

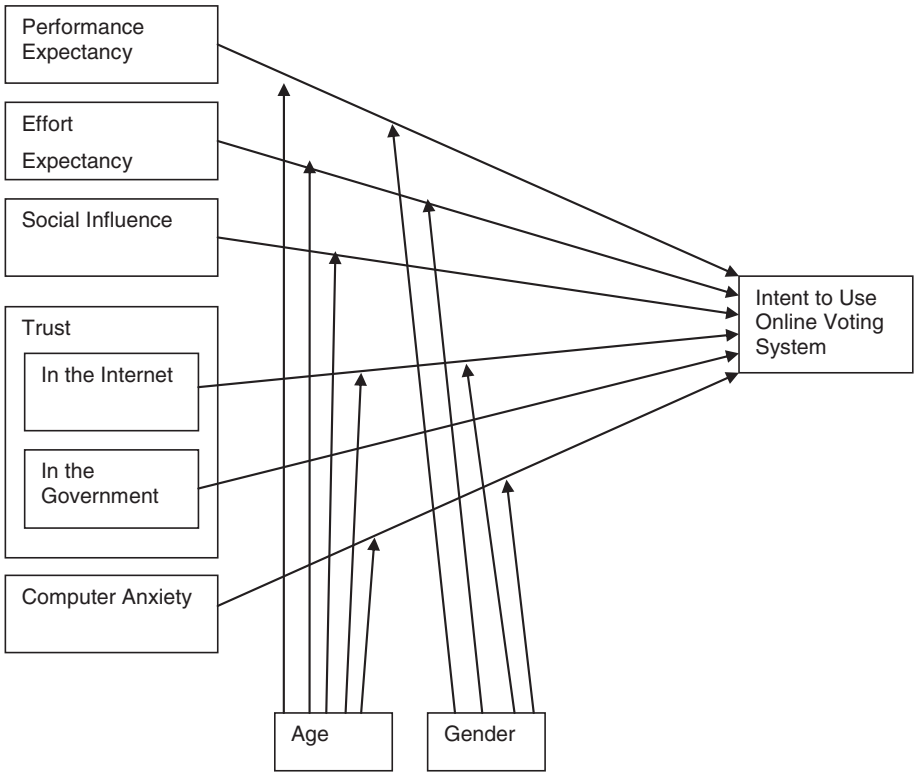


Fig. 1. Research model.

5. Methodology

5.1. Subjects

Two different sample groups were utilized to assess our hypotheses. Students enrolled in freshmen- or junior-level business classes at a mid-sized university in the Midwestern U.S. were surveyed for the first sample group. Three hundred fifty-five usable surveys from students between the ages of 18 and 25 were completed. Average age was 20 years; 49% were males. Survey responses indicate that respondents had an average of ten to eleven years experience in using computers and that every respondent had used the internet. All but five reported that they had convenient access to the internet, and 95% reported using the internet more than once a week. While an argument can be made that college students may be more technically savvy than the same age group in the general public, the increasing use of computers in high school (and lower grades) provides justification that in the future even those who do not attend college will still have computer education. This sample is referred to as young adults for the remainder of the paper.

Our second sample group was composed of senior citizens at least 60 years of age (referred to as seniors for the rest of the paper). Surveys were administered at six retirement homes in four small towns near a large metropolitan area of the U.S. Midwest. In addition, surveys were administered at senior community centers during scheduled activity times. Two hundred eleven usable responses were returned. Average age in this sample was 76 years and respondents ranged from 60 to 96 years of age; 32.7% were male. Survey responses indicate that respondents had an average of 7 years experience in using computers and 54% of the respondents had used the internet. Sixty-five percent reported that they had convenient access to the internet, and 28% reported using the internet more than once a week. While not shown in the table below, our sample of seniors was a very well-educated group. One third of the seniors had a college degree, while an additional third had some college. Table 2 summarizes demographic data of the two samples.

5.2. Instruments

Constructs were measured using validated instruments. Performance expectancy, effort expectancy, and behavioral intent were all measured with four items; computer anxiety was measured with five items, and social influence with three items (Venkatesh et al., 2003). Trust was divided into two constructs: trust in the internet and trust in the government. Trust in the internet was measured using six items; trust in the government was measured using three items (Carter & Belanger, 2005). Items were measured using a 7-point Likert scale with 1 being strongly disagree and 7 being strongly agree. Item questions were modified to reflect the study. Construct categories and associated questions can be found in Appendix A.

6. Results

6.1. Data analysis

The analysis was conducted using partial least squares (PLS) implemented in SmartPLS (Ringle, Wende, & Will, 2005). The reasons for employing PLS were threefold. First, PLS uses a component-based approach for estimations (Lohmoller, 1989), and assesses the measurement and structural models simultaneously. Second, it places minimal restrictions on sample size and non-normal data distributions (Chin, Marcolin, & Newsted, 2003). Finally, PLS has been used effectively to assess interaction effects based on nominal group membership (Ahuja & Thatcher, 2005; Keil et al., 2000; Venkatesh & Morris, 2000).

Convergent and discriminant validities were assessed for both the measurement models and constructs. Given the focus on potential differences based on gender and age, the validities were assessed

Table 2
Demographic comparisons of two sample groups.

# of responses	All	Young adults	Seniors
	566	355	211
Age (average in parenthesis)	18–96 (41.2)	18–25 (20.3)	60–96 (76.4)
Gender	43.3% male	49.6% male	32.7% male
Used computer?	Yes = 88.5% (9.2 years on average)	Yes = 100% (10.6 years on average)	Yes = 69.2% (7.0 years on average)
Used internet?	Yes = 82.7%	Yes = 100%	Yes = 54%
Internet use > once a week	70%	95%	28%
Access to computer?	Yes = 86%	Yes = 98.6%	Yes = 65%

for each subgroup. At the indicator level, convergent and discriminant validities are demonstrated by evaluating the loadings and cross-loadings. These are presented for the full sample in Table 3 and for the gender and age subgroups in Appendix B. All outer model loadings exceed 0.70 and were statistically significant at $p<0.01$ (Fornell & Larcker, 1981). Also the items load higher on the focal construct than other constructs in the model (Chin, 2010). The patterns of loadings should also be consistent across samples to support subgroup analyses (Ahuja & Thatcher, 2005; Carte & Russell, 2003). The results presented adequately demonstrate discriminant and convergent validities at the indicator level for the full sample and subgroups.

At the construct level, convergent and discriminant validities are demonstrated by evaluating the average variance extracted (AVE) and construct correlations. AVE should exceed 0.50 and the square root of AVE should exceed the off diagonal construct correlations (Chin, 2010). As presented in Tables 4, 5, and 6 for the full sample and subgroups, the constructs demonstrate convergent and discriminant validities. Also at the construct level, we assess the reliability

Table 3
Factor loadings and cross-loadings.

	Comp anx	Effort expect	Perf expect	Social influence	Trust_gov	Trust_int	e-Vote_intent
ANX1Apprehensive	**0.70**	−0.30	−0.26	−0.18	−0.27	−0.37	−0.40
ANX2Unsure	**0.78**	−0.54	−0.31	−0.08	−0.03	−0.13	−0.27
ANX3Hesitate	**0.88**	−0.48	−0.30	−0.13	−0.17	−0.29	−0.36
ANX4Intimidating	**0.86**	−0.57	−0.38	−0.12	−0.16	−0.23	−0.36
ANX5Scares	**0.84**	−0.40	−0.27	−0.14	−0.21	−0.34	−0.37
EOU1Clear	−0.45	**0.88**	0.68	0.53	0.44	0.61	0.65
EOU2Skillful	−0.52	**0.93**	0.57	0.42	0.35	0.44	0.57
EOU3EasyToUse	−0.53	**0.95**	0.63	0.45	0.34	0.46	0.60
EOU4Learning	−0.56	**0.93**	0.58	0.38	0.29	0.38	0.54
GOVT1Trust	−0.20	0.35	0.29	0.34	**0.96**	0.57	0.42
GOVT2Faithfully	−0.25	0.41	0.41	0.43	**0.94**	0.75	0.54
GOVT3Trustworthy	−0.15	0.31	0.26	0.30	**0.93**	0.53	0.36
INTENT1WouldUse	−0.43	0.60	0.66	0.57	0.46	0.66	**0.96**
INTENT2SeeMyself	−0.44	0.63	0.66	0.55	0.47	0.64	**0.96**
INTENT3WouldNotHesitate	−0.43	0.61	0.64	0.58	0.46	0.69	**0.94**
INTENT4MoreLikely	−0.34	0.56	0.68	0.59	0.41	0.60	**0.87**
SI1Influence	−0.17	0.46	0.48	**0.92**	0.35	0.47	0.51
SI2Important	−0.13	0.42	0.45	**0.92**	0.35	0.49	0.52
SI51FriendsCoworkers	−0.14	0.42	0.51	**0.83**	0.34	0.51	0.60
TRUST1Safeguards	−0.35	0.51	0.53	0.53	0.57	**0.92**	0.68
TRUST2Protect	−0.35	0.54	0.53	0.51	0.58	**0.90**	0.64
TRUST3AccurateCounted	−0.33	0.45	0.45	0.46	0.66	**0.90**	0.62
TRUST4Safe	−0.31	0.46	0.49	0.54	0.62	**0.95**	0.64
TRUST5Security	−0.31	0.47	0.50	0.52	0.64	**0.95**	0.66
TRUST6Tamper	−0.26	0.42	0.43	0.50	0.67	**0.91**	0.61
USE1Useful	−0.33	0.59	**0.90**	0.48	0.34	0.49	0.63
USE2Efficiency	−0.36	0.62	**0.92**	0.52	0.33	0.49	0.67
USE3Participate	−0.35	0.65	**0.89**	0.48	0.27	0.42	0.59
USE4Likelihood	−0.23	0.44	**0.72**	0.38	0.27	0.41	0.53

Table 4
Construct reliabilities and discriminant validity (full sample).

Construct	Composite reliability	R^2	Construct correlations[a]						
Performance expectancy	0.92		**0.86**						
Effort expectancy	0.96		0.67	**0.92**					
Social influence	0.91		0.54	0.49	**0.81**				
Computer anxiety	0.92		−0.37	−0.56	−0.16	**0.89**			
Trust in the internet	0.96		0.35	0.39	0.39	−0.22	**0.94**		
Trust in the government	0.97		0.53	0.52	0.55	−0.35	0.67	**0.92**	
Online voting intention	0.96	0.689	0.71	0.64	0.61	−0.44	0.48	0.70	**0.9**3

[a] Bold diagonal elements are the square root of average variance extracted (AVE).

Table 5
Construct reliabilities and discriminant validity (age sample).

Subgroup and construct	Composite reliability	R^2	Construct correlations[a]						
			1	2	3	4	5	6	7
Senior citizens									
Performance expectancy	0.95		**0.90**						
Effort expectancy	0.97		0.67	**0.94**					
Social influence	0.93		0.68	0.54	**0.90**				
Computer anxiety	0.95		−0.37	−0.59	−0.26	**0.90**			
Trust in the internet	0.97		0.43	0.43	0.46	−0.24	**0.96**		
Trust in the government	0.98		0.67	0.61	0.64	−0.34	0.78	**0.96**	
Online voting intention	0.95	0.699	0.76	0.72	0.65	−0.49	0.50	0.65	**0.91**
Young									
Performance expectancy	0.87		**0.80**						
Effort expectancy	0.93		0.54	**0.88**					
Social influence	0.92		0.42	0.39	**0.89**				
Computer anxiety	0.83		−0.21	−0.37	−0.01	**0.70**			
Trust in the internet	0.95		0.34	0.39	0.34	−0.24	**0.93**		
Trust in the government	0.96		0.46	0.46	0.48	−0.38	0.59	**0.90**	
Online voting intention	0.97	0.706	0.65	0.54	0.56	−0.36	0.49	0.74	**0.94**

[a] Bold diagonal elements are the square root of average variance extracted (AVE).

using the composite reliability scores. For all samples, CR scores exceed 0.83 for all constructs with most greater than 0.90.

6.2. Hypotheses analysis

To test the hypotheses, we modeled the approach of Ahuja and Thatcher (2005) to evaluate the impact of group membership on relationships between constructs in IT-related nomological models. This approach is also consistent with the most recent recommendations on evaluating interaction effects using the PLS approach (Eberl, 2010; Henseler & Fassott, 2010). We analyzed a series of models to permit comparison of full sample and the age and gender sub-groups. The results for the full sample are presented in Fig. 2. This model shows significant relationships on all paths except trust in the government and explains 68.9% of the variance in online voting intention.

To assess the potential moderating influence of age and gender on the direct relationships in our research model, we analyzed a number of interaction models using the product-indicator approach (Chin et al., 2003; Henseler & Fassott, 2010). These models introduced interaction terms for both age and gender with each of the six independent variables. None of these models indicated significant interactions at the $p<0.05$ level. Thus, we turned to a group comparison approach to evaluate the moderating influence of age and gender on online voting intentions. Following the recommendation of Carte and Russell (2003), we evaluated the equivalence of variances and covariances between the subgroups prior to conducting the group comparisons. The Levene's tests (gender: $p<0.072$; age: $p<0.242$) indicate adequate group equivalence for age and gender thus allowing us to make subgroup comparisons and to use the pooled variance test described by Chin (2000) to assess differences in paths between subgroups. The PLS models of the gender and age subgroups are presented in Figs. 3 and 4. The path comparison results are presented in Tables 7 and 8.

7. Discussion of hypotheses results

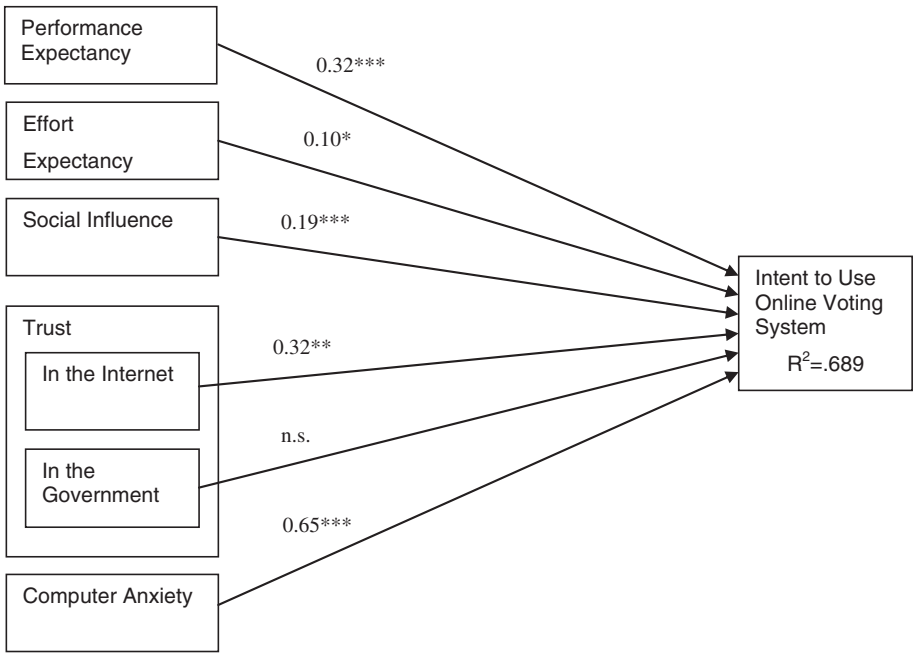
7.1. Performance expectancy

The path loading of performance expectancy on online voting intention is 0.32 ($p<.001$) providing support for Hypothesis 1. To the extent that online voting is perceived to be useful, individuals' intentions to vote online increase. Evaluating the changes in explained variance for the full sample (Chin, 2010; Cohen, 1988), we find that performance expectancy represents a medium effect on online voting intentions ($\Delta R^2 = 0.046$, $f^2 = 0.15$). The path comparison tests for the gender and age subgroups indicate no significant differences for performance expectancy. Thus the impact of performance expectancy is not interacting with age and gender.

Table 6
Construct reliabilities and discriminant validity (gender sample).

Subgroup and construct	Composite reliability	R^2	Construct correlations[a]						
			1	2	3	4	5	6	7
Males									
Performance expectancy	0.93		**0.88**						
Effort expectancy	0.96		0.64	**0.92**					
Social influence	0.92		0.54	0.48	**0.89**				
Computer anxiety	0.90		−0.62	−0.48	−0.21	**0.80**			
Trust in the internet	0.96		0.33	0.41	0.38	−0.27	**0.94**		
Trust in the government	0.97		0.48	0.54	0.50	−0.44	0.69	**0.92**	
Online voting intention	0.96	0.698	0.69	0.64	0.60	−0.47	0.55	0.71	**0.93**
Females									
Performance expectancy	0.92		**0.86**						
Effort expectancy	0.96		0.69	**0.93**					
Social influence	0.92		0.56	0.49	**0.89**				
Computer anxiety	0.91		−0.29	−0.51	−0.12	**0.82**			
Trust in the internet	0.96		0.38	0.38	0.40	−0.19	**0.94**		
Trust in the government	0.97		0.57	0.51	0.59	−0.28	0.66	**0.93**	
Online voting intention	0.96	0.695	0.73	0.64	0.62	−0.42	0.44	0.69	**0.93**

[a] Bold diagonal elements are the square root of average variance extracted (AVE).



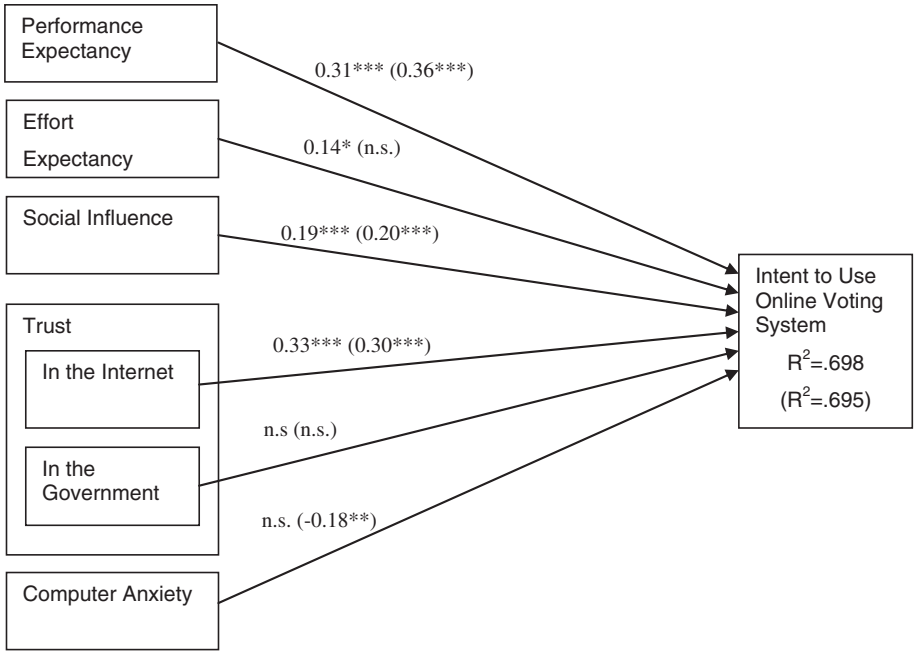
Note: ***p<0.001; **p<0.01; *p<0.05; n.s. – not significant.

Fig. 2. Data analysis results: full sample.

7.2. Effort expectancy

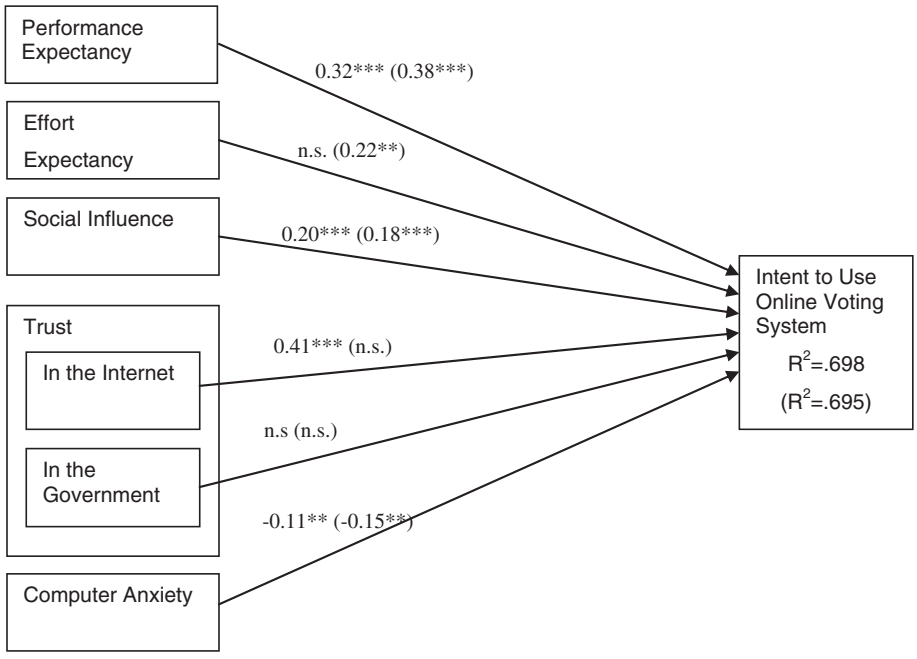
Hypothesis 2 was supported for the full sample. If online voting is perceived to be easy, individuals' intentions to use this voting method will increase. While effort expectancy has a significant impact on intentions ($p<0.05$), the overall effect of effort expectancy on variance explained is minimal ($\Delta R^2 = 0.004$, $f^2 = 0.01$).

Comparing the influence of effort expectancy across subgroup samples provides a more nuanced picture. The path comparisons for gender indicate no significant difference. However for the age subgroup,



Note: ***p<0.001; **p<0.01; *p<0.05; n.s. – not significant. Estimates for Females are in parentheses.

Fig. 3. Data analysis results: gender sub-sample.



Note: ***p<0.001; **p<0.01; *p<0.05; n.s. – not significant. Estimates for Seniors are in parentheses.

Fig. 4. Data analysis results: age sub-sample.

effort expectancy is significant ($p<0.01$) for seniors but insignificant for younger voters and path comparison test indicates that this difference is significant ($t=2.06$, $p<0.05$). Thus, ease of use will have a greater influence on the intentions to use online voting for seniors as compared to young voters.

7.3. Social influence

Social influence, i.e., the extent to which influential others intend to vote online, has a significant positive relationship to voters' intentions to vote online. Hypothesis 3 was supported. Social influence has a small but meaningful effect on online voting intentions ($\Delta R^2=0.022$, $f^2=0.07$). The path comparison tests for the gender and age subgroups indicate no significant differences for social influence. Thus the impact of social influence on voting online does not appear to be impacted by an age or gender interaction.

7.4. Trust in the internet

Trust in the internet represents the extent to which individuals perceive the internet as a safe and reliable environment for voting. As predicted, we find that if individuals have a higher degree of trust in the internet, intentions to vote online increase. Thus, we find support for Hypothesis 4. For the full sample, trust in the internet represents a small-to-medium effect on the internet voting intentions ($\Delta R^2=0.039$, $f^2=0.13$).

Analysis of differences for the subgroups confirms expectations. The path differences between young adult and senior voters are highly significant (t-value = 3.94, $p<0.001$). This is consistent with conventional wisdom that younger people are more open to and trusting of the internet and its various capabilities. However, senior citizens are likely to have lower confidence in the internet and are thus less likely to

Table 7
Path comparisons (gender subgroup).

Sub-group	Male		Female		Path comparison
Construct	Std. path coefficient	t-Value	Std. path coefficient	t-Value	t-Value
Performance expectancy	0.31	4.91	0.36	5.80	0.56
Effort expectancy	0.14	2.08	0.06	1.09	0.82
Social influence	0.16	3.60	0.20	4.75	0.71
Computer anxiety	−0.03	0.53	−0.18	3.73	2.09*
Trust in the internet	0.33	4.67	0.30	4.65	0.36
Trust in the government	0.10	1.65	−0.03	0.70	1.48

*p<0.05.

Table 8
Path comparisons (age subgroup).

Sub-group	Young		Senior		Path comparison
Construct	Std. path coefficient	t-Value	Std. path coefficient	t-Value	t-Value
Performance expectancy	0.32	6.12	0.38	4.48	0.65
Effort expectancy	0.05	1.19	0.22	3.05	2.06*
Social influence	0.20	5.38	0.18	3.30	0.35
Computer anxiety	−0.11	2.85	−0.15	2.26	0.55
Trust in the internet	0.41	7.99	0.01	0.15	3.94***
Trust in the government	0.03	0.57	0.11	1.65	1.04

*p<0.05, ***p<0.001.

vote online. In the context of online voting intentions, gender is not moderating the influence of internet trust.

7.5. Trust in the government

Hypothesis 5 was not supported for the full sample as trust in the government did not significantly influence online voting intentions. Initially, this finding was quite surprising in the sense that the integrity of the voting process is dependent on the government; and, given the high levels of dissatisfaction, suspicion, and antipathy that seem to fill general discourse in society regarding the ways that government functions, it seemed reasonable to expect that the extent of trust in the government would impact online voting intentions. Since this result did not yield from our analysis, this led us to revisit the literature on trust in the government. As one anonymous reviewer noted, "how can we distinguish, for example, between trust in the government of the day, which may be composed of political party members whom the voter (subject respondent) does not trust, and trust in the government as a bureaucracy, (which is administering the voting system), whom he may have no reason to distrust." Indeed, a recent publication by the Pew Research Center Publications (2010) reports on a public survey that shows that the general public has a very low opinion of elected officials with only 25% having a favorable opinion of Congress in the U.S.

A study of public trust in the government (Mundy, 2007) found evidence that the general public has a higher level of trust in federal and state public administrators as compared to elected and politically appointed officials. The same study shows that government officials at the local level are trusted more than state and federal counterparts. One may surmise that since voting is a function administered by local, public administrators rather than elected officials, the general public would have higher levels of trust in voting administration than in the work of elected officials. Thus, the results of our study reflect this higher level of trust in public administration. Clearly, this is an area that requires a more accurate measurement of trust in future research, perhaps by providing a clearer definition of the type of trust being measured by a survey instrument.

Exploring subgroup differences reinforces the lack of influence of trust in the government on intentions to vote online. Neither the gender or age subgroups showed a significant difference in paths.

7.6. Computer anxiety

Hypothesis 6 was supported as computer anxiety has a significant, negative influence on e-voting intentions. To the extent that individuals have general apprehensions about using computers, the intention to vote online decreases. Computer anxiety represents a small effect size on intentions to vote online ($\Delta R^2 = 0.008$, $f^2 = 0.03$).

Subgroup analysis indicates an interaction based on gender. The path differences between females and males are significant (t-value = 2.09, $p<0.05$) with females more negatively influenced by computer anxiety. The path differences for age were not significantly different. This finding is in line with that reported earlier by Cooper (2006).

7.7. Gender as a moderator

We find very limited support for the role of gender as a moderator on intentions to vote online. While comparison of the subgroups finds a small difference in the variance explained in online voting intentions, the effect cannot be classified as even small. Similarly, comparisons of path coefficients find only the computer anxiety path as significantly different between genders. This finding further confirms prior research on the role of gender on computer anxiety (Cooper, 2006). However, we must conclude that Hypothesis 7 is not supported.

7.8. Age as a moderator

The analysis of subgroups and path comparison tests between young and senior voters offers some support for the role of age as a moderator. The difference in variance explained between the age sub-samples represents a small effect but meaningful difference ($\Delta R^2 = 0.007$, $f^2 = 0.024$). For both effort expectancy and trust in the internet the path differences between age sub-samples are significant (t-value = 2.06, $p<0.05$ and t-value = 3.94, $p<0.001$, respectively). Thus we conclude partial support for Hypothesis 8.

8. Conclusion

8.1. Research implications

This study provides additional support for the UTAUT model of technology acceptance. Performance expectancy, effort expectancy, social influence, trust in the internet, trust in the government, and computer anxiety explained 68.9% of the intent to vote online for the sample. This study has also compared intent to vote between two different age groups, the youngest voters and the oldest voters by use of PLS analysis.

8.2. Implications for practice

Consistent with earlier research, these results indicate that online voting should be implemented differently for different age groups. Even though young adults are experienced with technology, they still have concern for computer security issues. No doubt, these concerns arise because they are aware of security problems, and project this awareness onto a potential online voting system. A high percentage of the young adult respondents (75%) identified security/trust issues as a reason for rejecting the use of online voting systems. For a government trying to introduce online voting, those concerns will have to be addressed. The U.S. government may be able to provide examples from other countries that have adopted online voting and proof of the accuracy of the results when providing online voting to U.S. citizens (Pieters & Kiniry, 2005; Tanner, 2005).

Seniors are also concerned with security issues, but also believe that going to traditional polls is a patriotic duty, and worry about the learning curve — if not for themselves, then for other seniors. It is not surprising that effort expectancy was significant for the seniors but not for the young adults. The seniors have less experience with computers, and did not grow up with them as the young adults have. The young adults surveyed reported heavy use of the internet and several years of experience working on computers. Young adults believe that learning to use online voting will be a simple task; seniors are less likely to believe that learning to use a computer to vote online will be an easy task. An online voting system would have to be very easy to use for the most computer illiterate.

In addition, because of resistance from both young adults and seniors, the government should consider using online voting as a supplement (rather than as the only option) to traditional polling places in order to achieve optimal voter turnout.

8.3. Limitations

As with any study, there are limitations to this study. First and foremost, all respondents came from the U.S. It would be interesting to duplicate this study in other countries to see if results differ, particularly in countries that are further along in providing e-government services to their citizens such as Estonia or the Netherlands (Pieters & Kiniry, 2005; Tanner, 2005).

While the goal of this study was to examine intent to vote online, and to compare differences between two age groups, both of the age groups in our study were better educated than the average U.S. citizen. All of the 18–25 year respondents were currently enrolled in college.

While only 25% of U.S. citizens over the age of 25 have a college degree, 33% of our senior sample had college degrees. While this makes the two groups in this study more comparable to one another in terms of educational attainment, another study might examine less-educated individuals to determine if results vary from these. There is no way for us to guarantee that the subjects of this study are representative of online voters in general as such data are not published in any resource that we could discover. Readers are advised to consider this limitation when drawing their own conclusions about the results.

Appendix A

Performance expectancy
1. I would find an online voting site useful.
2. Using an online voting site would enhance my efficiency in voting in elections.
3. Using an online voting system would make it easier to participate in elections.
4. If I have access to an online voting system I will be more likely to vote.

Effort expectancy
1. I believe that interacting with an online voting site would be a clear and understandable process.
2. It would be easy for me to become skillful at using an online voting site.
3. I would find an online voting site easy to use.
4. Learning to use an online voting site would be easy for me.

Social influence
1. People who influence my behavior think that I should use an online voting site.
2. People who are important to me think that I should use an online voting site.
3. I would use an online voting site because of the proportion of friends and coworkers who will use it.

Trust in the government
1. I think that I can trust the government.
2. The government can be trusted to carry out online voting transactions faithfully.
3. In my opinion, the government is trustworthy.

Trust in the internet
1. The internet has enough safeguards to make me feel comfortable using it to vote.
2. I feel assured that legal and technological structures adequately protect me from problems on the internet.
3. I trust that internet votes will be accurately counted.
4. I think that the internet is now a safe enough environment for online voting.
5. I would trust the security of an online voting system.
6. I trust that online votes will not be tampered with.

Computer anxiety
1. I feel apprehensive about using an online voting system.
2. I am unsure of my ability to learn to use an online voting system.
3. I would hesitate to use an online voting system for fear of making mistakes I cannot correct.
4. An online voting system would be somewhat intimidating to me.
5. It scares me to think that my vote could be lost using an online voting system by hitting the wrong key.

Behavioral intent
1. I would use an online voting site to vote in political elections.
2. I could see myself using an online voting system to participate in future elections.
3. I would not hesitate to use an online voting site to vote in future elections.
4. An online voting system would be somewhat intimidating to me.

Appendix B

Subgroup factor loadings and cross-loadings

	Male subgroup							Female subgroup						
	CA	EE	PE	SI	T_G	T_I	Intent	CA	EE	PE	SI	T_G	T_I	Intent
ANX1Apprehensive	0.69	−0.36	−0.38	−0.21	−0.28	−0.45	−0.45	0.71	−0.25	−0.18	−0.15	−0.26	−0.30	−0.37
ANX2Unsure	0.77	−0.59	−0.40	−0.12	−0.09	−0.22	−0.28	0.78	−0.51	−0.25	−0.05	0.01	−0.06	−0.26
ANX3Hesitate	0.86	−0.51	−0.40	−0.21	−0.23	−0.36	−0.37	0.89	−0.46	−0.23	−0.06	−0.15	−0.23	−0.34
ANX4Intimidating	0.84	−0.60	−0.45	−0.17	−0.19	−0.28	−0.36	0.87	−0.54	−0.32	−0.07	−0.15	−0.20	−0.34
ANX5Scares	0.85	−0.44	−0.30	−0.11	−0.26	−0.38	−0.36	0.83	−0.37	−0.23	−0.14	−0.19	−0.30	−0.37
EOU1Clear	−0.52	0.87	0.63	0.54	0.46	0.62	0.66	−0.40	0.88	0.71	0.52	0.43	0.60	0.65
EOU2Skillful	−0.57	0.92	0.51	0.35	0.39	0.42	0.51	−0.49	0.94	0.61	0.45	0.34	0.45	0.60
EOU3EasyToUse	−0.56	0.95	0.61	0.46	0.34	0.48	0.60	−0.51	0.95	0.63	0.44	0.34	0.44	0.59
EOU4Learning	−0.62	0.94	0.58	0.37	0.31	0.42	0.57	−0.51	0.92	0.58	0.39	0.28	0.35	0.52
GOVT1Trust	−0.26	0.40	0.29	0.36	0.96	0.59	0.49	−0.17	0.32	0.31	0.34	0.96	0.56	0.38
GOVT2Faithfully	−0.30	0.40	0.39	0.41	0.93	0.76	0.60	−0.22	0.43	0.43	0.45	0.95	0.73	0.51
GOVT3Trustworthy	−0.19	0.34	0.23	0.30	0.94	0.54	0.44	−0.13	0.30	0.31	0.31	0.92	0.53	0.31
INTENT1WouldUse	−0.44	0.61	0.63	0.55	0.52	0.65	0.96	−0.41	0.60	0.69	0.58	0.43	0.67	0.96
INTENT2SeeMyself	−0.45	0.61	0.62	0.55	0.55	0.64	0.94	−0.42	0.64	0.69	0.55	0.42	0.63	0.96
INTENT3WouldNotHesitate	−0.46	0.59	0.63	0.58	0.57	0.75	0.95	−0.42	0.62	0.65	0.58	0.38	0.65	0.93
INTENT4MoreLikely	−0.38	0.59	0.67	0.56	0.40	0.60	0.88	−0.31	0.53	0.70	0.61	0.42	0.60	0.87
SI1Influence	−0.21	0.45	0.49	0.93	0.35	0.41	0.51	−0.14	0.46	0.49	0.91	0.35	0.52	0.51
SI2Important	−0.18	0.40	0.46	0.92	0.35	0.43	0.52	−0.10	0.43	0.46	0.93	0.36	0.53	0.53

Appendix B (*continued*)

	Male subgroup							Female subgroup						
	CA	EE	PE	SI	T_G	T_I	Intent	CA	EE	PE	SI	T_G	T_I	Intent
SI51FriendsCoworkers	−0.18	0.42	0.48	0.83	0.33	0.49	0.57	−0.09	0.41	0.53	0.83	0.36	0.53	0.61
TRUST1Safeguards	−0.46	0.54	0.49	0.51	0.58	0.91	0.69	−0.27	0.49	0.57	0.55	0.56	0.93	0.67
TRUST2Protect	−0.45	0.59	0.49	0.47	0.58	0.89	0.65	−0.28	0.51	0.55	0.55	0.58	0.91	0.62
TRUST3AccurateCounted	−0.38	0.46	0.42	0.40	0.68	0.90	0.65	−0.30	0.46	0.49	0.51	0.64	0.90	0.61
TRUST4Safe	−0.38	0.47	0.43	0.48	0.65	0.96	0.66	−0.25	0.46	0.55	0.58	0.59	0.95	0.64
TRUST5Security	−0.37	0.49	0.42	0.47	0.64	0.95	0.65	−0.27	0.47	0.56	0.56	0.64	0.96	0.67
TRUST6Tamper	−0.36	0.41	0.39	0.44	0.66	0.90	0.63	−0.19	0.43	0.47	0.54	0.67	0.91	0.60
USE1Useful	−0.40	0.50	0.89	0.46	0.33	0.44	0.60	−0.29	0.65	0.92	0.50	0.35	0.53	0.66
USE2Efficiency	−0.46	0.59	0.91	0.45	0.24	0.39	0.61	−0.28	0.64	0.93	0.56	0.41	0.57	0.71
USE3Participate	−0.53	0.65	0.87	0.43	0.24	0.38	0.53	−0.23	0.64	0.90	0.51	0.30	0.45	0.62
USE4Likelihood	−0.34	0.53	0.87	0.54	0.34	0.47	0.67	−0.20	0.41	0.66	0.33	0.24	0.40	0.49

	Young adults subgroup							Seniors subgroup						
	CA	EE	PE	SI	T_G	T_I	Intent	CA	EE	PE	SI	T_G	T_I	Intent
ANX1apprehensive	0.69	−0.19	−0.20	−0.12	−0.26	−0.38	−0.35	0.82	−0.39	−0.31	−0.23	−0.27	−0.34	−0.46
ANX2Unsure	0.50	−0.38	−0.10	0.10	0.04	−0.05	−0.06	0.88	−0.55	−0.26	−0.15	−0.08	−0.17	−0.38
ANX3Hesitate	0.80	−0.31	−0.15	0.04	−0.16	−0.24	−0.24	0.93	−0.58	−0.35	−0.26	−0.19	−0.32	−0.44
ANX4Intimidating	0.66	−0.40	−0.17	0.08	−0.10	−0.15	−0.16	0.95	−0.59	−0.35	−0.21	−0.22	−0.30	−0.47
ANX5Scares	0.82	−0.25	−0.11	0.01	−0.16	−0.30	−0.28	0.91	−0.53	−0.37	−0.28	−0.28	−0.37	−0.45
EOU1Clear	−0.27	0.85	0.52	0.44	0.41	0.52	0.58	−0.51	0.88	0.75	0.59	0.50	0.73	0.70
EOU2Skillful	−0.38	0.89	0.48	0.33	0.36	0.39	0.46	−0.54	0.96	0.57	0.45	0.36	0.49	0.65
EOU3EasyToUse	−0.34	0.91	0.46	0.32	0.32	0.37	0.46	−0.56	0.97	0.64	0.53	0.38	0.57	0.69
EOU4Learning	−0.33	0.87	0.42	0.24	0.25	0.27	0.37	−0.61	0.95	0.57	0.47	0.35	0.49	0.66
GOVT1Trust	−0.19	0.36	0.27	0.29	0.95	0.47	0.40	−0.23	0.39	0.39	0.43	0.97	0.72	0.48
GOVT2Faithfully	−0.30	0.41	0.40	0.38	0.94	0.68	0.58	−0.24	0.45	0.49	0.50	0.96	0.83	0.52
GOVT3Trustworthy	−0.11	0.29	0.24	0.25	0.91	0.43	0.33	−0.21	0.38	0.35	0.37	0.94	0.67	0.42
INTENT1WouldUse	−0.36	0.53	0.63	0.51	0.47	0.70	0.96	−0.49	0.67	0.72	0.61	0.47	0.61	0.95
INTENT2SeeMyself	−0.32	0.53	0.64	0.53	0.48	0.69	0.96	−0.53	0.71	0.67	0.54	0.47	0.57	0.94
INTENT3WouldNotHesitate	−0.36	0.51	0.58	0.51	0.48	0.73	0.94	−0.49	0.69	0.72	0.63	0.45	0.65	0.94
INTENT4MoreLikely	−0.32	0.48	0.61	0.56	0.44	0.66	0.91	−0.26	0.52	0.66	0.59	0.42	0.56	0.80
SI1Influence	−0.02	0.38	0.37	0.91	0.29	0.39	0.45	−0.25	0.50	0.58	0.93	0.43	0.58	0.54
SI2Important	−0.02	0.36	0.35	0.92	0.31	0.42	0.50	−0.20	0.46	0.58	0.93	0.41	0.58	0.54
SI51FriendsCoworkers	0.00	0.30	0.38	0.82	0.30	0.46	0.53	−0.23	0.50	0.64	0.83	0.40	0.57	0.65
TRUST1Safeguards	−0.36	0.42	0.44	0.44	0.46	0.91	0.68	−0.35	0.60	0.67	0.64	0.72	0.95	0.66
TRUST2Protect	−0.33	0.43	0.43	0.45	0.47	0.88	0.62	−0.35	0.63	0.62	0.57	0.72	0.94	0.63
TRUST3AccurateCounted	−0.38	0.39	0.40	0.39	0.61	0.87	0.65	−0.34	0.59	0.63	0.58	0.73	0.95	0.62
TRUST4Safe	−0.34	0.42	0.43	0.45	0.52	0.94	0.67	−0.30	0.56	0.65	0.65	0.75	0.97	0.62
TRUST5Security	−0.37	0.44	0.45	0.45	0.55	0.95	0.71	−0.28	0.55	0.65	0.62	0.76	0.97	0.60
TRUST6Tamper	−0.27	0.37	0.36	0.42	0.60	0.88	0.65	−0.31	0.55	0.65	0.63	0.77	0.96	0.61
USE1Useful	−0.18	0.47	0.87	0.36	0.33	0.41	0.57	−0.34	0.57	0.91	0.57	0.39	0.62	0.65
USE2Efficiency	−0.23	0.50	0.90	0.40	0.34	0.45	0.62	−0.34	0.62	0.92	0.62	0.36	0.59	0.68
USE3Participate	−0.14	0.45	0.79	0.29	0.17	0.26	0.45	−0.35	0.66	0.94	0.64	0.40	0.63	0.69
USE4Likelihood	−0.11	0.28	0.61	0.26	0.23	0.35	0.42	−0.30	0.58	0.85	0.61	0.41	0.60	0.72

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