12-2-2023

Differences in e-government trust between people with high and low IT innovativeness

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Differences in e-government trust between people with high and low IT innovativeness

Full research paper

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Abstract

While it is important to understand citizens' trust in e-government, theory on this topic does not accommodate potential differences between innovators and non-innovators. To investigate factors of trust development for two groups (innovators and non-innovators) and produce a multigroup model we conducted an EFA and CFA, followed by Structural Equation Modelling to test hypotheses for each group. We used the Perceived Innovativeness in IT (PIIT) construct to identify innovators and non-innovators. Our findings demonstrate that e-government trust processes for innovators and non-innovators are different, and our model accounts for more than half the variance in Trust in e-Government. Key antecedents for innovators are Technology Self-Efficacy and Trust in Government, and for non-innovators are Technology Self-Efficacy and Social Influence. We discuss some of the implications of these findings for both theory and practice.

Keywords e-government, trust, herd behaviour

1 Introduction

As e-government development continues to accelerate "it is imperative that digital government – including e-services and e-participation – be set up in a way that strengthens rather than undermines trust in Governments and public institutions" (UN 2022). However, recent industry reports suggest that low levels of citizen trust in e-government remain a problem (Deloitte 2022; Imperva 2022). As people's trust in e-government is a factor of e-government adoption (Bélanger and Carter 2008) this may impede e-government adoption, which may in turn prevent e-government from yielding the benefits it offers.

The pressing need to increase the level of citizen trust in e-government suggests a need to understand its factors. However, research into this issue has a number of shortcomings. First and foremost, there simply hasn't been very much of it. Despite early identification of the need for such research (Wimmer et al. 2008) little progress had been made by the time of Alzahrani et al.'s (2017) systematic review of the literature and our literature review (below) confirmed that this remains a problem. Prior research has largely focused on trust as an independent variable and has not explored its antecedents. Where factors of trust in e-government *have* been explored, Trust in Government itself has been identified as an antecedent (AlAwadhi 2019, Li and Xue 2012, Abu-Shanab 2014); in this study we define Trust in Government as the trust citizens have in the *people* of government – the politicians, the parties and legislators that make up the government (this is further elaborated upon in Section 3).

Second, those studies that do explore factors of e-government trust contain somewhat inconsistent results. For example, while some studies have found that trust in government has a positive effect on trust in e-government (Abu-Shanab 2014; Li and Xue 2021; Alkraiji and Ameen 2022), others report it to have a negative effect (Horsburgh et al. 2011), and still others found no significant effect at all (Alawadhi 2019; Chen et al. 2015).

Third, prior research has tended to focus narrowly on technology and government factors and have not considered the multidimensional nature of trust (Alzahrani et al. 2017) and prior studies have largely ignored the role of social influence in e-government trust processes. In this study we define Social Influence as the extent to which the people by whom one is influenced hold a particular opinion about an issue. Rare exceptions include Kabbar and Dell (2016)'s qualitative investigation, which found that social influence was very often a key influence in users' trust in e-government services, and Li et al. (2006; 2008), who extend the Web Trust Model (McKnight et al. 2002) to show that social influence has an impact on an individual's trusting intention.

However, while social influence appears to play a role in e-government trust, the nature of that role remains unclear – as indeed it does more broadly (Wei et al. 2019). That some people are 'opinion leaders' while others are 'opinion followers' suggests that people do not all act in the same way, therefore individual personality differences can play a role.

Other factors of e-government trust remain to be identified. Self-efficacy (Bandura 1977), which is defined as an individual's confidence and belief in their ability to use a system effectively, is also potentially a factor of trust in e-government as it has been identified as a factor of trust in other contexts such as Internet Banking (Reid and Levy 2008) and e-commerce (Kim 2005, Kim et al. 2008).

Although it is not central to their Web Trust Model, McKnight et al. (2002) identify a relationship between a user's Personal Innovativeness with IT (PIIT) (Agarwal and Prasad 1998) and their general disposition to trust; however, they do not elaborate upon it and McKnight et al. (2003) call for further research into the role of personal innovativeness. Innovativeness in this context refers to a personality trait characterized by an individual's willingness to use new technology (Agarwal and Prasad 1998). Furthermore, and despite the fact that user responses to technology differ between people with high and low innovativeness (Escobar-Rodríguez and Romero-Alonso 2014; Lam and Shankar 2014), e-government trust research currently makes the implicit assumption that the factors of people's trust are the same for different types of user. However, whether this assumption is true remains to be tested; one-size-fits-all models may not account for differences that occur within the user cohort (Eden et al. 2017).

In this study we investigate whether PIIT plays a role in users' trust in e-government. Our research objective is to investigate whether the same antecedent factors drive innovators' and non-innovators' trust in e-government. Stated formally, our research question is as follows:

Is Trust in e-Government (TIEG) among innovators and non-innovators driven by the same factors, specifically Technology Self-Efficacy (TSE), Trust in Government (TIG), and Social Influence (SI)?

We provide a review of the literature on trust in e-government in the following section, followed by the development of a theoretical model that draws on Deutsch's (1958) work on trust, which we note has influenced theorizing on trust in many disciplines. We also draw on theories of herd behaviour (Banerjee 1992) and self-efficacy (Bandura 1977).

2 Literature Review

We followed a Scoping Review (Munn et al. 2019) process to identify sources with relevance to the research question above; our purpose was to yield a comprehensive set of sources, and to ensure this we followed an pre-defined search protocol. We searched for papers published since 2000 that examined factors of e-government trust; the decision to include sources since 2000 was based on this being the approximate 'birth' of the Web 2.0 era. For the purposes of our review we considered a source to be relevant to e-government if it addressed the electronic delivery of general government services (Gesk and Leyer 2022) at any level: local, national or in-between. Such delivery is often, but not necessarily, web-based. We included research that focused on specific e-government applications or systems, as well as sources that considered the topic as a whole. The initial search, which used search parameters based on the above description, resulted in 112 sources of potential interest; these were screened by reading the titles and abstracts, resulting in identification of 52 sources. Papers were out-of-scope if they did not focus on both trust and e-government, and while we recognize the long-standing and serious issue of language bias in literature reviews (Grégoire et al. 1995), it was necessary in this study to exclude non-English sources. (As non-English sources were excluded by use of search parameters, it is not known how many sources were thus excluded). We read the full-text of the 52 sources identified; our reflections are summarised below.

While the majority of e-government research in general has been qualitative (Bolívar et al. 2016), most of the sources in literature specifically addressing e-government trust are quantitative and have largely treated e-government trust as antecedent to usage intention/behaviour (e.g. Wang and Lo 2013; Abu-Shanab 2014; Lian 2015; Alharbi et al. 2017) and user satisfaction (e.g. Chen et al. 2015; Alzahrani et al. 2018; Weerakkody et al. 2016), rather than a dependent variable. Similarly, a number of studies have observed the role played by the broader construct of trust in government in general in the adoption of e-government (e.g. Carter and Bélanger 2005; Bélanger and Carter 2008). This is a consequence of the dominant use of TAM (Davis 1989), UTAUT (Venkatesh et al. 2003) and the IS Success Model (DeLone and McLean 1992; DeLone and McLean 2003) in e-government trust research. Nevertheless, some studies have treated e-government use as an independent variable and concluded that it has an impact on satisfaction with, and trust in, government (e.g. Morgensen et al. 2011; Welch et al. 2005).

A number of sources (Warkentin et al. 2002; Wang and Lu 2010; Bannister and Connolly 2011) have proposed factors of e-government trust in conceptual models that were not tested empirically. Twenty-four studies have empirically tested antecedent factors of e-government trust, which fit under four broad themes: aspects of the individual citizen, technology, government, and risk (Alzahrani et al. 2017).

The most researched of these is technological aspects of e-government trust. Such aspects are undoubtedly important, but trust is also inescapably social and always operates "under the influence" of social guidance and there is an acute need for research that includes its social dimensions, particularly in an era in which an increasing share of life is lived and transacted online (Valsiner 2008). However, our review of the literature identified a lack of prior research exploring social factors of trust: none of the studies identified in the literature review explored the impact of social influence on e-government trust, either directly or indirectly. Where e-government researchers have included social influence in their research models they have typically done so only as a direct or indirect factor of usage behaviour (e.g. Dwivedi et al. 2017, Mensah and Adams 2019; Lallmahomed et al. 2017; Verkijika and De Wet 2018). Although subjective norms are known to influence people's intention to trust e-government systems (Li et al. 2006; Li et al. 2008), very few studies have investigated this relationship (Al Abri et al. 2009) and there remains a need for further research in this area.

Furthermore, although it has been predicted that the way trust influences adopters will be different for early and late adopters (Viardot 2017), no prior studies have investigated this important aspect of user trust. None of the studies that considered social influence investigated different types of user and they have all made the implicit assumption that all users belong to a single category. However, innovators who are the first to try new things may be the "influencer" rather than the "influencee". Hence, in this paper we use the terms "innovator" and "early adopter" synonymously.

In order to advance our understanding of these issues, the present study investigates the roles of Social Influence, Trust in Government and Technology Self-Efficacy, on users' Trust in E-Government Systems for innovators and non-innovators. The following section explains a theoretical model that incorporates these aspects.

3 Theoretical Development

3.1 Trust

Given its significance and importance, one might expect that trust to have been the subject of extensive theoretical development, but surprisingly this is not the case (Simpson 2007). An integrated theory of trust remains elusive, and theoretical understanding remains fragmented across different domains, including philosophy (Origgi 2004), sociology (Lewis and Weigert 1985), psychology (Anderson 2009), business and management (Mayer et al. 1995) and economics (Glaeser et al. 2000). This lack of consensus about the meaning of trust causes difficulty comparing one study to the next (McKnight and Chervany 1996; Tan and Sutherland 2005), and while it may not be possible for individual studies to resolve this matter, it is important that they make their working definition of trust as clear and unambiguous as possible.

We adopt the definition by Mayer et al. (1995) that trust is one's willingness to be vulnerable, driven by four factors: first, trust requires that the agent to whom or to which one is vulnerable is not under our control, and second that the potential cost of one's trust being abused outweighs the potential benefit if it is not abused. Third, trust also requires that the trusting party is aware of all these circumstances; that is, they realize that there is the potential for the other party to behave in a way which causes them harm, but the fourth element is an expectation that the other party will not do so.

We expect technology self-efficacy to affect trust. People with lower self-efficacy are more likely to imagine negative outcomes than positive ones, or as Bandura (1978) succinctly put it, "perceived vulnerability to potential hazards generates thoughts of injurious consequences". People with low self-efficacy also experience feelings of limited effectiveness, competence and causal agency, of powerlessness, alienation and futility, while people with high self-efficacy are also more positive and optimistic (Gecas 1989). Therefore, we expect higher feelings of vulnerability to e-government systems in users with lower technology self-efficacy due to those users being less confident in their expectation that their use of the e-government system might cause them harm. Similarly, we expect users with higher technology self-efficacy to be more confident and optimistic about their expectation that using e-government systems will not cause them harm.

We note that prior empirical work has observed similar relationships. Reid and Levy (2008) found that Computer Self-Efficacy was a significant antecedent to Trust in Online Banking, and similarly Kim and Kim (2005) and Kim et al. (2008) found that Online Transaction Self-Efficacy was a significant antecedent to consumers' trust in e-commerce transactions. For systems with high reliability, high computer self-efficacy is associated with high trust of the system (Madhaven and Phillips 2010), and Hocevar et al. (2014) found that users with greater social media self-efficacy had greater trust in social media information, while van der Meer and Zmerli (2017) found that political efficacy is a factor of political trust. All these empirical findings could be due to the theoretical prediction above: individuals with low self-efficacy feel more vulnerable and therefore are less likely to trust the object in question. Hence, in this study we propose that Technology Self-Efficacy will be an important factor of users' trust in e-government systems:

Hypothesis 1: Higher Technology Self-Efficacy leads to users having Trust in E-Government systems.

As trust is defined as a willingness to be vulnerable, when considering trust in e-government systems we ask the question: vulnerable to whom? E-government systems themselves, lacking agency, simply implement rules and processes prescribed for them. They cannot wilfully abuse the trust an individual places in them as they have no will of their own. Hence, the actors to whom a user is vulnerable are the people in government; users are more inclined to trust e-government when they trust the people of government and believe them to be competent (Kabbar and Dell, 2016). Thus, we expect that Trust in Government, which we define as the politicians, the parties and the legislators that set the tone and direction of government overall, will affect Trust in E-Government systems. This proposition is consistent with Abu-Shanab's (2014) prior empirical observation of a link between Trust in Government and trust in E-Government. However, we also expect that innovative users might be influenced by Trust in Government, while non-innovators might not. The theoretical basis for this lies in Herd Behaviour, which we discuss in the following section.

3.2 Herd Behaviour

Herd behaviour (Banerjee 1992) proposes that decision makers look at prior decisions of others before making their own decision and has been observed in a range of contexts including political opinion polls, the adoption of technological innovations, investment decision-making, and even decisions such as how many children to have (Banerjee 1992; Bikhchandani et al. 1992). At the core of herd behaviour is the simple idea that people "ignore private information and join the queue" (Morone and Samanidou 2008). That is, herd behaviour occurs when people simply copy the actions of those who have come before them, despite whatever information they have available that suggests a contrary action (Banerjee 1992; Teraji 2003). Some people may have more propensity to herding behaviour than others and psychologists have emphasized the role of personality traits, moods and emotions (Baddeley 2010) in driving herd behaviour, while economists have argued that it can be explained by ambiguity aversion (Dong et al. 2010).

Herd behaviour is a form of information cascade (Teraji 2003) and follows the S-curve common in innovation diffusion. Early-adopters are prominent in the early stages of the curve, but as time progresses "something of a bandwagon is likely to develop" as later adopters climb on board (Geroski 2000). Thus, there is a leader-follower relationship, with the innovators leading the way and the less innovative following behind. Following Agarwal and Prasad (1998), we define innovators here as individuals who are likely to adopt innovations earlier than others are.

People's innovativeness is likely to vary depending on the context. While early work focused on innovativeness as a general personality trait that everybody possessed to a degree – termed global innovativeness – later research has shown that this has low predictive power compared to domain-specific innovativeness (Agarwal and Prasad 1998). In this study, which investigates people's attitudes towards e-government systems, the innovativeness domain relates to information technology.

In light of the distinction between innovators who lead and non-innovators who follow, and returning to our theoretical prediction that Trust in Government will influence Trust in e-Government Systems, we therefore argue that this will occur only in situations in which individuals trust their own information. Therefore, innovators – who do trust their own information – will have higher levels of Trust in e-government if they have higher levels of Trust in Government. However, this theoretical prediction does not apply to non-innovators who ignore their own signal and simply copy others. We note that mathematical modelling has predicted differences in trust between early and late adopters in e-commerce, with later adopters more likely to follow the trust judgement of the herd compared to early adopters (Wang et al. 2015); however, these predictions have not been examined empirically.

Additionally, we make a second prediction that social influence is a factor of Trust in e-Government for non-innovators, who follow the actions of others. However, we expect that social influence is not a factor of Trust in e-Government for innovators, who follow their own information and who lead others rather than follow. The following hypotheses summarize this theoretical discussion:

Hypothesis 2a: Trust in Government is a factor of Trust in e-Government for innovators, with higher Trust in Government leading to Higher Trust in e-Government.

Hypothesis 2b: Trust in Government is not a factor of Trust in e-Government for non-innovators.

Hypothesis 3a: Social Influence is not a factor of Trust in e-Government for innovators.

Hypothesis 3b: Social Influence is a factor of Trust in e-Government for non-innovators, with higher Social Influence leading to higher Trust in e-Government for non-innovators.

These hypotheses are combined to form the model illustrated in Figure 1 on the following page. As one-size-fits-all models may not be appropriate for all user types (Eden et al. 2017), and given our prediction in Hypothesis 2 that the factors of Trust in e-Government will be different for innovators and non-innovators, our model is different for each of these groups.

4 Research Method

4.1 Measurement Development

We used the survey items provided in Appendix A, which are based on survey items from previous studies. Trust in Government was measured using items from Christensen and Lægreid (2005). These items assess the extent to which an individual trusts people in various governmental roles, and we chose them due to our theoretical focus on the people in government, as opposed to government as an abstraction. The items were measured on a five-point scale ranging from no trust at all to very high level of trust.

Trust in e-Government was measured using items from Kabbar (2016), which assess the extent to which respondents agree with statements about their trust in e-government systems, the information in such systems, and the honesty of the personnel who administer them. Similarly, Social Influence was also measured using items from Kabbar (2016). These items all used a five-point scale ranging from Strongly Disagree to Strongly Agree. Technology Self-Efficacy was measured using items adapted from Doargajudhur (2020) and assessed respondents' self-efficacy in using e-government systems. These were also measured using the same five-point scale ranging from Strongly Disagree to Strongly Agree.

Finally, we distinguished between innovators and non-innovators using Perceived Innovativeness in IT (PIIT) (Agarwal and Prasad 1998). This four-item scale draws on Diffusion of Innovation theory (Rogers 1983); this enabled us to classify each respondent as either innovator or non-innovator.

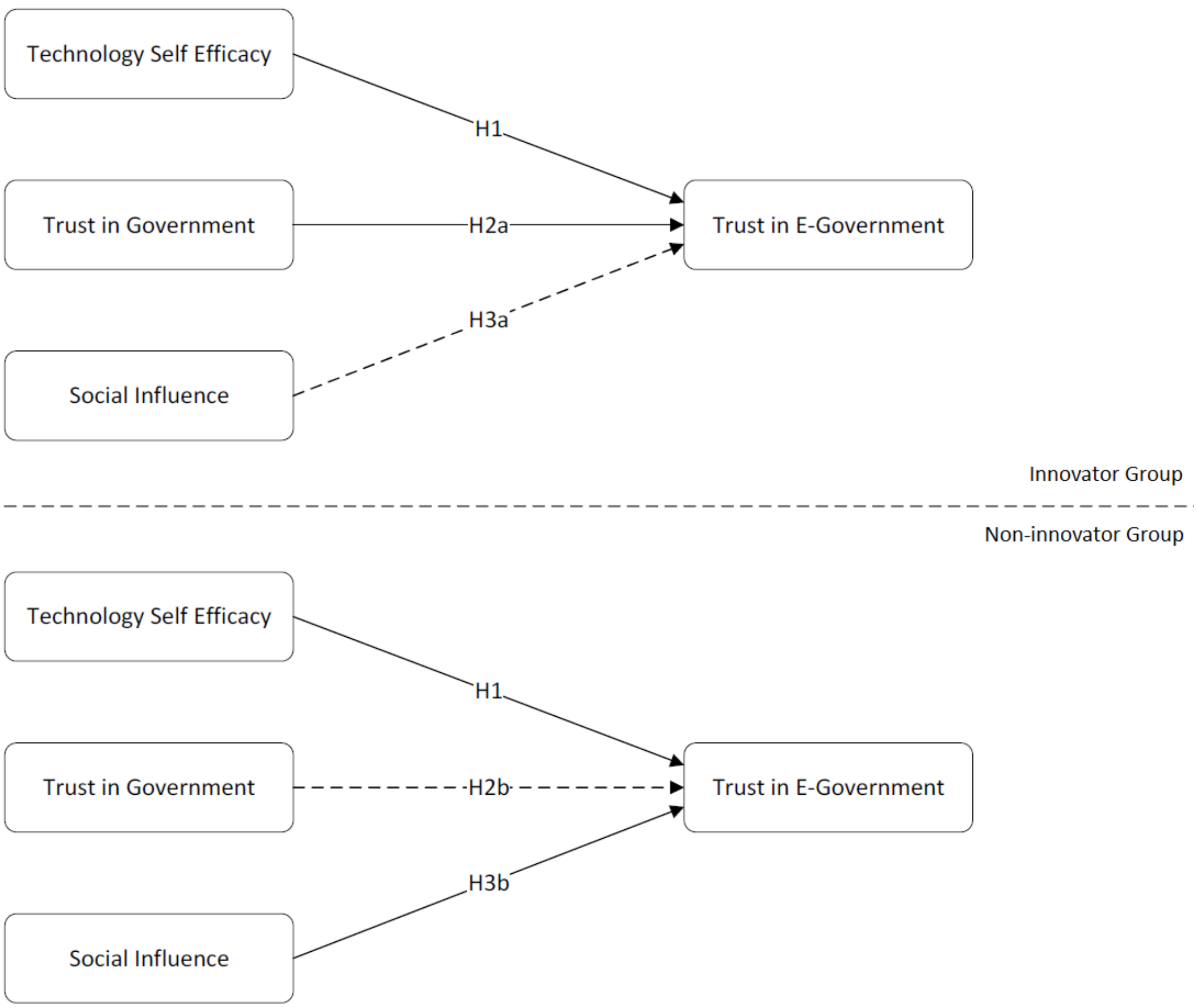

Figure 1: Conceptual Model

4.2 Data Collection

We collected survey data from 141 lay-person participants using a five-point Likert scale. Ethics approval was obtained from the Curtin University Human Research Ethics Committee (approval number HRE2018-0206). Survey respondents provided informed consent before commencing the survey. Citizen participants were recruited using snowball sampling via social media, resulting in respondents from 38 countries across six regions (Africa, Asia, Europe, North America, South America, Oceania), with the highest proportion from any individual country (25.4%) coming from Australia. Subsequent analysis investigated whether results were biased by the higher response rate from Australia but found no evidence of this.

Of the 141 responses received, 17 were from respondents who had completed less than 70% of the questions. Typically, this was due to respondents completing only the first section of the questionnaire and not subsequent sections; these responses were removed. A small number of the remaining records contained missing values; these were imputed using the series mean method. The final dataset contained 124 respondents; we note that this number of respondents in this study is well within the minimum of 100-150 responses Wang and Wang (2012) suggest is required for SEM analysis; however, the sample is nevertheless less than the 200 recommended by Analytics Calculators (https://analyticscalculators.com/calculator.aspx?id=89) to detect a medium effect size. Therefore, further research with a larger sample is recommended in Section 6.3. 52% (n=65) of respondents were male and 46% (n=57) were female (2% of respondents did not indicate their gender). Respondents came from a range of age groups, with the greatest representation being in the 35-44 age group (33.9%), followed by 55-64 (22.6%), 25-34 (19.4%) and 65+ (9.7%). 4.8% did not state their age group.

5 Results

The study employed Structural Equation Modelling (SEM) using SPSS and AMOS following the method described by Gaskin (2022). The KMO score for our data was 0.767 and Bartlett's test for sphericity was significant (sig = 0.000, chi-squared = 726.965), indicating that the selected variables were adequately correlated and ready for a factor analysis.

We conducted an Exploratory Factor Analysis (EFA) using Principal Component Analysis and Varimax rotation with Kaiser Normalization. This converged in five iterations, resulting in the rotated component matrix shown in Appendix B, which has no apparent cross-loading issues. The communalities were all above 0.5, and most were above 0.7. Average factor loadings were all well above 0.6, higher than any of the rules of thumb for minimum loadings discussed in the review by Taherdoost et al. (2014). The four factors resulting from the EFA explained 73.7% of the variance in the data. Cronbach alphas for all factors were above the acceptable threshold of 0.6 and above recommended by Ursachi et al. (2015) and Hair et al. (2010) (SI = 0.664, TIG = 0.867, TIEG = 0.771, TSE = 0.880). We dropped six survey items that did not survive the EFA scrutiny; these were excluded from further analysis.

After the EFA was complete we conducted a Confirmatory Factor Analysis (CFA) to further assess the factor structure and validate the scales (Hair et al. 2010; Hinkin 1998). We examined a few interim models in order to achieve acceptable CFA model fit indices, following the systematic process of examining the loadings and removing indicators with low loadings (Hair et al. 2010). The chi-square for the final 12-indicator, four-construct model was 71.012 with 46 degrees of freedom (p=0.010). These results are all within the recommended ranges provided by Hair et al. (2010); the chi-square value (CMIN/df) was 1.545 (recommended between 1 and 3), the comparative fit index (CFI) was 0.962 (recommended >0.95), the root mean square error of approximation (RMSEA) was 0.067 (recommended <0.08), PCLOSE was 0.176 (recommended >0.05) and the standardized root mean square residual (SRMR) was 0.0631 (recommended <0.09).

We tested for Common Method Bias in two ways. First, a Harman Single Factor test was conducted, which found that 35.2% of the variance was explained by a single factor. This is acceptable, however as the Harman Single Factor test is now considered inferior to other techniques, we also conducted a Common Latent Factor test and found no evidence to suggest the presence of Common Method Bias.

5.1 Structural Equation Model and Hypothesis Testing

The final step in the analysis was to test the hypotheses. We assessed the validity of the measurement model by examining the goodness of fit between the model and the data; model fit is important because it compares the theoretical model with the reality in the data. The results of all the metrics tested were acceptable (cmin/df = 1.472, CFI = 0.939, RMSEA = 0.044, PCLOSE = 0.821, SRMR = 0.0585).

			Model 1 – Innovators				Model 2 – Non-innovators			
			Estimate	S.E.	C.R.	P	Estimate	S.E.	C.R.	P
TIEG	<---	TSE	.541	.197	2.751	.006	.322	.081	3.996	***
TIEG	<---	SI	.020	.290	.070	.944	.281	.140	1.999	.046
TIEG	<---	TIG	.303	.096	3.149	.002	.086	.083	1.046	.295
TSE1	<---	TSE	1.000				1.000			
TSE2	<---	TSE	.994	.137	7.261	***	.833	.085	9.795	***
TSE3	<---	TSE	.770	.117	6.601	***	.833	.088	9.490	***
TIG4	<---	TIG	1.000				1.000			

TIG5	<---	TIG	.877	.087	10.050	***	1.074	.117	9.200	***
TIG1	<---	TIG	.715	.104	6.905	***	.791	.155	5.102	***
TIEG4	<---	TIEG	1.000				1.000			
TIEG2	<---	TIEG	1.357	.246	5.518	***	1.492	.294	5.072	***
TIEG1	<---	TIEG	.901	.207	4.352	***	1.371	.279	4.904	***
SI3	<---	SI	1.000				1.000			
SI4	<---	SI	1.424	.371	3.836	***	1.151	.420	2.739	.006
SI1	<---	SI	1.283	.343	3.747	***	.509	.244	2.088	.037

Table 1: Hypothesis testing results

After establishing model fit, we tested the hypotheses proposed in the theoretical model. All hypotheses were supported; Table 1 summarizes the results. Innovator and Non-innovator groups were identified using a median split of each respondent's PIIT score; using median split in this way is acceptable, on statistical grounds, where the focus is on differences between individuals who score high or low on a particular marker (Iacobucci et al. 2015). Our results support all the hypotheses in the theoretical model. The explanatory power is strong, as indicated by the R-squared values of 0.62 in the case of innovators, and 0.59 in the case of non-innovators (Figure 2). Finally, we controlled for age group and gender; however, neither had a significant effect.

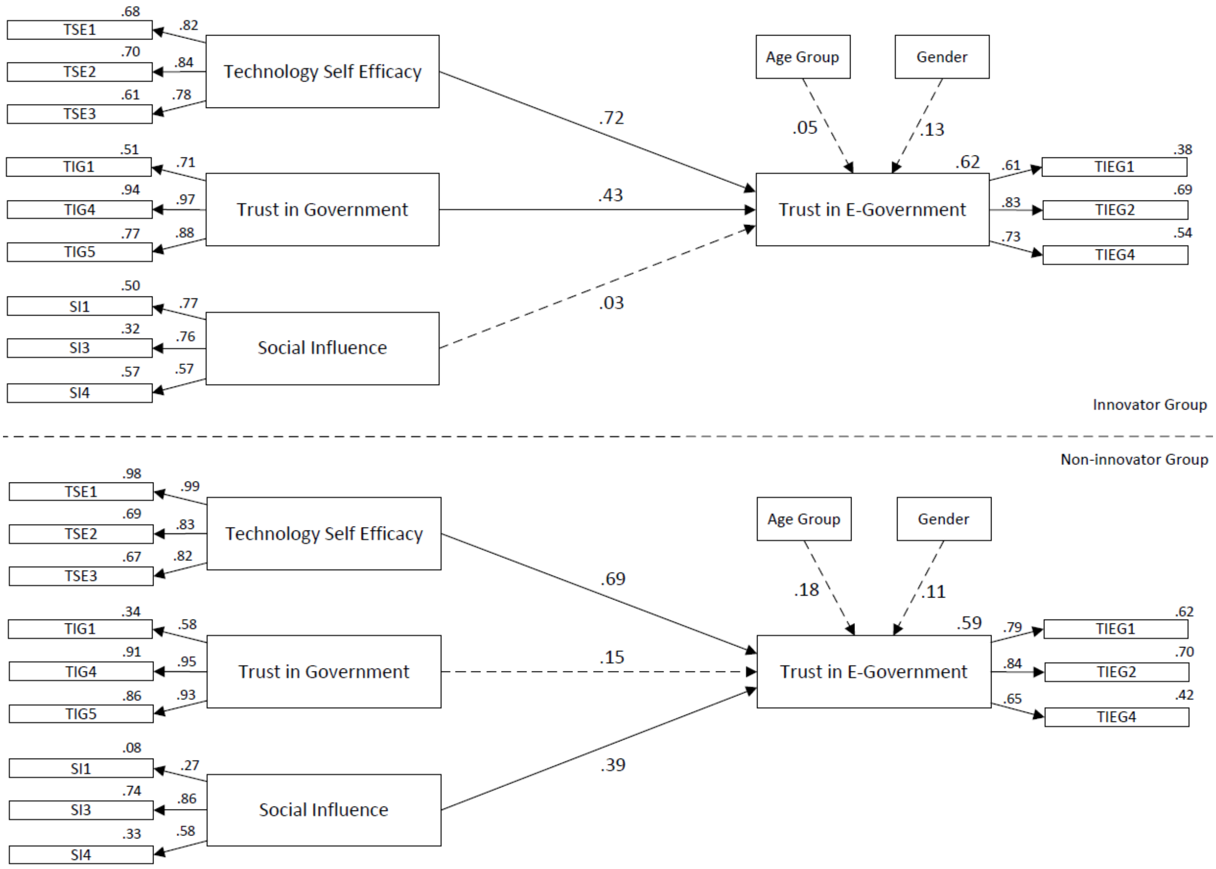

Figure 2: Structural analysis results

An alternative explanation for these findings could be that innovators and non-innovators' levels of TSE, TIEG, SI and TIG were different. For example, if either group had less variance in their responses than the other, it might not be possible to detect significant relationships in the data. In order to discount this possibility, we conducted 2-tailed t-tests to compare means and F-tests to compare variance to determine if there had been any differences between the responses of innovators and non-innovators. The results indicated no difference in response patterns between the two groups for any of the four constructs in the model (Table 2).

	TSE	SI	TIG	TIEG
2-tailed t-test	0.193	0.235	0.618	0.767

F-test	0.143	0.774	0.097	0.742

Table 2: Comparison between early and late adopter groups

6 Discussion

6.1 Theoretical Implications

Venkatesh et al. (2014) found that personal innovativeness has an effect on e-government adoption, but no prior study has investigated if it has any consequence for e-government trust and our study is the first to investigate this question. In doing so, we show that innovators and non-innovators are driven by different factors when forming trust in e-government: trust in government only affects innovators, while social influence only affects non-innovators.

The only prior research into the impact of social influence on e-government trust (Li et al. 2006; Li et al. 2008) did not examine differences in the role of social influence for innovators and non-innovators. Yet innovators are the opinion leaders and role models to whom others look for guidance (Rogers 1983) – they are the source of social influence rather than the recipient. Our findings show that non-innovators 'herd' behind more innovative social leaders, trusting e-government when those around them trust it, and not trusting e-government when they do not. Conversely, our findings show that trust in government affects only innovators' trust in e-government; non-innovators choose to 'follow the herd' rather than rely on their own judgment of whether to trust e-government systems.

This is an illustration of the importance of accounting for different types of user, and a demonstration of the way 'one size fits all' theory can obscure important nuances. In the case of e-government trust, one size does not fit all.

Identifying these differences can aid in resolving equivocal findings from other studies (Eden et al. 2017), and until contradictory findings are resolved the body of research cannot be considered mature (Cardinal et al. 2017). In the case of e-government trust, one explanation of the inconsistent findings from prior research discussed in the introduction (Section 1) may be that studies in which the sample consists of more innovative participants will find a significant effect of trust in government e-government trust; however, in samples consisting largely of non-innovators, herd behaviour will lead participants to ignore their own trust in government and simply follow others instead.

Similarly, while some studies have found evidence that Trust in Government is a significant predictor of e-Government usage intention (Ahmed and Campbell 2015), others have not (Carter 2008). We recommend further research to determine whether innovators and non-innovators are driven by different adoption factors. While we do not advocate unnecessary theoretical complexity, we believe that the difference in the impact of Social Influence and Trust in Government for innovators and non-innovators is an example of how more nuanced theoretical frameworks can sometimes provide a more complete explanation than one-size-fits-all approaches. Our findings have shown that incorporating insights from herd behaviour and trust theories could be beneficial to e-government research.

6.2 Practical Implications

Practitioners have recognized that trust is essential for the success of e-government; a 2018 forum of senior public sector practitioners concluded that trust is the key requirement for public agencies to transform successfully to a digital environment (Burton 2018).

While one-way communication with followers may be effective means of influencing people, two-way communication may be required with opinion leaders, particularly via social media (Segev et al. 2012). Therefore, an implication of our findings is that different strategies to engender e-government trust with innovators and non-innovators may be more effective than a single strategy that does not acknowledge the differences between these two groups. Different social media channels could enable practitioners to develop strategies that target innovators and non-innovators at a relatively high level of precision.

For example, a recent study (Colladon et al. 2023) found that innovators behave differently in online forums. They are substantially more active than non-innovators, tend to take on an opinion leadership role, and are more oriented to exchanging ideas and opinions. In contrast, non-innovators tend to use online forums for socializing and building relationships. Therefore, our findings suggest that practitioners' strategies to increase trust of e-government systems may be more effective when focusing on innovators.

Finally, we note that managers should not overlook the importance of Technology Self-Efficacy, as strategies that build citizens' self-efficacy could lead to increased trust in e-government systems for both innovators and non-innovators.

6.3 Limitations and Future Research

Like all studies, the current research has limitations that pose questions for further research. First, few studies have investigated the implications of differences between innovators and non-innovators for e-government, and it is possible that there are implications for other dependent variables than trust alone. There has also been little research exploring how social influence operates after adoption has taken place (Wang et al. 2013).

Post-hoc analysis by Teo et al. (2008) identified different relationships between variables for passive and active users, and it is possible that innovator and active users overlap, and likewise that non-innovators and passive users overlap. We suggest that further research to determine if the same differences between innovators and non-innovators also apply to active and passive users might help to inform strategies to encourage users to engage more actively with e-government systems, as opposed to passive use.

The sample used in this study was less than 200 and included respondents from multiple countries; this is a limitation of the study and conclusions should be interpreted with caution. Future studies to confirm these findings and to explore further whether innovators and non-innovators have different trust processes should ensure non-diverse samples. Additionally, we call for further research to investigate whether trust processes are the same across countries.

Finally, it has been suggested elsewhere that the extent to which someone associates with other like-minded individuals, or homophily, has possible implications for herd behaviour (Munawar et al. 2017), and one possibility is that the extent to which one's peers are like-minded could moderate the role of social influence. For example, having like-minded peers has been implicated in the level of trust between them (Tang et al. 2013), and it is plausible that citizens in homophilous networks might trust their peers' judgements of e-government more than those in non-homophilous networks.

7 Conclusions

The increasing array of e-Government projects being implemented around the world must be trusted by the public if they are to be successful. This study shows that innovators and non-innovators' trust of these projects will not be driven by the same factors. It also challenges the predominantly technological view of e-government trust by demonstrating the importance of non-technological factors. Future research and practice can support the development of e-government to assist it to achieve its potential by not overlooking such factors, and by acknowledging the differences between different types of user.

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Appendix A – Survey Items

	How trusting are you of the following public institutions?
TIG1	Parliament/Law-makers/Legislature
TIG4	Political parties (in general)
TIG5	Politicians (in general)
	Please tell us how much you agree with the following statements.
SI1	People who influence me are comfortable using the Internet
SI3	People who influence me tell me about their Internet experiences
SI4	People who influence me tell me about their experiences with online government systems
TSE1	I can use online government systems effectively
TSE2	I am confident using online government systems
TSE3	Compared to other people, I am confident I could use most online government systems very well
TIEG1	I trust online government systems
TIEG2	Information provided by online government services can be trusted
TIEG4	The people who manage online government systems are honest
PIIT1	If I heard about a new information technology, I would look for ways to experiment with it.
PIIT2	Among my peers, I am usually the first to try out new information technologies.
PIIT3	In general, I am hesitant to try out new information technologies.
PIIT4	I like to experiment with new information technologies.

Appendix B – Rotated Component Matrix

	TSE	TIG	TIEG	SI
TSE1	.895			
TSE2	.863			
TSE3	.788			
TIG1		.747		
TIG4		.938		
TIG5		.936		
TIEG1			.594	
TIEG2			.785	
TIEG4			.820	
SI1				.649
SI3				.790
SI4				.784
Average factor loading	.849	.874	.733	.741

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