

Developing Trust Reciprocity in E-Government: The Role of Felt Trust

by

Ali E.Q.H.A. Dashti

B.Sc., Colorado School of Mines, 1999
M.B.A., Georgia State University, 2003

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

(Business Administration)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

July 2010

© Ali E.Q.H.A. Dashti, 2010

ABSTRACT

Citizens' levels of trust in e-government, has been proposed as an important impediment to increased utilization of e-government. Although there is a large amount of literature on online trust, no study to date has examined the impact of felt trust - a person's feeling of being trusted - on the adoption of electronic business in general, or online government services in particular. No study has examined how IT artifacts on websites make citizens feel that they are trusted by the government, and how that "felt trust" could affect citizens' trust in websites and, subsequently, users' adoption of these websites. This "felt trust" construct, which is new to the IS literature, has received the attention of scholars in other disciplines; their empirical works, framed in theories such as Social Exchange Theory, Leader-Member Exchange Theory, and Appropriateness Framework, have shown that perceptions of felt trust lead to trust-related behaviour and other considerations (e.g., satisfaction and loyalty).

A series of qualitative studies, were conducted to identify the antecedents of trust and felt trust. Next, a model of e-government adoption was tested using data collected from 254 participants in an online survey. Felt trust was found to be the most important factor in building trust, and trust fully mediated felt trust's impact on the antecedents of adoption (i.e., perceived usefulness, perceived ease of use and perceived risk). The convergent and discriminant validities demonstrated not only the difference between felt trust and trust as constructs, but also the difference between these constructs in both online and offline environments.

The Information Systems research community should focus more on the construct of felt trust by investigating its influence on other outcome variables such as satisfaction with trustees (e.g. e-vendors), the productivity of virtual teams, and success of outsourcing relationships. Existing IS research findings can also be re-evaluated in light of the importance of this new construct to determine whether existing IT artifacts used or systems implemented to build trust were successful, not because they improved trust directly, but because they triggered felt trust, which, in turn, improved trust.

TABLE OF CONTENTS

ABSTRACT	ii
TABLE OF CONTENTS	iv
LIST OF TABLES.....	vi
LIST OF FIGURES	vii
ACKNOWLEDGEMENTS	viii
DEDICATION	ix
1 INTRODUCTION.....	1
1.1 E-government Defined.....	1
1.2 E-government Adoption Problem.....	1
1.3 Trust: The Key to E-government Adoption Problem	2
1.4 Research Questions	5
1.5 Key Contributions	6
1.5.1 Theoretical Contributions	6
1.5.2 Managerial Contributions	7
1.6 Thesis Audience	8
1.7 Thesis Outline.....	8
2 TRUST, FELT TRUST, AND E-GOVERNMENT ADOPTION: A THEORETICAL FRAMEWORK.....	9
2.1 Trust Defined	9
2.2 Felt Trust Defined	10
2.3 Theoretical Framework	11
2.3.1 Trust.....	12
2.3.2 Antecedents Of Trust	13
2.3.3 Felt Trust.....	18
2.3.4 Antecedents Of Felt Trust	22
2.4 Summary	35
3 FELT TRUST SALIENCY: DESIGN ELEMENTS AND WEB FUNCTIONALITIES	37
3.1 Felt Trust Saliency In E-government: A Focus Group Study	37
3.1.1 Study Sample.....	38
3.1.2 Procedure	40
3.1.3 Results.....	40
3.2 Design Features That Enhance Trust From Information Systems Literature	43
3.3 Felt Trust And Web Functionalities: A Classification Study	46
3.3.1 Study Sample.....	46
3.3.2 Procedure	47

3.3.3	Results	48
3.4	Discussion	51
3.5	Conclusion	56
4	FELT TRUST FROM E-GOVERNMENT: THEORY TESTING	57
4.1	Research Methodology	57
4.2	Measurement	58
4.2.1	Item Generation	58
4.2.2	Scale Development: Card Sort Studies	62
4.2.3	Item Testing: Pilot Studies	69
4.3	Sample Description	69
4.4	Empirical Procedures	70
4.5	Analysis	72
4.6	Descriptive Statistics	72
4.7	Measurement Model	73
4.8	Structural Model	76
4.9	Discussion	80
5	CONCLUSION TO THE DISSERTATION AND FUTURE RESEARCH	82
5.1	Contributions	83
5.1.1	Theoretical Contributions	83
5.1.2	Managerial Implications	86
5.2	Limitations	87
5.3	Future Research	88
	REFERENCES	90
	APPENDICES	103
	Appendix A Testing The Causal Relationship Between Felt Trust And Trust	103
	Appendix B Focus Group Study Task And Discussion Guide	117
	Appendix C Classification Study Survey Items	127
	Appendix D Survey Items	130
	Appendix E Items Loadings And Cross Loadings	133
	Appendix F Common Method Bias Analysis	139
	Appendix G Multicollinearity Analysis	143
	Appendix H Ethical Approval Certificates	146

LIST OF TABLES

Table 1: E-government adoption statistics.....	2
Table 2: Trust formation processes	12
Table 3: Felt trust literature	20
Table 4: Felt trust related behavior	25
Table 5: Questions asked about the role of reciprocity (n=12).....	41
Table 6: Website design features that influence trust	45
Table 7: Focus group study Vs. classification study	54
Table 8: Items used to measure trust, felt trust, and their antecedents	60
Table 9: Card sort results (N=17)	64
Table 10: Card sort results (N=19)	67
Table 11: Descriptive statistics	73
Table 12: Internal consistency figures	73
Table 13: Inter-construct correlation matrix	75
Table 14: Study results	78
Table 15: The impact of felt trust inclusion in model	80
Table A1: Items used in the instrument	111
Table A2: Internal validity figures.....	113
Table A3: Item loadings	113
Table A4: Correlation matrix	113
Table A5: Groups statistics.....	114
Table A6: T-test results.....	114
Table A7: MANOVA results	115
Table E1: Item loading and internal consistency statistics.....	133
Table E2: Item cross loadings	136
Table F1: Principal component analysis without rotation	139
Table F2: Common method bias analysis.....	141
Table G1: Felt trust antecedents collinearity.....	143
Table G2: Felt trust antecedents collinearity statistics.....	143
Table G3: Trust antecedents collinearity	144
Table G4: Trust antecedent collinearity statistics.....	144
Table G5: Usefulness antecedents collinearity	145
Table G6: Usefulness antecedents collinearity statistics	145
Table G7: Attitude antecedents collinearity	145
Table G8: Attitude antecedents collinearity statistics.....	145

LIST OF FIGURES

Figure 1: The antecedents of trust and felt trust	11
Figure 2: Theory of Reasoned Action Vs. Correspondence Inference Theory.....	23
Figure 3: Forums on E-government.....	27
Figure 4: Theoretical model	36
Figure 5: List of design features.....	43
Figure 6: Web functionalities impact on trust and felt trust	49
Figure 7: Web functionalities classification based on empirical study with 38 subjects	50
Figure 8: Focus Group Findings Vs. Classification Study Results	55
Figure 9: Questions used in generating additional items for trust and felt trust	59
Figure 10: Methodology procedure summary	71
Figure 11: Structural model	77
Figure 12: Mediation test	79
Figure A1: Experiment design	103
Figure A2: Experiment notification	107
Figure A3: Websites used in trust treatment.....	108
Figure A4: Websites used in felt trust treatment	108
Figure A5: Hierarchy of branches	109
Figure A6: Short video explaining task requirement	110
Figure F1: Common method bias modeling in PLS (Liang et al., 2007).....	140

ACKNOWLEDGEMENTS

I would like to thank Kuwait University for its generous support of this journey. I would not have come this far without the helpful supervision of Stephanie Ko, Andrew Janusz, Nikki Chy, Anna Tigan, and Bedoor Al-Sultan, who kept me vigilant about what needed to be done regarding administrative issues with Kuwait University.

I am also grateful for the discussions I had with faculty, staff and my fellow students at the University of British Columbia and Simon Fraser University. For their stimulating conversation and constructive comments, I am indebted to Sameh Al-Natour, Camille Grange, Landon Kleis, Kafui Monu, Paul Ralph, Chee Wee Tan, Bo Xiao, Dongmin Kim, Kyung Shim, Victor Cui, Dr. Hasan Cavusoglu, Dr. Ron Cenfetelli, Dr. Yair Wand, Dr. Carson Woo, William Tan, Eric Lim, and Hani Zaher. My expression of gratitude also extends to Dr. Deutsch-Salamon for inspiring and helping me think in unconventional ways about trust. Her Ph.D. thesis and subsequent publications were the starting point for my research.

I owe particular thanks to my committee members (in alphabetical order), Dr. Benbasat, Dr. Boardman, Dr. Burton-Jones, the late Dr. Chwelos and Dr. Robinson. I will never forget the numerous meetings with Dr. Chwelos and his insightful guidance when I embarked upon my initial studies. Dr. Boardman's knowledge of public administration and government operations facilitated my understanding of e-government objectives. I am grateful to Dr. Robinson for her mastery of the trust literature and her expertise with this multifaceted construct, which made it possible for me to figure out what "trust" is about.

Working with Dr. Benbasat and Dr. Burton-Jones was a dream come true. I value their taking me under their wings, but also their challenging me to think outside the box in looking for ways to improve my research. Their time and energy in steering my work were key to my desire to become a leading IS researcher. Their words of wisdom will echo in my mind with every step I take. There are no words to describe how grateful I am for their supervision.

Finally, I owe special thanks to my parents and siblings, who have supported me both morally and spiritually throughout my years of education. I also thank Aaya, my daughter, for her patience, which kept me motivated and determined throughout my academic endeavours.

To Dr. Paul Chwelos (Rest in Peace)

1 INTRODUCTION

1.1 E-government Defined

E-government (e-gov), Digital Government, Electronic Government, and Online Government are terms used to describe governments' use of Information and Communication Technologies (ICTs) within the public administration domain to deliver public services to stakeholders (Sharma and Gupta, 2003; Welch, Hinnant, and Moon, 2005). ICTs cover not only web/internet-based technologies, but also others like fax machines, kiosks and telephones. Stakeholders can be citizens, businesses, other government agencies, or non-profit organizations that deal with a government. This research, however, employs the term "e-government" only in reference to government-citizen interactions over web-based technologies.

1.2 E-government Adoption Problem

Canada's e-government initiative started in 1999 and was completed by 2006 (Underhill and Ladds, 2007). By 2005, there were 130 services available online. In that year, 8.2 million Canadians age 18 years and over accessed e-government websites, so 1 in 3 Canadians and 71% of the Canadian online community reached the government through the Internet. However, 72% used it only for information purposes (looking up government statistics, programs and benefits) and only 25% used it to conduct transactions (e.g., completing and submitting forms online). Usability figures remained steady even two years later according to a survey of almost 4,500 Canadians conducted by Forrester Research Group, which revealed that 74% of the Canadian online community used e-government websites (Webber et al., 2007).

Similarly, results of the surveys I conducted (Table 1) show that 76% of respondents had used e-government websites in the past and, of those 76%, three-quarters used it mostly for informational or interactional purposes (e.g., search for information, and updating records), and the rest for transactional¹ purposes (e.g., filing taxes online). In other words, despite the steady increases in information technology (IT) spending and in the sophistication of e-government services, citizens have been cautious in their adoption of e-government and, as a result, have tended to limit their use to archival-based activities (Webber et al., 2006).

Table 1: E-government adoption statistics²

Did you use e-government websites in the past for information, interaction, or transaction purposes?	count	%	
No	350	24.1	
Yes	1101	75.9	
Total	1451	100.0	
What is your main purpose of using e-government websites?	count	%	% of use
I never visit e-government.	350	24.1%	
Information or interaction purposes	845	58.2%	76.7%
Transaction purposes	256	17.6%	23.2%
Total	1451	100%	

1.3 Trust: The Key to E-government Adoption Problem

An often-cited inhibitor of e-government adoption is privacy, as some citizens fear that the government is collecting their personal information and will share that information with other entities (Cardin and Holmes, 2006). They worry that using e-government will make them more vulnerable to identity theft (e.g., the possibility that dishonest

¹ According to Baum and Di Maio (2000), e-government goes through four stages of development: 1) only information is available at the first stage 2) the “interactive” stage allows users to download forms and interact with the website (e.g. search for information using search engine) 3) the “transaction” stage allows users to complete transactions online and 4) the last stage is “transformational”; online services between different government levels and branches are integrated at this stage.

² Data was collected through 21 pilot studies asking Canadian participants (n=1451) about general e-government experience through online surveys carried out between October 2008 and October 2009. Participants on average started using e-government 1-2 years ago, using it less than monthly for 15 minutes to 1 hour per visit. Fifty percent of participants were females, 36-45 years old, with college degrees, employed on full time basis, with an average household income of \$40-55K, having more than 10 years of internet daily experience, accessing it through high speed connections (e.g., Cable, DSL, ISDN, Wi-Fi, T1...etc). Participants received electronic points as incentive for participation.

employees will steal the information sent by users and obtain sensitive information like credit card numbers and bank accounts). These concerns limit many users of e-government to looking up information or “window-shopping” tasks (Webber, Leganza, and Baer, 2006).

A user’s level of trust can work as an antidote that overcomes these concerns. Lack of trust has long been recognized as an impediment to adoption of e-government (Bélanger and Carter, 2008; Carter, 2008; Carter and Bélanger, 2005; Gefen et al., 2002; Gefen et al., 2005; Gilbert, Balestrini, and Littleboy, 2004; Horst, Kuttischreuter, and Gutteling, 2007; Hung, Chang, and Yu, 2006; Lee and Rao, 2007; Lee and Lei, 2007; Lee, Braynov, and Rao, 2003; Lee and Rao, 2009; Phang et al., 2006; Tan, Benbasat, and Cenfetelli, 2008; Treiblmaier, Pinterits, and Floh, 2004; Wu and Chen, 2005). The literature on e-government adoption has shown that trust in e-government impacts perceived usefulness (Gefen et al., 2005; Horst et al., 2007; Lee and Rao, 2007; Lee and Rao, 2009; Phang et al., 2005; Wu and Chen, 2005), ease of use and perceived risk (Bélanger and Carter, 2008; Gefen et al., 2002; Lee and Rao, 2007).

According to Sztompka (1999), trust can be anticipative, responsive, and/or reciprocal: 1) anticipative trust is based on the expectation that the trustee will act in a trustworthy fashion, 2) responsive trust is placed in a trustee based on the expectation that he will act in a trustworthy manner as a result of the trustor’s actions (i.e., placing trust in the trustee), and 3) reciprocal trust is based on the “belief that the other person will reciprocate with trust toward ourselves” (p. 28). This type of trust can be initiated either by the trustor or the trustee. However, this trust classification (i.e., anticipative,

responsive, and reciprocal) is artificial and for analytical purposes only (Sztompka, 1999).

To increase individuals' levels of trust proactively, the trustee can improve her reputation for being trustworthy, thereby evoking anticipative trust, and/or place trust in the trustor first to provoke reciprocal trust. Similarly, improving users' adoption of e-government through building trust can be accomplished by enhancing e-government trustworthiness, which is the dominant paradigm in trust studies within IS literature, and/or by bestowing trust in users to evoke trust reciprocity, which is an approach completely new to the IS literature⁴.

The latter strategy for improving trust is promising because it has received scholars' attention in other disciplines. Studies have shown that bestowing trust in citizens leads to trust-related behaviour toward government in the offline environment (Murphy, 2003; Murphy, 2004; Yang, 2005). Government officials take an oath to conduct themselves in a trustworthy manner, and the constitution that a government official upholds secures citizens' legal rights. Government officials who are suspicious of their citizens and treat them like criminals (e.g., using excessive surveillance) breach that contract, resulting in a decline of citizens' levels of trust in those officials. Conversely, a government official who protects citizens' legal rights (e.g., treats them with respect and dignity) and keeps promises maintains citizens' levels of trust. In other words, a government's trust in

⁴ My review of 102 trust studies published in the leading IS journals between 1995 and 2010 shows that most studies investigated anticipative trust (93%), a few studies examined responsive trust (5%) and only 2% looked at trust reciprocity (initiated by the trustor). The studies reviewed examined trust in websites in different domains using empirical data collection methods and hypothesis testing. The list of IS journals was provided by the Association of Information Systems MIS Journal Ranking website.

citizens generates citizens' trust in government, while a government's distrust in citizens produces citizen's distrust in government (Sztompka, 1999).

An e-government user places trust in e-government based on his or her belief that e-government is trustworthy, which is the definition used for "trust in e-government" in this research. Alternatively, a user's belief that e-government is designed in a way as if it places trust in the user is what is referred to as "felt trust from e-government".

Empirical evidence shows that "felt trust" is more important than "trust" when it comes to hierarchical relationships. For example, Lester and Brower (2003) found that, between subordinates and managers, felt trust had a more significant influence on individuals' attitude than trust did. Their findings supported the notion that trust can be reciprocal and cyclical (Butler, 1991; Fox, 1974; Zand, 1972). One of the limitations that Schoorman, Mayer and Davis (2007) acknowledged in their 1995 trust model was the assumption of trust unidirectionality (Mayer, Davis, and Schoorman, 1995). They commented that empirical studies of trust reciprocity are in short supply and that this is a promising area for future research.

1.4 Research Questions

Most literature on trust related to electronic media has assessed trust in a unidirectional manner only, such as the effect of IT artifacts on website trustworthiness (anticipative trust). No study has examined other side of the trust relationship: how IT artifacts on a website can promote felt trust and how users' felt trust affects their trust in e-government (reciprocal trust). Moreover, the relationships among users' felt trust, usage attitude and intention to use e-government have not been studied. This research

fills those gaps in the literature by investigating the impact of reciprocal trust. The research questions addressed in this thesis are:

1. What is felt trust? What is the relationship between felt trust from e-government and users' level of trust in e-government? Are the antecedents of felt trust from e-government different from those of trust in e-government? These questions are addressed by the theoretical framework developed in Chapter 2.
2. Is felt trust a salient phenomenon that users experience when they visit and transact with e-government websites? This question is addressed in Chapter 3.
3. Where does felt trust fit within the nomological network of e-government adoption? This question is investigated in the empirical study described in Chapter 4.

1.5 Key Contributions

This research is expected to contribute to research and practice in the following ways:

1.5.1 Theoretical Contributions

A conceptual model will be developed, supported by propositions derived from existing information systems and management theories, to generate hypotheses with which to investigate the involvement of trust in and felt trust from e-government. Past literature on trust in online service providers has focused on the role of trust in website adoption and on mechanisms that can increase that trust. Despite empirical evidence that shows the influence of individuals' felt trust on trust and trusting behaviour in the offline world, felt trust has not been examined as it relates to the electronic medium (such as in e-government). This research explores the applicability of felt trust in e-government and explicates the relationship between felt trust and trust.

As with trust in technological artifacts (Vance, Elie-Dit-Cosaque, and Straub, 2008), proposing that government websites induce perceptions of felt trust on the part of citizens necessitates the assumptions that Information Technology (IT) artifacts are perceived by users as social actors (i.e., surrogates for the designers) and that interactions with these artifacts are social and interpersonal. Consistent with the Computers are Social Actors paradigm (Reeves and Nass, 1996), an abundance of empirical studies have demonstrated that users are likely to assign human-like characteristics to IT artifacts such as recommendation agents (Wang and Benbasat, 2005). Results from the current research could corroborate the findings that IT artifacts are perceived as “active” social actors that reciprocate trust, which could lead to other avenues of research. This reciprocal trust relationship could improve the predictability and the explanatory power of IT adoption models.

1.5.2 Managerial Contributions

If felt trust is shown to be important on the electronic medium, a paradigm shift could occur in the way governments design websites. Government website designers could proactively signal trust in users in order to evoke felt trust and improve e-government adoption. IT designers and practitioners would consider not only how IT artifacts build trust but also how to signal their trust in users.

Second, the questionnaire to be developed for this research can be used by public managers to monitor their online initiatives. The survey questions used to operationalize the different constructs in the nomological network of e-government adoption can be tracked as a scorecard that public managers can inspect periodically to

highlight areas in which e-government websites thrive and those that require further attention.

This research also addresses how to improve trust and felt trust by providing public managers with strategies that can be applied to improve these perceptions by differentiating the antecedents of trust from those of felt trust. These antecedents will guide public managers when they are making decisions about online initiatives by narrowing their selections of IT solutions to address those with larger impacts on these antecedents.

1.6 Thesis Audience

Audiences for this research include public administrators and web designers in general and the academic community interested in e-government topics. E-government website designers could learn how to improve citizens' levels of trust in the electronic medium, while policy-makers have the opportunity to learn more about citizens' needs. The results should also shed light on the adoption problem that has been of interest in the IS academic community.

1.7 Thesis Outline

In chapter 2, a theoretical model is developed and hypotheses are derived to investigate the relationship between felt trust and trust in e-government. Chapter 3 examines the saliency of felt trust in the e-government setting. Chapter 4 outlines an empirical study used in testing the theoretical framework, developed through a survey of citizens who reviewed a government service portal in Canada, and provides the key results. Chapter 5 describes the implications of the findings of the different studies and addresses the limitations and opportunities for future research.

2 TRUST, FELT TRUST, AND E-GOVERNMENT ADOPTION: A THEORETICAL FRAMEWORK

The objective of this chapter is to provide accepted and formal definitions for trust and felt trust. The antecedents of trust are differentiated from those of felt trust, and the relationship between these two constructs and their role within the nomological network of e-government adoption models are delineated.

2.1 Trust Defined

Trust is not a new concept in e-government literature, yet there is little consensus on what it means. Trust has been conceptualized as the opposite of perceived risk (Park, 2008), as the expectancy that promises made will be met (Bélanger and Carter, 2008; Carter and Weerakkody, 2008), as the willingness to be vulnerable to e-government (Tan et al., 2008) and as an attitudinal belief held about e-government trustworthiness (Wu and Chen, 2005). We follow Wu and Chen's (2005) conceptualization of trust in e-government as an attitudinal belief, which is consistent with trust conceptualization by prominent IS scholars, including Gefen, Karahanna, and Straub (2003) and Wang and Benbasat (2005) and other scholars, like McAllister (1995), Robinson (1996), and Jones and George (1998).

Hence, trust in e-government is defined as an attitudinal belief shaped by evaluating the trustworthiness dimensions of e-government ("trust" and "trustworthiness" are used interchangeably in this thesis). Trustworthiness dimensions are perceived attributes that the public thinks warrant their trust (McKnight, Choudhury, and Kacmar, 2002a).

With definitions adapted from Mayer, Davis, and Schoorman (1995), the most salient dimensions of trust in e-government are: 1) ability, defined as those skills that enable e-

government to perform competently when serving the public; 2) benevolence, defined as the degree to which the public believes that e-government wants to help them; and 3) integrity, defined as the degree to which the public believes that e-government adheres to acceptable principles.

2.2 Felt Trust Defined

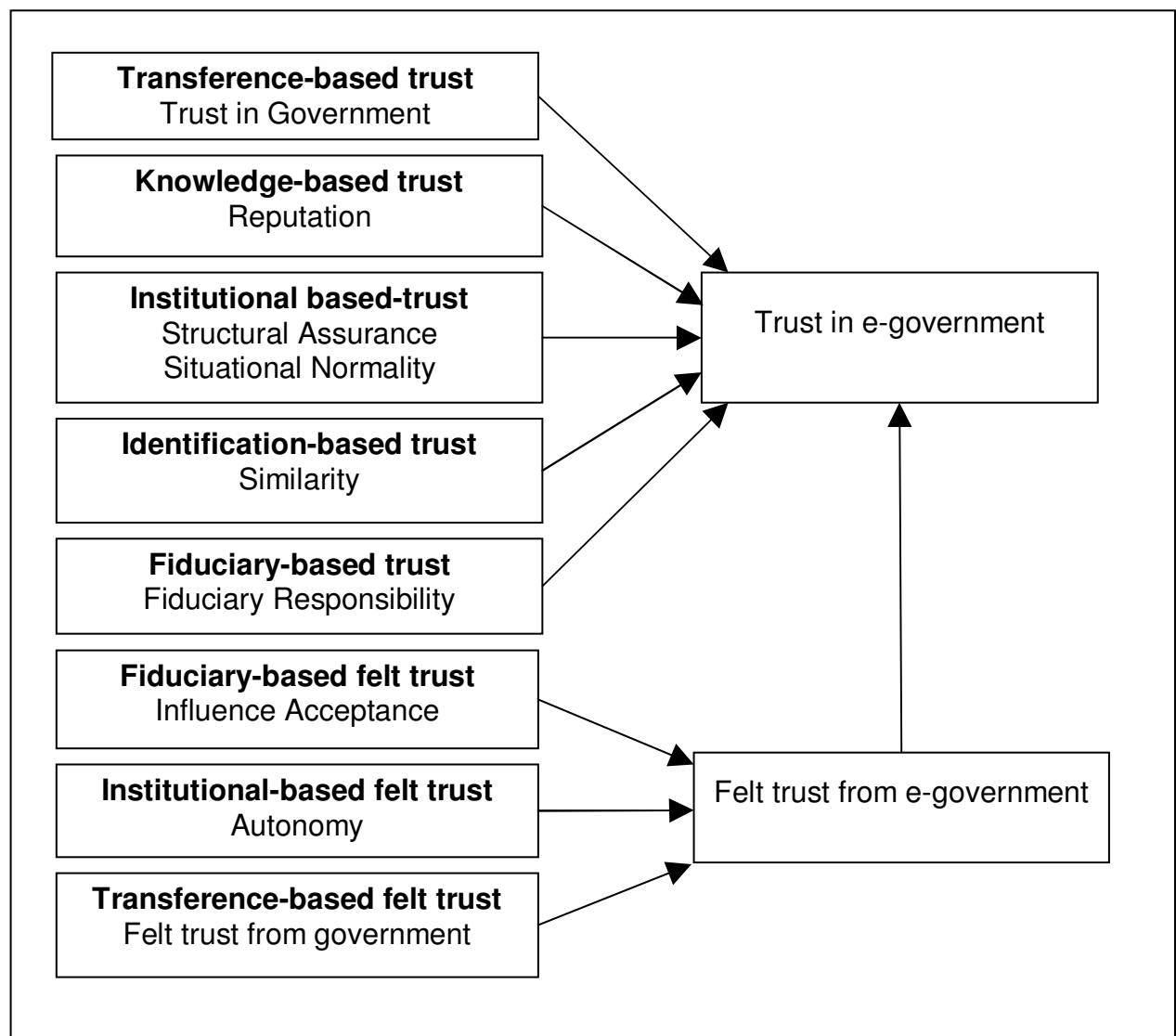
Within the public administration literature, trust in government is conditioned upon how the government treats its citizens (Kim, 2005). Levi (1998) argued that a government that trusts its citizens can help restore or build trust. Other studies have shown that people proactively participate in political activities, voluntarily comply with regulations, follow the rules, and trust the government more when they feel they are being trusted and respected in return (Yang, 2005). Citizens break the rules or attempt to break them (e.g., avoid paying taxes), distrust the government, and even resent officials when they sense they are distrusted (Braithwaite et al., 1994; Levi and Stoker, 2000; Peel, 1995; Pettit, 1995).

A definition of “felt trust” developed by Deutsch Salamon (2004) is adapted for the research. It refers to a citizen’s perception that e-government is designed in a way as if it considers him/her to be trustworthy (i.e., implied through the design elements and processes of the websites).

2.3 Theoretical Framework

Figure 1 shows the theoretical model developed after a review of trust formation processes and theories to establish the causal link between felt trust and trust. The following sections discuss the antecedents of trust, the antecedents of felt trust, and the relationship between felt trust and trust represented in this model.

Figure 1: The antecedents of trust and felt trust



2.3.1 Trust

Table 2 lists the definitions of trust formation processes that scholars have used in identifying antecedents that lead to the development of trust. The last column in table 2 lists IS studies investigating these antecedents.

Table 2: Trust formation processes

Trust Formation Process	Definition	Author	IS Literature
Transference-based Trust	The idea that trust can be transferred from a known entity to an unknown entity based on a strong link between the former and the latter.	(Doney and Cannon, 1997; Doney, Cannon, and Mullen, 1998; Kramer, 1999; Luo and Najdawi, 2004)	(Stewart, 1999, 2003, 2006)
Knowledge-based Trust	Confidence that a desired behaviour can be forecast based upon a history of interaction and direct experience with the trustee	(Doney and Cannon, 1997; Doney et al., 1998; Lewicki and Bunker, 1996; Luo and Najdawi, 2004; Nyhan, 2000; Zucker, 1986)	(Gefen, 2000; Gefen et al., 2003; Komiak, Wang, and Benbasat, 2005; Luo, 2002; McKnight, Choudhury, and Kacmar, 2000)
Institution-based Trust	The belief that laws, rules and regulations are in place to guarantee that the trustee will behave as expected	(Kramer, 1999; Zucker, 1986)	(Akhter, Hobbs, and Maamar, 2004; Balasubramanian, Konana, and Menon, 2003; Bart et al., 2005; Borchers, 2001; Chellappa and Pavlou, 2002; Corbitt, Thanasankit, and Yi, 2003; Gefen et al., 2003; Kim and Ahn, 2005; Koufaris and Hampton-Sosa, 2004; Liu, Marchewka, and Ku, 2004; Liu et al., 2004; Luo, 2002; McKnight et al., 2002a; Pavlou and Gefen, 2004)
Identification-based Trust	The trustee's attributes that are shared with the trustor, including values, gender, ethnicity, and nationality	(Kramer, 1999; Lewicki and Bunker, 1996; Zucker, 1986)	(Aberg and Shahmehri, 2000; Aberg and Shahmehri, 2001; Basso et al., 2001; Luo, 2002)
Fiduciary-based Trust	The belief that the trustee will not engage in any opportunistic behaviour as a result of the role/position the trustee holds	(Kramer, 1999)	

Trust Formation Process	Definition	Author	IS Literature
Calculative-based Trust	Trust based on the trustor's calculation of the cost and benefits (or positive and negative consequences) the trustee will face if it engages in opportunistic behaviour	(Doney and Cannon, 1997; Doney et al., 1998; Lewicki and Bunker, 1996)	(Chau et al., 2007; Gefen et al., 2003; Komiak et al., 2005)
Intentionality-based Trust	Trust based on the trustor's assessment of the trustees' motives	(Doney and Cannon, 1997; Doney et al., 1998; Luo and Najdawi, 2004)	(Komiak, Wang, and Benbasat, 2004)
Capability-based Trust	Trust formed after examining the skills and competencies of the trustee's capacity to carry out what has been promised	(Doney and Cannon, 1997; Doney et al., 1998; Luo and Najdawi, 2004)	(Komiak et al., 2004)

To explain the antecedents of trust in e-government, this chapter focuses on all of these trust formation processes except calculative-based trust, intentionality-based trust, and capability-based trust. Calculative-based trust was excluded primarily because my pilot studied showed it to have an insignificant effect on trust in e-government. Intentionality-based trust and capability-based trust were excluded because, rather than viewing the trustee's motivations and abilities as influencing the formation of trust, I take the view of McKnight et al. (2002a) that motives and abilities are captured within the trustworthiness dimensions of ability, and benevolence.

2.3.2 Antecedents Of Trust

2.3.2.1 Transference Based Trust

Researchers within the field of public administration attempted in the 1970s to explain what trust in government stands for. At that time, the Citrin-Miller debate focused on people's evaluation of "trust" in government. Miller (1974) argued that people's general evaluation of government followed a holistic view. An individual's level of trust in

government reflected his evaluation of system performance and regime legitimacy. On the other hand, Citrin (1974) challenged that perception by showing that trust in government was a sign of people's evaluation of the incumbent leaders' and other individuals' (e.g. politicians') performances. Even people who did not trust the government still believed that the system was legitimate (Citrin, 1974). Studies conducted by Maeda and Miyahara (2003), Ulbig (2002), Miller and Borrelli (1991), Rahn and Rudolph (2005), and Rafalowska (2005) all corroborated Citrin's (1974) conclusions. Thus, generally speaking, trust in "government" is dyadic (i.e., citizens evaluate *officials* working for the government, not the overall system), vibrant (i.e., it fluctuates with time), and contingent on citizens' evaluations of officials' trustworthiness attributes. It can also be classified as a vertical type of trust due to the hierarchical nature of the government-citizen relationship (i.e., it exists at different levels of government and toward different branches of the government).

By the same token, users' level of trust in "e-government" reflects their evaluation of government officials responsible for developing, maintaining, and monitoring the information system consistent with Friedman, Khan, and Howe (2000) emphasis on people behind the technology when it comes to virtual trust, not the technology itself. However, the difference between trust in "government" and trust in "e-government" lies in the reference point. Trust in "government" is based on the trustworthiness attributes of public servants and politicians in the public eye. Since individuals are more familiar with government operations than e-government procedures, in part because of government visibility and its interaction history with these individuals, they evaluate e-

government's trustworthiness based on their personal experience with the offline government.

This type of trust formation is referred to in the trust literature as trust transference. Trust in an object is transferred from offline to online (Lee, Kang, and McKnight, 2007) when this object (in this case the government) is dealt with in a context with weaker institutional structures (i.e., online environment) (Stewart, 2003). Individuals count on sources of evidence to transfer trust from "known" to "unknown" parties (Doney et al., 1998), in this case, using information furnished by the "offline" government to predict how "online" government will behave. For example, Koufaris and Hampton-Sosa (2004) found that users' level of familiarity with a company in the offline world shaped their level of trust in that company's website, with which users were unfamiliar. Similarly, citizens' levels of trust in government in the offline world were shown to have an influence on their assessment of e-government trustworthiness (Colesca, 2009; Horst et al., 2007). Therefore:

Hypothesis-1: trust in government in the offline world will have a positive effect on trust in e-government.

2.3.2.2 Knowledge Based Trust

Person "A" tends to trust Person "B" if Person "B" is found to act predictably in a trustworthy fashion, based on the experiences of Person "A" or others known by Person "A" (Doney et al., 1998). In other words, if the trustee consistently demonstrates trustworthy behaviour, it is rational to predict that she will continue to act in a trustworthy manner since she desires to maintain the reputation gained. Empirical evidence shows that trust is influenced by online vendors' reputations (Corbitt et al., 2003; McKnight et

al., 2000; Pavlou, 2003). Thus, users assess e-government trustworthiness based on its reputation.

Hypothesis-2: reputation of e-government will have a positive effect on trust in e-government.

2.3.2.3 Institutional Based Trust

McKnight et al. (2002a) defined institution-based trust as “the belief that needed structure conditions are present (e.g., in the internet) to enhance the probability of achieving successful outcome” (p. 339). They divided institution-based trust into structural assurance, defined as “guarantees, regulation, promises, legal resources, or other procedures ... in place to promote success” (p. 339), and situational normality, defined as “one’s belief that the environment is in proper order and success is likely because the situation is normal” (p. 339). E-government users who have high levels of structural-based trust feel safe conducting transactions with the government over the electronic medium because the users believe they can remedy any problems that may result from any e-government opportunistic behaviour. For example, users who use credit cards in making payments for government services rendered online can get a full refund from credit card companies if they feel that e-government charged them erroneously.

Institutional-based trust will be eroded if situational cues (design elements) trigger suspicion (e.g., a website asks for a Personal Identification Number instead of a credit card number). In other words, users look for situational normality in how the website is designed and the processes associated with it when assessing its trustworthiness (Corritore, Kracher, and Wiedenbeck, 2003). Therefore:

Hypothesis-3: structural assurance will have a positive effect on trust in e-government.

Hypothesis-4: situational normality will have a positive effect on trust in e-government.

2.3.2.4 Identification Based Trust

Identification-based trust falls within the in-group vs. out-group framework. People are more likely to trust those who share similar beliefs and with whom they have much in common (in-group) than those who do not share the same beliefs or with whom they have nothing in common (out-group) (Tajfel, 1982). They expect those similar to them not to take advantage of their vulnerabilities because they are both on the same “team”. People also expect that those similar to themselves will be more responsive to their needs because people who are similar are able to understand their situation better than others can. Empirical evidence shows that websites with in-group design features (e.g., affiliation with local companies and/or endorsement of local peers) are seen as more trustworthy than those that have out-group design features (e.g., affiliation with foreign companies and/or endorsement of foreign peers) (Sia et al., 2009).

Perceived similarity is based on how the trustee acts, speaks, and/or appears. For example, a user who encounters pictures or slogans on an e-government website that represent what she believes is likely to assume that e-government shares her beliefs and is, therefore, trustworthy.

Hypothesis-5: perceived similarity will have a positive effect on trust in e-government.

2.3.2.5 Fiduciary Based Trust

Fiduciary-based trust is embedded in the role played by the trustee as part of an institution. For example, a landlord seeking firemen's help with a fire that broke out in her building believes that it is the firemen's duty to act in a trustworthy (benevolent) manner and provide assistance because of what their job description mandates. Similarly, users of e-government assume that web administrators must be trustworthy because of the role/responsibility given to them. Web administrators work for the government, which mandates that employees who serve the public abide by ethical standards set by government officials and do their best when delivering government services online.

Hypothesis-6: fiduciary responsibility will have a positive effect on trust in e-government.

In summary, constructs hypothesized to have an influence on trust in e-government were derived from trust formation processes framework based on a summary of trust literature. However, the e-government literature has not examined the relationship between trust and its antecedents other than in terms of transference-based trust (Lee and Rao, 2007; Teo, Srivastava, and Jiang, 2008). Felt trust from e-government, which is proposed as another antecedent that influences trust in e-government is discussed in the following section.

2.3.3 Felt Trust

Generally speaking, reciprocity deals with people's positive (or negative) reactions to others' positive (or negative) actions (Fehr and Gächter, 2000; Ostrom, 2003). Studies have shown that reciprocity is a phenomena that exists in a wide ranging contexts, such as amongst chimpanzees (de Wall, 2003), and children (Harbaugh et al., 2003).

According to Kramer, Brewer, and Hanna (1996), trust reciprocity deals with “individual’s a priori beliefs regarding the likelihood that other group members will reciprocate acts of trust” (p. 371). One way to reciprocate trust bestowed is by acting in a trustworthy manner towards another (Gouldner, 1960) as a result of feeling obligated to honour the trust bestowed (Murnighan, Malhotra, and Weber, 2004). One can also reciprocate trust received by trusting those who initially bestowed it (Sztompka, 1999). This thesis addresses the latter type of reciprocity and refers to it as “felt trust”.

The construct of “felt trust” was introduced because, in the offline world, it has been shown to have an influence on trust in government, organizations or employers (Braithwaite et al., 1994; Carnevale, 1988; Deutsch-Salamon, 2004; Deutsch-Salamon and Robinson, 2008; Fox, 1974; Lester and Brower, 2003; M. Levi and Stoker, 2000; Lines et al., 2005; McCauley and Kugner, 1992; Peel, 1995; Pettit, 1995).

Table 3 lists the studies that have used different theoretical frameworks and methodologies to investigate the impact of felt trust on other constructs. Only studies that explicitly measured felt trust through self-reported instruments were included in this review, although other studies that have used qualitative research methods like case studies and interviews were not listed but reported similar results (e.g., Dawson and Darst, 2006; Klitzman and Weiss, 2006). Felt trust was found to have a positive relationship with trust in those who initially bestowed it (Butler, 1986; Murphy, 2004; Zand, 1972), and with the responsibility to act in a trustworthy manner (Deutsch-Salamon and Robinson, 2008; Harrell and Hartnagel, 1976) which basically cover the reciprocal and responsive types of trust classified by Sztompka (1999).

Table 3: Felt trust literature

Authors (year)	Context	Theory	Methodology	Subjects	Dependent Variable	Key Findings
(Murphy, 2004)	Tax evasion	None	Survey	2292 tax payers	Trust in government institutions and resistance toward rules and decisions	Felt trust increased trust and reduced resistance
(Zand, 1972)	Team work	Spiral-Reinforcement Model	Experiment	64 upper-middle managers	Trust and problem solving effectiveness	Felt trust builds trust and improves problem solving effectiveness
(Lester and Brower, 2003)	Leader-subordinate	Social Exchange Theory	Survey	188 dyads (subordinates and leaders)	Job satisfaction, organization citizenship behavior, and performance	Felt trust had a positive relationship with job satisfaction, organization citizenship behavior, and performance.
(Harrell and Hartnagel, 1976)	Assembly line	Responsibility Norm	Experiment	84 subjects	Stealing	Felt trust leads to moral behavior
(Lagace, 1991)	Leader-Subordinate	Leader-Member Exchange Theory, Social Exchange Theory	Survey	55 dyads (sales persons and sales managers)	Job satisfaction, manager satisfaction, role conflict and evaluation of manager.	Felt trust had a positive relationship with opinion about manager, job and manager satisfaction and lower role conflict.
(Butler, 1986)	Female-Male relationships	None	Survey	98 dyads (females and males)	Trust in partner	Felt trust had a positive effect on trust in partner.
(Deutsch-Salamon and Robinson, 2008)	Leader-subordinate	Appropriateness framework	Survey	8434 employees	Responsibility norms	Felt trust was positively related to responsibility norm

Deutsch-Salamon (2004) identified the theories that justify the relationship between felt trust and trust. Social Exchange Theory, developed by Blau (1964), postulates that people seek balance in their exchanges to eliminate dissonance or stress caused by unbalanced relationships. Stress caused by unbalanced relationships can come in the form of debt or lingering obligation as a result of an inability to reciprocate equally in a relationship. People avoid being in debt by undertaking equal reciprocation in order not to risk losing the relationship. In other words, consistent with the norm of reciprocity developed by Gouldner (1960), a person who seeks benefits and receives them from a provider feels obligated to return the benefits if they are sought by the provider, contingent upon the receiver's interest in maintaining a relationship with the provider.

Hence, if a user thinks that the e-government trusts her, as indicated by the website's design elements and processes, then she will reciprocate that trust in e-government when it asks for it. Citizens would want to reciprocate trust because they seek balance in the relationship (e.g., they don't want to take advantage or be taken advantage of). Thus, if they perceive that trust has been given to them, they will trust e-government in return in order to reach balance. Obviously, if they don't trust e-government, then there is no relationship. Users will decide not to use the website and the relationship will be terminated. Therefore:

Hypothesis-7: felt trust from e-government positively affects trust in e-government⁵.

⁵ The reverse (i.e., trust in e-government positively affects felt trust from e-government) is not true. There is no way to test this in a cross-sectional survey study, but I present experimental results supporting this view later in the thesis (Appendix A).

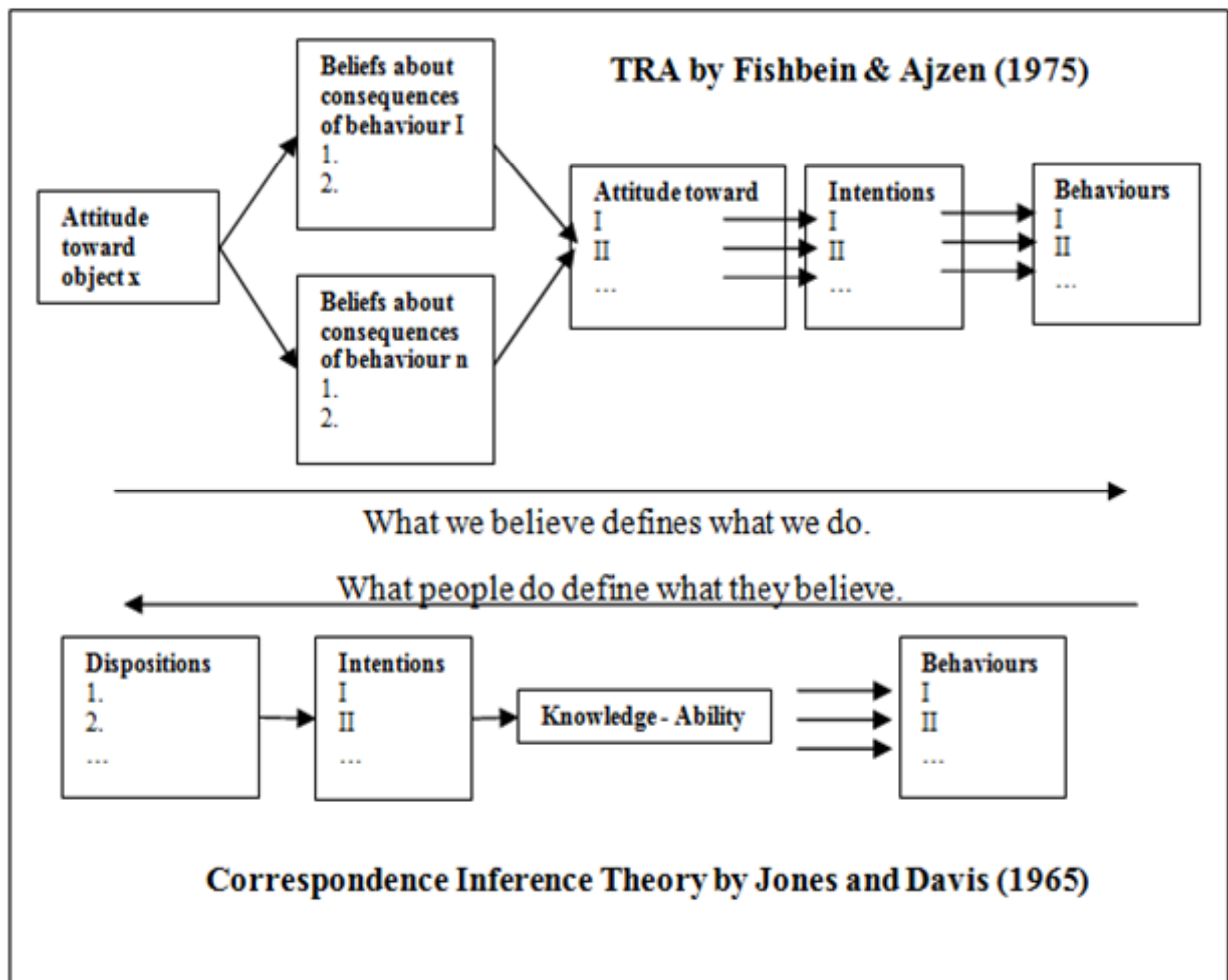
2.3.4 Antecedents Of Felt Trust

The relationship between the antecedents of felt trust and felt trust is justified under the umbrella of Attribution Theory developed by Heider (1958) who distinguished between two explanations that people assign to events around them:

- Personal/Internal attribution: explanations are framed based on an actor's attributes (e.g., John Elway won the Super Bowl because he practiced on a daily basis).
- Situational/External attribution: explanations are framed in terms of external factors that are not under the actor's control (e.g., John Elway won the Super Bowl because his teammate Terrell Davis was the Most Valuable Player).

Internal attribution supplied the basis for Jones and Davis' (1965) Correspondence Inference Theory. According to this theory, when an observer observes the actor's behavior, it is possible for that observer to infer the intentions and dispositions the actor had before behaving that way. This theory is almost identical to the Theory of Reasoned Action (Fishbein and Ajzen, 1975). Though both theories address beliefs, and dispositions associated with actions taken by individuals, Correspondence Inference Theory explains how individuals' actions (behaviours) are interpreted in the eyes of the beholder, while the Theory of Reasoned Action explains what goes in individuals' minds before acting in a certain way (figure 2).

Figure 2: Theory of Reasoned Action Vs. Correspondence Inference Theory



Correspondence Inference Theory works best when the actors (in this case, website administrators) have the choice and full control to engage in a trusting behaviour. Website administrators are not obliged to trust completely, and trusting users is not an expected behaviour. Thus, Correspondence Inference Theory suggests that, if users perceive that e-government acts in a trusting way towards them, they will perceive that trust as a choice made by e-government and conclude that e-government thinks that the users are trustworthy.

Because felt trust in e-government has not been studied before, the literature on trust was examined and a study was conducted asking participants feedback on actions that may make them perceive the trustee to be behaving in a trusting way (i.e., similar to the method used to extract salient beliefs as suggested by Ajzen (2006)). Building on insight gained from the preliminary empirical studies described in the next chapter, government trust related behaviour was solicited from participants in two separate online surveys that asked participants to answer open-ended questions about what a government does to show how much it trusts citizens. Participants were recruited using a marketing panel and were rewarded for participation with points that they could redeem for merchandise. Two hundred eighty one (n=281) participants gave answers that were qualitatively coded of which two hundred and two (n=202) were usable. Responses such as “the government trusts me” were excluded because they added no value to the study and some respondents did not know how to answer because they indicated that they speak only French (the survey was in English). Some respondents did not believe that the government can do anything to show it trusts citizens, thus, confirming the “unexpected” nature of felt trust.

Table 4 lists the themes I identified⁶ of activities the government can engage in to show it trusts its citizens. Only the top two are included in the study because they are the most frequently mentioned. In addition, the selected themes are applicable to the electronic medium, whereas the others are not (e.g., information disclosure is not applicable because governments cannot disclose sensitive information over the internet for national security or other legal reasons).

⁶ Atlas.ti was used in analyzing the collected feedback.

Table 4: Felt trust related behavior

Theme	Frequency	Percentage
Influence Acceptance	59	29%
Autonomy	50	25%
Other (tax breaks)	23	11%
Information Disclosure	21	10%
Control Reduction	18	9%
Approval	15	7%
Respect	8	4%
Reward	8	4%
Total	202	100%

2.3.4.1 Influence Acceptance

Influence acceptance refers to the degree to which users believe that those in charge are willing to listen and respond to users' demands about improving the website. It shows government trust in citizens by taking their opinions into consideration before launching any new initiatives or new designs. Twenty-nine percent of the respondents stated that a government that seeks public view points and acts on these suggestions/comments shows that it values their knowledge about the topic. Influence acceptance also indicates government recognition of how much the citizens care about the well being of the country as a whole, in addition to being honest in providing feedback.

Some have argued that influence acceptance is behaviour that shows trust in the other party (Blau, 1964; Zand, 1972). A website that allows citizens to participate in governance issues through its design features makes the users feel appreciated and valued for the knowledge they are sharing, as opposed to a website that only offers products and services and does not take people's advice/support into consideration. For example, when e-government asks users to rate the website, users are perceived to have the capacity to evaluate the website and suggest ways to improve it. It would not

be logical for the government to seek citizens' feedback if it perceives them to be inexperienced with websites or unknowledgeable about content or public issues. Exploiting citizens' feedback also facilitates monitoring website performance and assists in generating new ideas that officials might have missed during website planning and development. Therefore:

Hypothesis-8: perceived influence acceptance positively affects felt trust from e-government.

Influence acceptance can be classified under role-based felt trust formation processes (the perception that one is being trusted because of the role she occupies). E-government bestows trust because being a "user" is a role in which a user is expected to implicitly abide by moral principals and demonstrate honesty when providing information. Users are considered to be volunteers who are helping evaluate how the website is designed, and it is the users who know how they want government services to be delivered over the electronic medium and what web components to include. Influence acceptance is not an institutional/rule-based felt trust formation process (the perception that felt trust is mandated according to online rules/regulations) because e-government is not obligated to respond to users' demands nor required to obtain their opinions when designing government portals. However, autonomy, which I discuss next, can be classified under the institutional/rule-based felt trust formation process.

2.3.4.2 Granting Autonomy

The second most frequently cited behaviour that government can undertake to show trust in citizens is granting autonomy. Autonomy refers to the degree of which users believe to have the freedom to act as they desire over e-government without any monitoring. Twenty five percent of the participants said that the government should

leave them alone and not monitor every thing they do. Granting discretionary power shows that government has confidence that citizens can take care of themselves without government supervision. Granting autonomy is a sign of trust (Zand, 1972).

To illustrate autonomy within the realm of e-government, some websites deploy forums in their portals so citizens can open topics for discussion and express their views and opinions. Discussion on forums can take the form of text response, audio or video. Some websites monitor forum postings to remove content that is considered not suitable, while other websites leave it to the users to judge the content and flag postings that may be seen as inappropriate or offensive (figure 3).

Figure 3: Forums on E-government





Been wanting to share your views with others? This forum allows you to interact and engage in active discussion with fellow Singaporeans and permanent residents on national policies and issues.

REACH's Discussion Corner

Discussion threads in REACH's Discussion Corner are created for public consultation and feedback gathering purposes. REACH reserves the right to remove any topics that have been created by the public in this forum. Public users are invited to start their own discussion threads in "**Your Discussion Corner**".

REACH reserves the right to remove postings/views that are deemed inappropriate and/or insensitive to other users.

[Forum Home](#)
[Search](#)

Forum	Threads	Posts	Last Post
I			
 Welcome and Forum Announcements All important announcements regarding this forum	6	79	28/01/2008 12:09 PM Admin
II			
 Our Common Space Issues regarding community and social development	7	639	27/03/2008 7:49 PM Anonymous
 The World and us International Affairs and Singapore	0	0	
III			
 Learn and Earn Issues on education and employment	14	151	26/03/2008 11:18 AM Anonymous

E-government that deploys forums demonstrates faith in citizens to act responsibly and not to post anything others might find offensive. Citizens are expected to share their ideas in an open and friendly environment and to use the forum for discussion, rather than for posting links or content for commercial purposes. In other words, forums indicate government officials' expectations of users' honesty. E-government also perceives users to understand what is being discussed, so allowing them to share their ideas on the forum indicates e-government's perceptions of users' ability to engage in fruitful and productive discussions. Therefore:

Hypothesis-9: perceived autonomy positively affects felt trust from e-government.

As mentioned earlier, granting autonomy can be classified under institutional-based trust. In the offline world, people are assumed to be honest until proven guilty, and the same principle governs the relationship between users of e-government and the website. Thus, e-government must not restrict users' behaviour unless there is compelling evidence that shows users are likely to pose a threat to website operations.

Granting autonomy and influence acceptance will trigger internal attribution because the conditions of internal attributions as discussed by Jones and Davis (1965) are in place. E-government has a choice/full control over engaging in these actions. They are not required to take users feedback into consideration before making any decisions (e.g.; launching changes to a government website, implement new policy...etc) nor are they expected to leave users act in any way they please without at least some unobtrusive monitoring. They are expected to trust those who are honest but keep an eye on those who might have the intentions to do harm to system operations (e.g., hackers). In other words, e-government web administrators are required to trust, but verify and be vigilant

at the same time. Finally, it is not socially desirable for the government to take people's feedback into consideration or grant autonomy because it will not be able to make everybody happy, nor can it be 100% sure of who to trust or not trust, partially because of the characteristics of the electronic channel that makes users' verification hard. Nevertheless, not restraining users' actions and listening to their comments make users feel they are being trusted by e-government which, as I argued before, will improve trust in e-government.

2.3.4.3 Felt Trust From Government

As argued for Hypothesis-1, users who believe that e-government trusts them rely on other sources to corroborate these beliefs, consistent with the line of argument in Doney et al. (1998) regarding trust transference. That is, users who feel trusted by e-government will reflect on their experience with government in the offline world to validate their judgement. If users find evidence that e-government is replicating what the government is doing offline, then users will most likely conclude that e-government's trusting actions are sincere, lessening any ambiguity surrounding e-government's true intentions. In other words, users' attitude about government in the physical world helps shape their attitudes about government in the virtual world.

Hypothesis-10: felt trust from government positively affects felt trust from e-government.

2.3.4.4 A Note On The Symmetry Of Trust Reciprocity In E-government

Two aspects of symmetry should be noted about the antecedents of trust and felt trust in the theoretical model. First, the antecedents for trust and felt trust are similar in the sense that each antecedent affects trust and felt trust *as a construct* rather than affecting particular *dimensions* (such as antecedents that affect beliefs about a trustee's

competence). Since attitudes are general evaluations of a set of beliefs (Fishbein and Ajzen, 1975), it is more accurate to study them at a holistic level than to identify the antecedents for each dimension separately. The nature of felt trust makes it even more important to study it in a general fashion. Specifically, felt trust is determined by a user's evaluation of e-government's actions. It is unlikely that users will be able to determine the specific *reasons* for these actions (i.e., whether it is because of the e-government's perception of the user's competence, benevolence, or rather, integrity). E-government could have several reasons for engaging in particular actions, and users have no way of discovering the true reasons behind those actions; instead, they perceive what the general reasons might be.

The second aspect of symmetry in the theoretical model is that the antecedents of trust and felt trust are grouped according to the categories of trust formation processes shown in figure 1, but the categories used for trust and felt trust are not quite symmetrical. Some trust-formation categories (characteristics and knowledge) are shown as antecedents of trust but not felt trust. They were not included in the model because they were not salient to users of e-government according to their responses to the elicitation exercise.

2.3.4.5 Nomological Network Of E-government Adoption Model

Information Systems adoption literature is largely framed within the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975). According to the TRA, object-based beliefs—information that one has about an object by linking that object to an attribute—form one's attitude toward that object. Attitude, a person's favourable or unfavourable evaluation of an object, forms the person's intent to engage in behaviours

with respect to that object. Therefore, behaviours (overt actions) with respect to that object are a function of those intentions. In other words, beneficial attributes of a website as perceived by a user (beliefs) results in favourable evaluation of that website (attitude) and, when a user has a favourable attitude toward a website, he will form the intention to engage in behaviours on that website.

Fishbein and Ajzen (1975) later clarified that attitude toward an object is not sufficient to predict the intent to engage in a behaviour related to that object because the attitude toward the behaviour itself should also be taken into consideration. One's attitude toward a behaviour is a function of the expected outcome of that behaviour (behavioural beliefs⁷) (Wixom and Todd, 2005). However, the general attitude toward an object also influences beliefs about behavioural consequences (Ajzen and Fishbein, 2005).

Following the IS literature, trust in e-government is conceptualized as an attitudinal belief (Gefen et al., 2003; Wang and Benbasat, 2005) wherein the object is evaluated using trustworthiness as the criteria. When e-government is judged to have favourable attributes that make it trustworthy, the expected positive outcomes of engaging with it improve, and perceptions of the expected negative outcomes decrease (Fishbein and Ajzen, 1975).

The Technology Acceptance Model (Davis, 1989) delineates two constructs that are commonly used within the IS literature: perceived usefulness and perceived ease of

⁷ Wixom and Todd (2005) distinguish between object based beliefs/attitudes and behavior based beliefs/attitude. Objects based beliefs/attitudes focus on the attributes of the object of interest (e.g.; characteristics of the information system), whereas behavior based beliefs/attitudes (such as, ease of use) address the attributes associated with engaging in a behavior with that object (e.g.; attributes associated with using the information system).

use. Perceived ease of use is the degree to which a person believes that using e-government would be free of effort, while perceived usefulness is the degree to which a person believes that using e-government would be more advantageous than other ways of interacting with the government. When the website is perceived to be trustworthy, users save the energy required to monitor interactions with it, thereby reducing the effort required (Pavlou, 2003). In addition, using a trustworthy government website is perceived to be useful when providing advantages that users consider beneficial (e.g., saving time), thereby improving users' performance when dealing with the government (Gefen et al., 2003). Perceived usefulness and ease of use are categorized under Wixom and Todd's (2005) behaviour-based beliefs, mediating the relationship between trust (which is classified as object-based belief using Wixom and Todd's framework) and attitude toward using e-government. Therefore:

Hypothesis-11: trust in e-government positively affects perceived ease of use of e-government.

Hypothesis-12: trust in e-government positively affects perceived usefulness of e-government.

For trust and felt trust to be relevant, perceived risk must be present, as vulnerability is the basis of trust (and felt trust). In the online world, the relationship between trust and perceived risk is well established. Although there no agreement on which comes first, it is well known that both have an impact on intention to transact online. Many studies have found that trust negatively influences perceived risk, which then mediates its influence on intention (Borchers, 2001; Cho, 2006; Jarvenpaa and Tractinsky, 1999; Jarvenpaa, Tractinsky, and Vitale, 2000; Kimery and McCord, 2002; Liang et al., 2004; Pavlou and Gefen, 2004; Pavlou, 2001; Pavlou, 2003; van der Heijden, Verhagen, and

Creemers, 2003). Others have argued that perceived risk moderates the relationship between trust and intention to shop online (Bart et al., 2005; McKnight, Kacmar, and Choudhury, 2003), and some have argued that perceived risk is an antecedent of trust (Corbitt et al., 2003) but have found no supporting evidence. McKnight, Choudhury, and Kacmar (2002b) found that perceived risk and trust both predict intention, and Warkentin et al. (2002) hypothesized that trust is an antecedent of perceived risk in an online setting, and that perceived risk mediates trust's effect on intention to use e-government; this hypothesis was supported by Gefen et al. (2002).

I believe that felt trust does not have a direct impact on perceived risk but is mediated by trust in the website. In a risky setting, being trusted by e-government will not motivate the user to form a positive attitude and intention to use the website unless the user finds it to be trustworthy. For example, a website that claims to be willing to ship products before authorizing payment from the user, based on her prior purchase history, is not reducing the uncertainty associated with possible late delivery unless the e-vendor is perceived to be trustworthy in the first place.

Hypothesis-13: trust in e-government negatively affects perceived risk.

A citizen will evaluate e-government favourably if its use is expected to provide an advantage over alternatives (perceived usefulness). If a citizen expects that using e-government will be free of effort, then her attitude toward using it will be positive because the expected behaviour will not cause inconvenience, difficulty, or frustration. Furthermore, the easier the adoption of e-government, the more useful it is perceived to be (Tan et al., 2008; Wang, 2003; Warkentin et al., 2002). Hence:

Hypothesis-14: perceived usefulness positively affects positive attitude toward adoption.

Hypothesis-15: perceived ease of use positively affects positive attitude toward adoption.

Hypothesis-16: perceived ease of use positively affects perceived usefulness

Users of e-government also consider the expectations of negative outcomes (e.g., privacy and security concerns, identity theft, and fraud) as a result of engaging with e-government. When citizens believe that, because of security mechanisms, transacting with the website will not jeopardize their privacy nor will they suffer financial, sociological, performance, or time risk⁸, their attitude toward using the website is expected to be positive (Gefen et al., 2002; Hung et al., 2006).

Hypothesis-17: perceived risk negatively affects positive attitude toward adoption.

According to the Theory of Reasoned Action and the Theory of Planned Behaviour (Ajzen, 1985; Fishbein and Ajzen, 1975), attitude toward behaviour is an antecedent to behavioural intention. When a person forms a favourable attitude toward a behaviour, she is more likely to intend to engage in that behaviour, and when she forms an unfavourable attitude toward a behaviour, she will avoid engaging in it. Positive attitude was found to be a significant determinant of users' adoption intentions of online tax filing and payment systems developed by the government in Taiwan (Hung et al., 2006; Wu and Chen, 2005). Therefore:

⁸ Sociological risk is the likelihood that using e-government will affect in a negative way the perceptions other individuals have of the user; financial risk is the likelihood that using e-government will not lead to the best possible monetary gain; performance risk is the likelihood that using e-government will not be completed in a manner which will result in a user's satisfaction; and time risk is the likelihood that using e-government will cause one to waste time, cause an inconvenience or waste effort in getting a transaction redone. According to Glover (2008) each one of these risks types can be reduced using web-based tools (e.g., spam reduction and shipment tracking features).

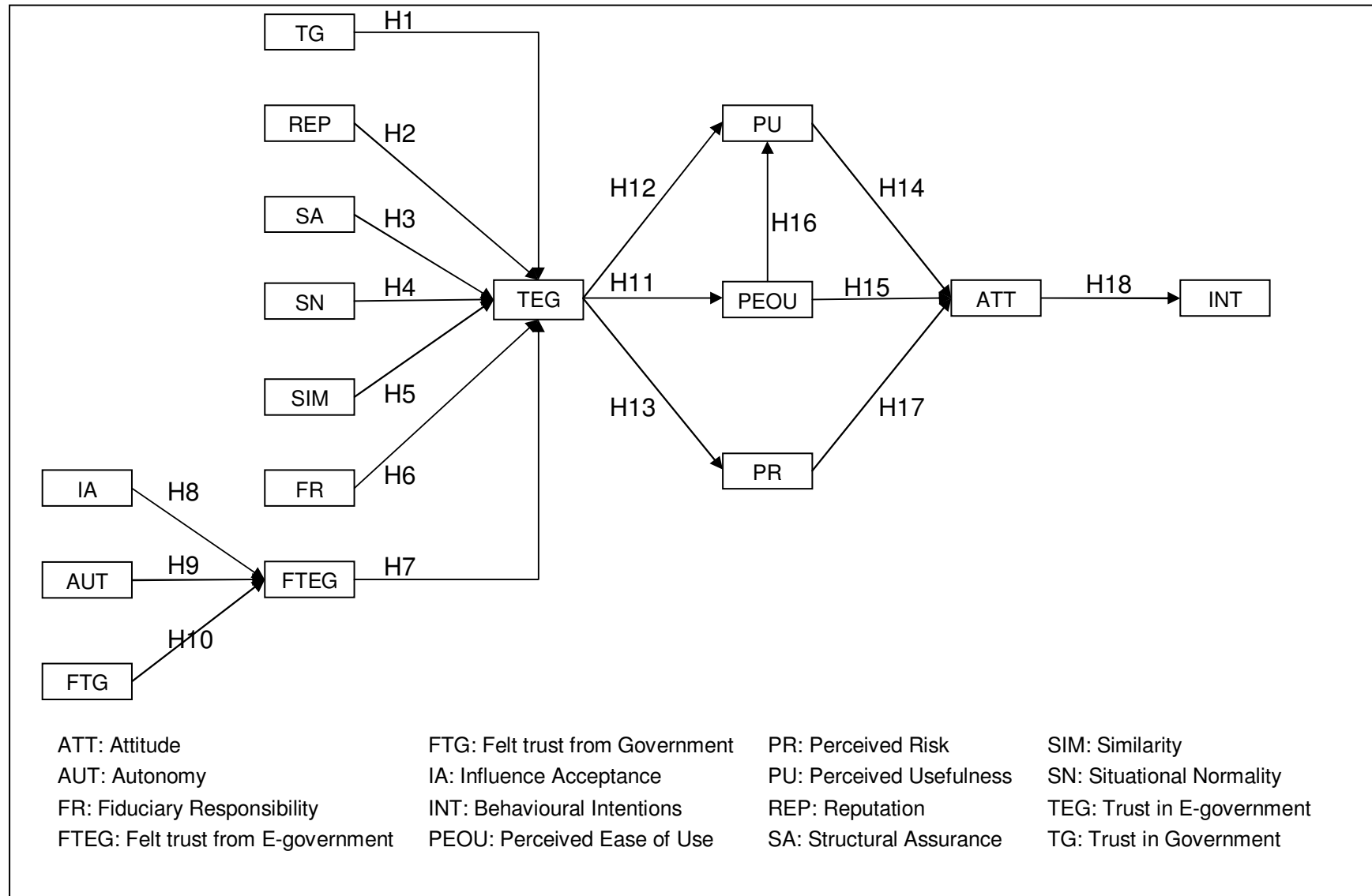
Hypothesis-18: Positive attitude toward adoption will positively affect intentions to adopt.

2.4 Summary

Trust and felt trust were defined at the beginning of this chapter, and a theoretical model delineating the relationships between these two constructs and their antecedents was constructed. Hypotheses concerning the relationships between trust and its antecedents were established after reviewing trust formation processes commonly used in the trust literature. After examining results from studies in other disciplines, I posited felt trust to have a direct impact on trust, but its antecedents were revealed by responses obtained from online surveys. Correspondence Inference Theory (Jones and Davis, 1965) delivered the theoretical justification for the relationship between felt trust and its antecedents. Finally, for the first time in IS literature, felt trust and its antecedents were introduced within the nomological network of technology adoption models. The theoretical model is shown in figure 4.

The introduction of “felt trust” and its antecedents to the e-government context merits the use of exploratory research using a qualitative approach to verify their saliency amongst users of e-government. Using qualitative methods at this early stage is justified by the fact that the study’s research questions have not been examined before in the online context in general or for e-government in specific. These issues will be addressed in the next chapter.

Figure 4: Theoretical model



3 FELT TRUST SALIENCY: DESIGN ELEMENTS AND WEB FUNCTIONALITIES

The goal of this chapter is to explore evidence of felt trust in e-government in preparation for investigating the theoretical model advanced in chapter 2. I conducted two studies to examine the saliency of felt trust as it relates to e-government and to identify the web design elements and functionalities that generate felt trust and trust and how they can be mapped over the antecedents outlined earlier.

3.1 Felt Trust Saliency In E-government: A Focus Group Study

Qualitative research methods are suitable for research topics that have not been addressed before (Creswell, 2003). Given the lack of research on felt trust in the context of e-government, investigating its saliency in that domain warrants employing a qualitative research method. The method is particularly suited for studying issues in the use and adoption of technology (Myers, 1997).

After examining a number of different qualitative methods, the focus group data collection strategy was selected because, while some individuals may be reticent to reveal their true perceptions and thoughts on sensitive topics like government operations when asked individually, they may be more inclined to share their thoughts openly when other group members share these ideas. As is typical with the focus group method, feedback is collected in a friendly environment where participants are given the choice to answer or not answer questions posed by the moderator.

Another advantage of this data collection method is that interaction amongst participants can give rise to new issues that have not been previously identified. Online focus groups generate more ideas than their offline counterparts (in the face-to-face

environment), and their contributions are more concise (Reid and Reid, 2005). Schneider et al. (2002) found that distraction is not an issue for online focus groups since participants spend little or no time on small talk.

The objectives of the focus group was to find out whether people feel trusted when using an e-government website and how it would affect their trust beliefs and subsequent adoption of government portals. In addition, focus group members were encouraged to identify different e-government website design features that influence their perceptions of felt trust. These design features could highlight the antecedents of felt trust to see if they are different from trust antecedents. The process is similar to Ajzen's (2006) salient beliefs elicitation process except that the goal of elicitation which was more specific (i.e., design features).

3.1.1 Study Sample

Purposive sampling was used to solicit participation from subjects who met the following criteria:

- 1) They are familiar with e-government and e-commerce websites.
- 2) They are between 25 and 55 years of age (average of 41 years), whose annual income ranges between \$27,000 and \$77,000 (average of \$57,000)⁹.
- 3) Currently reside in Canada.

Seventeen participants were recruited through a marketing research firm. The sample size was chosen after consulting with the moderator (from the marketing research firm) experienced in moderating effective online focus groups discussions. The recommended sample size ranges between 8 and 12 participants as themes coded

⁹ Demographical information was set to represents those of e-government users described by industrial and governmental surveys (i.e. Forrester research group, and Stats Canada).

usually become repetitive as early as sixth response (Dahl and Moreau, 2007; Guest, Bunce, and Johnson, 2006). Nevertheless, additional participants were intentionally invited to compensate for potential subjects' attrition.

Any respondents who did not meet the criteria specified were excluded. Email messages were sent to the recruited participants explaining what they must do before providing their feedback. Each participant was asked to:

- 1) Check the Government of Canada website (<http://www.gc.ca>).
- 2) Check the Service Canada section of the Government Canada website (<http://www.servicecanada.gc.ca/en/home.shtml>)
- 3) Access the online income tax filing website (<http://www.netfile.gc.ca/>)
- 4) Access the Government of Singapore website (<http://www.gov.sg>)
- 5) Access the Government of Dubai website (<http://www.dubai.ae>)

These websites were chosen because of their differences in design quality, as ranked by industrial and international organizations (Haveez, 2004; Rohleder and Jupp, 2004). More specifically, the Canadian portal is ranked amongst the best government portals in terms of functionality, and Canadian participants can relate to a Canadian government portal more than other countries' portals. Like the Canadian portal, the Singapore government website is also highly functional but, of course, it does not deal with Canadian public services. The Dubai government portal is typically ranked lower in terms of functionality and the diversity of its offerings¹⁰.

¹⁰ According to Haveez (2004), Canada's e-government was ranked 7th, Singapore's e-government was ranked 8th, and UAE's e-government was ranked 60th in terms of United Nation E-government Readiness Index (0.8369, 0.8340, and 0.4736 respectively).

3.1.2 Procedure

An asynchronous Focus Group (bulletin board) was set up. It required having a nickname, and password sent by the moderator to access the chat room. Once accessed, participants had to click on the questions and provide their answers without being able to view other participants' responses. After submitting their initial responses, participants were able to view others' responses and interact with the rest of the group. The moderator posted the questions from the discussion guide developed prior to launching the bulletin board. Any questions, suggestions, or comments I had were only accessible by the moderator, thus, minimizing "researcher's effects".

The moderator led the discussion, encouraged interaction amongst participants, and probed the participants to clarify their responses when necessary. Questions were open-ended and the bulletin board was available to participants for three days. Questions and snapshots of websites were progressively revealed to participants, but participants could always access questions that they had already answered; in fact, they were encouraged to review and complete any questions that they may have missed. The discussion guide and participants' tasks are detailed and attached in Appendix B. Each participant received Canadian \$20 for each day of participation, and it was estimated that each participant spent 45-60 minutes daily accessing the bulletin board.

3.1.3 Results

Participants indicated that a trustworthy website helped them overcome their privacy and security concerns when they were deciding to use an e-government website. Amongst the 12 participants who answered the questions about the impact that felt trust

and trust would have on their adoption of online government, half said that they needed both to feel trusted and to perceive the website to be trustworthy, compared to a third who said that they would only transact with the website if they perceived it to be trustworthy (table 5). Two participants said they would never use a government website because of other factors not directly related to trust or felt trust.

Table 5: Questions asked about the role of reciprocity (n=12)

Question: Below is a list of statements. Please select which statement best describes how you feel about doing transactions on e-government websites and why?		
Category	Count	%
For me to transact with the government website, it must demonstrate first that it is trustworthy.	4	33.3
For me to transact with the government website, it must demonstrate first that it trusts me.	0	0
For me to transact with the government website, it must be trustworthy and demonstrate that it trusts me.	6	50
For me to transact with the government website, I don't need to be trusted or trust the website.	0	0
I will never transact with the government website for other reasons.	2	17.7

For those who said they were reluctant to use e-government, the major concern was the perceived risk of providing their information online because of perceptions that the medium is prone to be hacked by others. One participant also continued dealing with offline government to keep people from being replaced by technology:

"I prefer to deal with people. It allows me to explain my situation and it also gives me the impression that I'm contributing to save some jobs."

The logic of those willing to transact with the government only after it demonstrated its trustworthiness was based on their perception of the government's inability to recognize who the users are and their concerns about how government protects their data. Those who needed both trust and felt trust claimed that felt trust, particularly the belief that the government trusts citizens' *ability* to use online government, was important for them to complete the transaction online. As one participant answered:

"Plain and simple, I don't trust it, I don't use it. And it works the other way. Why would I submit something if I did not believe that the other party trusts me? I would consider it

a waste of time. I don't care if it takes longer; I need to know that once I have performed a transaction that I have done everything that is needed."

Participants were asked to identify the specific design elements on the sample websites (i.e., Canada, Singapore, and Dubai) that communicated "trustworthiness" and whether each website made them feel trusted or if it was cautious in dealing with them. Depending on their feedback in terms of whether they felt e-government trusts them or was cautious, they were asked about what design features gave them those perceptions. Two participants liked pictures:

"Showing family, male, female, young, old, multi culture... [is] a smart idea. As the header states, 'Service Canada ... People serving People.' It also isn't cluttered or fussy."

"I think that a picture of Royal Canadian Mounted Police (RCMP) would be better. The people are fine, but I rarely see people smiling about their dealings with the government. The RCMP would project a more 'protective' image, which I think is appropriate."

Two other participants liked the logo and security measures:

"On this site, the Canada logo on the top right communicates this feature. What is missing is a line or logo stating that this site is secure."

"I think the site communicates trustworthiness well. I read the Security section under Netfile and would feel confident that the information I would provide remains secure."

Similarly, when they were asked about the different features on the government websites that instil perception of being trusted (i.e., felt trust), a participant said that allowing the execution of applications online was a sign of government trust in citizens:

"The fact that all these services are available indicates trust to me."

Having the opportunity to voice opinions was also indicative of how much the online government values its citizen:

"The site in general, no matter what page you are on all seems to have an area where people can respond, give their input and check out other peoples' testimonials. I like that, it gives you a feeling that the government actually wants your input and thoughts so they can improve any areas that need it."

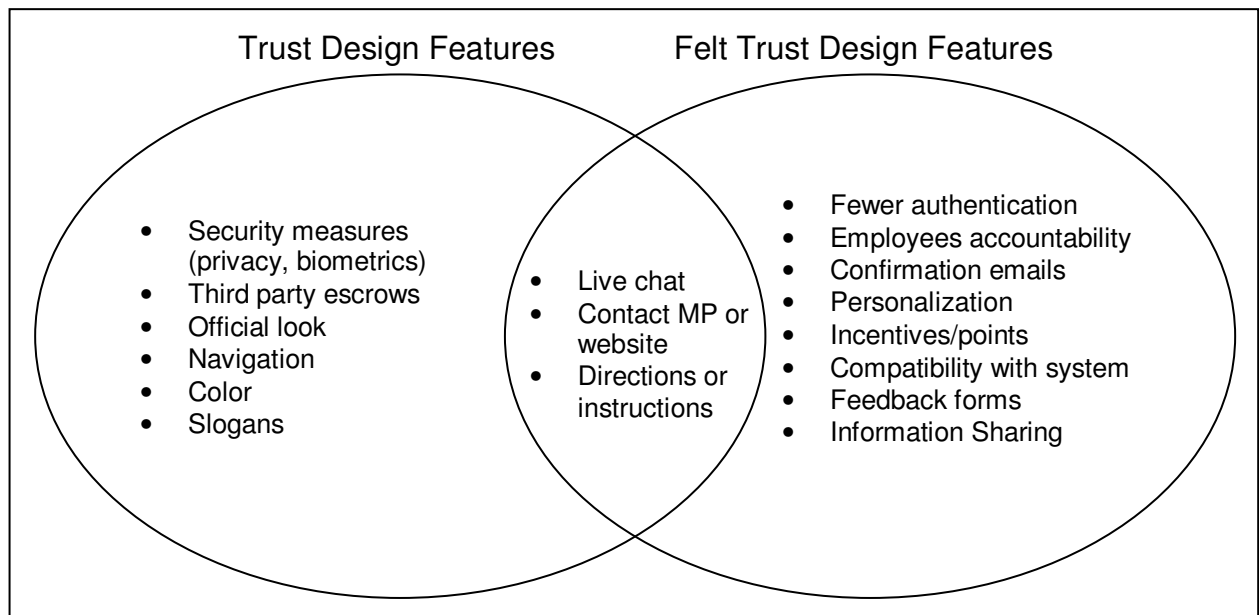
Another theme that was mentioned by participants was sharing of information:

“I felt the Singapore site was very upfront whereas the Canadian site was like playing poker with someone, not revealing its hand too early.”

“In terms of cautiousness, Dubai’s site seems more cautious to me. The sober look combined with the fact that there is less content display on primary pages. The fact that people have to look harder to find what they want or need, says more cautious to me.”

Figure 5 highlights the different web design features perceived to induce trust, felt trust, or both. In other words, trust and felt trust can coexist and could be operationalized using different design elements.

Figure 5: List of design features



3.2 Design Features That Enhance Trust From Information Systems Literature

Based on a recent literature review of 45 articles concerning online shopping, Chang, Cheung and Lai (2005) proposed that trust significantly reduces risk perceptions of the electronic medium and vendor and positively influences attitude toward online shopping. In addition to the articles mentioned in Cheung et al.’s literature review, I examined another set of references to identify a more comprehensive list of IT-enabled

applications that may influence and enhance trust in e-government (framework adopted from Benbasat, 2006).

Not all of the design features listed in table 6 have been tested in the context of e-government, but participants in the focus group identified some of them (e.g., security measures, third-party escrows, colour, and navigation) as building trust and helping them overcome their concerns about technology adoption in transacting with the government.

Table 6: Website design features that influence trust

Application	IT Artifact	References
Advice and Explanations	Recommendation Agents	(Bart et al., 2005; Komiak and Benbasat, 2006; Komiak and Benbasat, 2008; Sinha and Swearingen, 2002; Wang and Benbasat, 2005; Wang and Benbasat, 2008)
	Automated Customer Service Reps	(Komiak and Benbasat, 2006; Komiak et al., 2005; Komiak et al., 2004; Qiu and Benbasat, 2004; Urban, Sultan, and Qualls, 2000)
	Human web assistance	(Aberg and Shahmehri, 2001; Basso et al., 2001)
User-To-User	Collaborative Systems	(Flanagin et al., 2002)
	Feedback mechanism (ratings/testimonials)	(Ba and Pavlou, 2002; Bolton, Katok, and Ockenfels, 2004; Grazioli and Jarvenpaa, 2000; Pavlou and Gefen, 2004; Pennington, Wilcox, and Grover, 2003; Wakefield, Stocks, and Wilder, 2004; Yang, Hu, and Chen, 2005)
	Community building features	(Bart et al., 2005; Yang et al., 2005)
Content	Audio/video	(Basso et al., 2001; Yang et al., 2005)
	Pictures	(Riegelsberger, Sasse, and McCarthy, 2002; Riegelsberger, Sasse, and McCarthy, 2003; Stewart, 2003; Yang et al., 2005)
	Security measures	(Akhter et al., 2004; Balasubramanian et al., 2003; Bart et al., 2005; Borchers, 2001; Bélanger, Hiller, and Smith, 2002; Chellappa and Pavlou, 2002; Corbitt et al., 2003; Gefen et al., 2003; Kim and Prabhakar, 2004; Kim and Ahn, 2005; Kim and Prabhakar, 2000; Koufaris and Hampton-Sosa, 2004; Liu et al., 2004; Liu et al., 2004; Malhotra, Kim, and Agarwal, 2004; Pavlou and Gefen, 2004; Yoon, 2002)
	Policies/Privacy	(Balasubramanian et al., 2003; Bart et al., 2005; Bélanger et al., 2002; Chellappa and Pavlou, 2002; Corbitt et al., 2003; Gefen et al., 2003; Kim and Prabhakar, 2004; Kim and Ahn, 2005; Kim and Prabhakar, 2000; Liu et al., 2004; Malhotra et al., 2004; Pavlou and Gefen, 2004)
	Aesthetics	(Akhter et al., 2004; Bart et al., 2005; Bélanger et al., 2002; Roy, Dewit, and Aubert, 2001; Wakefield et al., 2004)
	Trust assuring arguments/explanations	(Kim and Benbasat, 2003; Kim and Benbasat, 2006; Kim, 2003; Pennington et al., 2003)
Interactivity	Navigation	(Bart et al., 2005; Flavian, Guinaliu, and Gurrea, 2006; Gefen et al., 2003; Kim and Ahn, 2005; Roy et al., 2001; Stewart, 1999; Stewart, 2003; Yang et al., 2005)
	Personalization or customization	(Koufaris and Hampton-Sosa, 2004; Sillence et al., 2005)
Third Party Assurances	Assurance seals	(Borchers, 2001; Bélanger et al., 2002; Kim and Ahn, 2005; Kimery and McCord, 2002; McKnight, Kacmar, and Choudhury, 2004; Pennington et al., 2003; Rifon, LaRose, and Choi, 2005; Wakefield et al., 2004; Yang et al., 2005)
	Escrows	(Pavlou and Gefen, 2004)

However, table 6 also lists IT artifacts that were identified by the focus group members to be used in inducing felt trust (e.g., personalization/customization) and others used in building both trust and felt trust (e.g., human web assistants). These additional identifications could be attributed to the fact that felt trust has not been investigated within the IS literature, so felt trust design features were grouped together with those used in building trust. Alternatively, the additional identifications could indicate that the relationship between felt trust and trust is causal in nature (i.e., deploying felt trust features increased trust) or that these constructs are basically similar to one another and the feedback obtained from participants in the focus group study was just a coincidence. The next section describes a study conducted in an attempt to corroborate the findings from the focus group study.

3.3 Felt Trust And Web Functionalities: A Classification Study

Service-oriented e-government websites have many functionalities (e.g., search for information, and service customization), but this research classifies the thirty-one most commonly deployed e-government web functionalities (Tan and Benbasat, 2009) according to their impact on trust and felt trust . The goal of this study is to examine the saliency of felt trust at the level of web functionalities, as opposed to the “design level”, in order to clarify findings from the focus group.

3.3.1 Study Sample

A marketing research company was employed to invite randomly selected yet representative sample of the online community. Subjects received electronic points for completing the survey, which are redeemable for merchandise from the marketing

company website. The sample recruited for this study (n=40) are 68% males, 40 years old on average, with college degree and employed full-time¹¹.

3.3.2 Procedure

A survey was administered online and was designed to take only 15 minutes to complete. The marketing company randomly selected potential subjects via email inviting them to participate in this study. Once subjects received the invitation email message, they clicked on the link provided to access the study. Subjects who decided to participate in the study were asked to sign the consent form electronically. If they refused to participate, they could close the window or click on “do not agree” button¹².

Subjects were first provided with definitions of trust and felt trust. Then, descriptions of thirty one e-government website functionalities adopted from Tan and Benbasat (2009) were placed on the pages of the survey in a randomized fashion, and subjects were asked to classify these functionalities into the categories of trust or felt trust. A web functionality could also be classified under “neither” categories if a subject felt it had no impact on her level of trust in e-government or felt trust from e-government. After answering all the questions, subjects were debriefed about the objectives of the study and awarded the incentive offered (i.e. electronic points). Survey items are shown in Appendix C.

¹¹ Participants' demographics are relatively similar to those obtained by surveys carried out by research companies (e.g., Forrester Research, Inc. and Stats Canada) with regard to users of Canada's e-government websites (average age between 39 and 42, 74% employed full time, and 35% graduated from college).

¹² Only 1 subject abandoned the survey/refused to participate and another subject partially completed the survey.

3.3.3 Results

Responses collected were downloaded and converted to a format compatible with PASW 18¹³, which was used for the analysis. Then, responses were aggregated and summarized and depicted using a box plot (figure 6). A web functionality that was placed under the trust category received a score of (1), while a web functionality that was placed under the felt trust category received a score of (-1). Zero was coded for those that did not fit either of these two categories and placed under “neither category”.

¹³ Formerly known as SPSS.

Figure 6: Web functionalities impact on trust and felt trust

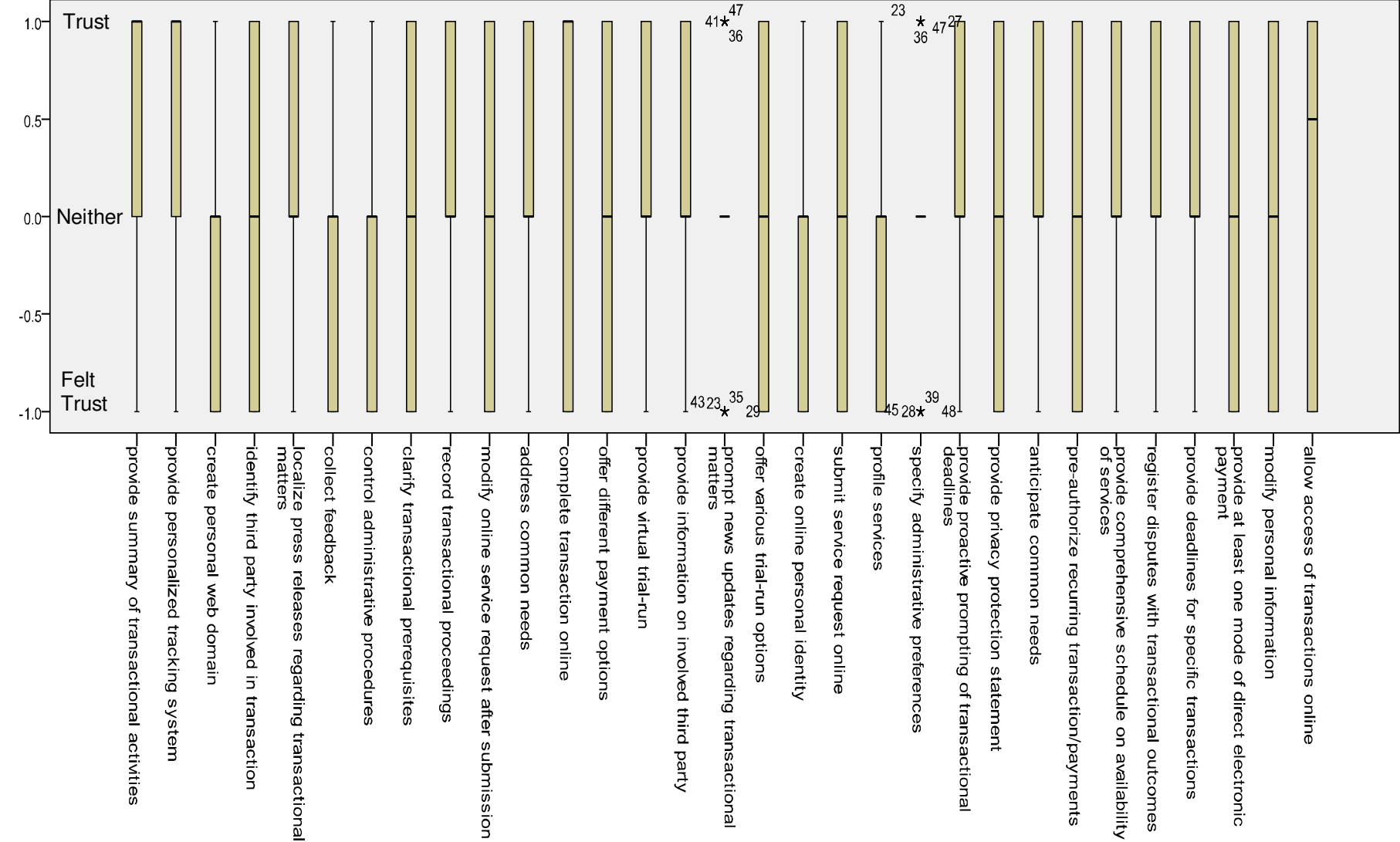
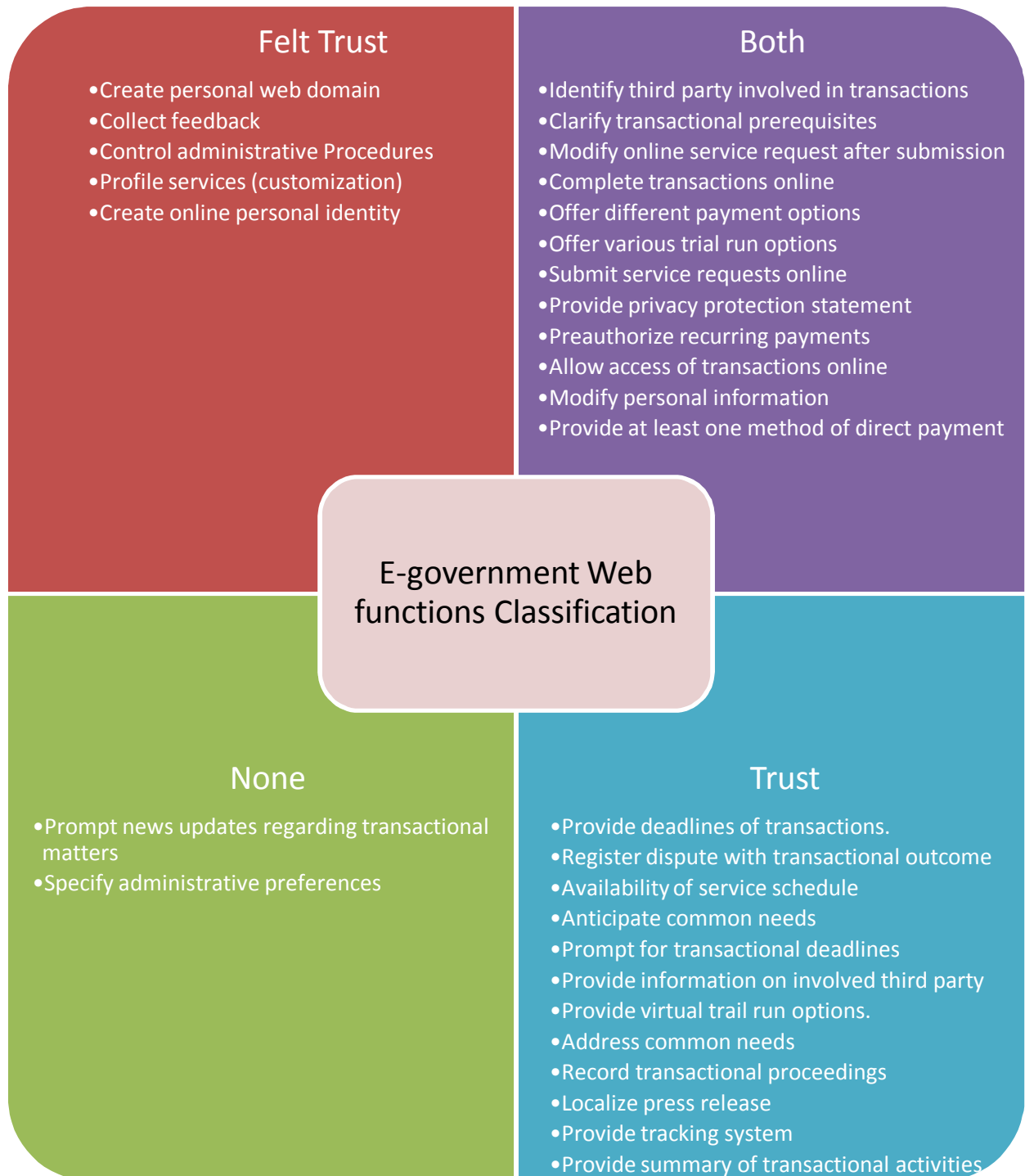


Figure 6 shows that some web functionalities were seen exclusively to influence trust, and others felt trust. Few web functionalities had no impact on either trust or felt trust. The 2x2 matrix in figure 7 lists the functionalities under trust and felt trust.

Figure 7: Web functionalities classification based on empirical study with 38 subjects



3.4 Discussion

The results of the focus group study demonstrate that some design features (e.g., feedback forms and fewer authentication documents) exclusively instil felt trust. Subjects considered the availability of feedback forms as an indication of e-government's willingness to listen and respond to users' demands. Moreover, requesting fewer authentication documents accentuated e-government's effort to reduce the restraints that impact users' freedom to act as they desire. These design features materialized the two antecedents of felt trust (i.e., influence acceptance and autonomy) proposed in chapter 2, which could explain participants' labelling of these artifacts as felt trust design features.

Furthermore, participants in the focus group study were able to identify some design features that exclusively build trust in e-government. For example, security measures reflected e-government's competence in implementing mechanisms used to promote a safe environment, thereby engendering users' confidence when they transact with the e-government. An official look accomplished by using national flags or logos influenced users' belief that e-government is obligated to act in a trustworthy manner, as mandated by its responsibilities as an online public service provider. Overall, these design features manifested the antecedents of fiduciary responsibility and structural assurance that were hypothesized earlier to build trust in e-government (figure 4).

However, the e-government websites' design elements that were labelled as building both trust and felt trust may drive the antecedents of both trust and felt trust simultaneously. For example, a "live chat" design feature caused users to believe that

e-government is willing to listen to users' concerns and comments (influence acceptance) in addition to signalling its obligation to answer users' inquiries about e-government transactions (fiduciary responsibility). The availability of directions or instructions gave the impression that e-government is there to help users (fiduciary responsibility) while also allowing users to complete online transactions on their own and without monitoring (autonomy).

After the focus group identified some design antecedents of trust and felt trust, another study was conducted to elucidate and clarify the ideas generated by the focus group. Felt trust saliency was investigated from an abstract level by examining 31 web functionalities commonly deployed in e-government. In this study, web functionalities were classified under trust, felt trust, both or none and the theoretical framework developed in chapter 2 (figure 4) was used to rationalize the results. For example, allowing users to create a personal web domain and customize the site's services generated perceptions of autonomy that led users to perceive felt trust.

Similarly, providing information about third parties involved (e.g., tax preparation software vendors) is part of e-government's obligation in disclosing the information users need before making decisions about filing their taxes online. Perceptions of fiduciary responsibility justifies why participants in the classification study placed this functionality under trust category.

Finally, some web functionalities gave the impression that e-government is trustworthy and trusts its users because it stimulated the antecedents of both trust and felt trust.

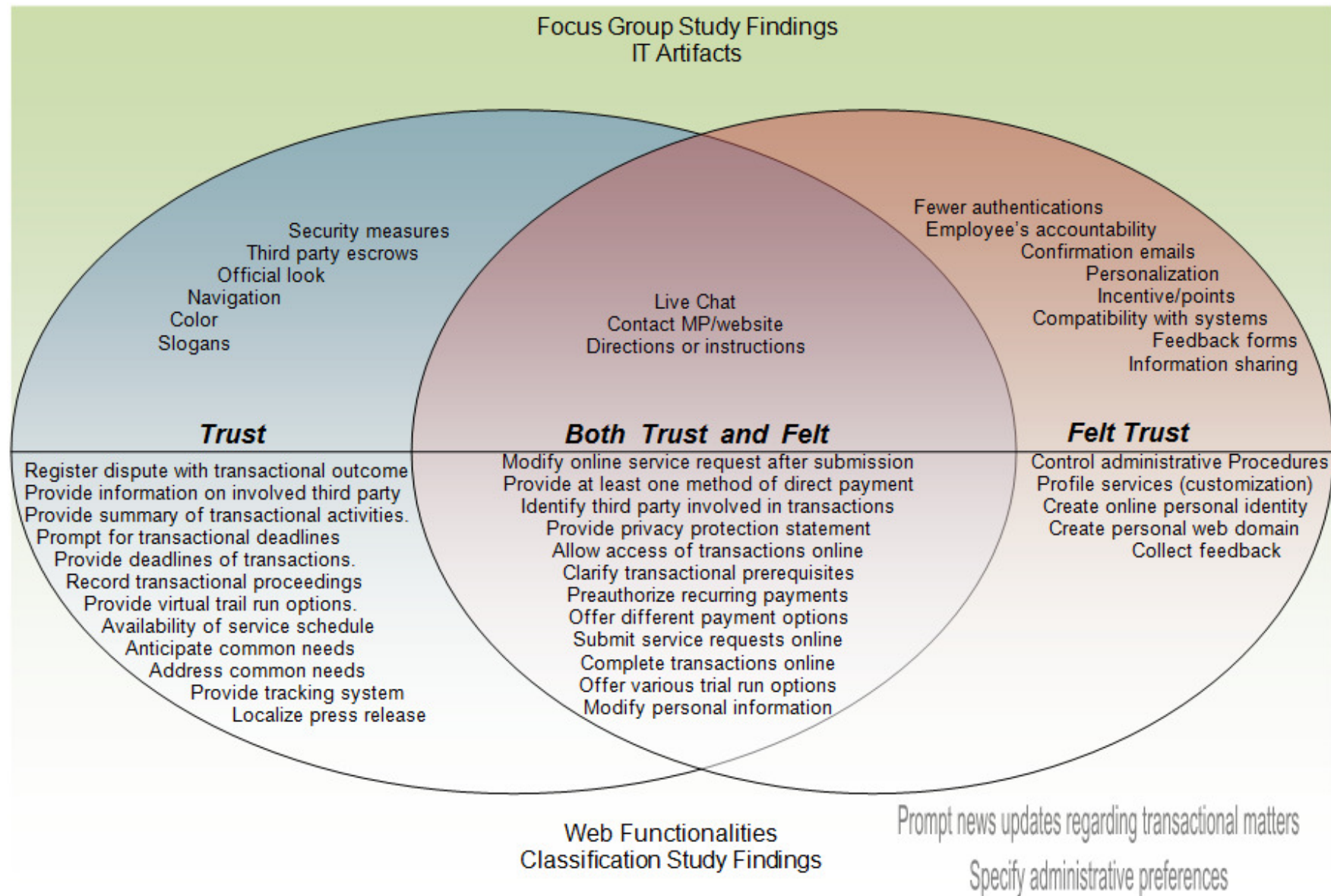
For example, allowing users to modify services after information submission indicates that remedies are in place for users to use in case of unintentional error (i.e. structural assurance). In addition, it makes users believe that e-government is designed in a way to promote autonomy (e.g., the freedom to make amendments without penalties).

Table 7 and figure 8 highlight the differences and similarities between the focus group and classification studies. These studies, however, complement each another in two ways. First, the classification study expands the categories of results from the focus group study. The type of questions asked in the focus group study revealed IT artifacts that were used to operationalize trust, felt trust, or both. Subjects did not explicitly mention IT artifacts that are not related to either trust or felt trust. On the other hand, using a closed-ended question format for the classification study demonstrated that some web functionalities were related to trust (e.g., provide tracking system), felt trust (e.g., collect feedback), both trust and felt trust (e.g., modify personal information), or none (e.g., specify administrative references). Second, the classification study yielded a matrix of web functionalities while the focus group study developed a preliminary typology of IT artifacts that can be used in operationalising these functionalities. In other words, these studies examined felt trust saliency at different levels of IT specificity.

Table 7: Focus group study Vs. classification study

Aspect	Focus Group Study	Classification Study
Objectives	<ul style="list-style-type: none"> Find out whether people feel trusted when using an e-government website. Identify the IT artifacts that support the above objective. Define the problem and develop hypotheses to be tested in addition to generating of items to be used in a questionnaire. 	<ul style="list-style-type: none"> Confirm findings from focus group study. Examine felt trust saliency amongst users of e-government at a more abstract level (i.e. different level of IT specificity focusing on web functionalities as opposed to design elements). Develop a matrix classifying the different web functionalities.
Sample	Purposive sampling	Random sampling
Measures	Open ended questions (Appendix B)	Closed ended questions (Appendix C)
Procedure	A professional moderated the discussion over an online bulletin board.	Participants answered an online questionnaire.
Findings	Some IT artifacts deployed over the three websites examined instil trust exclusively, instil felt trust exclusively, or both.	Some of the commonly deployed web functionalities reviewed instil trust exclusively, felt trust exclusively, both, or none.

Figure 8: Focus Group Findings Vs. Classification Study Results



3.5 Conclusion

The goal of this chapter was to examine the saliency of felt trust in e-government websites. Several website design features and functionalities operationalising this construct were identified through two separate studies. The results of these two studies have both theoretical and practical importance. Public managers should be aware that trust and felt trust are constructs that can co-exist in e-government settings. The preliminary results of these two studies were summarized in a preliminary typology of design features and a 2x2 matrix of 31 web functionalities (figures 5 and 7) that can be used to influence trust, felt trust, or both.

The findings from these two studies highlight the importance of felt trust from e-government, but the small sample size of the empirical study and the qualitative nature of the focus group do not warrant conclusive findings about the role of felt trust from e-government. While this construct was salient for the participants in these studies, it could be insignificant when compared to other factors already established within the nomological network of e-government adoption models. However, given the research type (exploratory) and the objectives, these two studies provide a foundation for further investigation through confirmatory research (experiments and surveys), which will be the objectives of subsequent chapters in this thesis.

4 FELT TRUST FROM E-GOVERNMENT: THEORY TESTING

Chapter 3 showed that users experience felt trust when they transact with the government online. Felt trust was shown to be caused by design elements and functionalities that are different than those that produce trust in e-government. The objective of the current chapter is to investigate felt trust and its antecedents' roles within the nomological network of the e-government adoption model that was developed in chapter 2. This chapter will highlight the research methodology employed, outline the steps followed in generating the instrument used in collecting data from participants, and describe the participants recruited for this study. Analysis conducted and the results obtained are discussed at the end of this chapter.

4.1 Research Methodology

According to Carnevale and Wechsler (1992), three ways can be used to assess trust reciprocation:

- The inferential approach when researchers infer trust reciprocation by observing the trustor's and trustee's behaviours,
- The experimental approach using game theory and measuring output of interactions between trustor and trustee, or
- The direct approach where trust reciprocity is measured through self administered questionnaires.

The direct approach (questionnaires) is the most suitable data collection option since users (citizens) of e-government perceptions are the focus of this research. The constructs of interest are users' beliefs and attitudes, which are best elicited by this data collection technique (Creswell, 2003; McMillan and Schumacher, 2001; Stone, 1978). Survey methods are most appropriate when the researcher is trying to describe a

current phenomenon in its natural setting without any manipulations of dependent or independent variables (Pinsonneault and Kraemer, 1993) by objectively assessing the relationship between those variables and testing hypotheses extracted from a theoretical framework (Newsted, Huff, and Munro, 1998).

4.2 Measurement

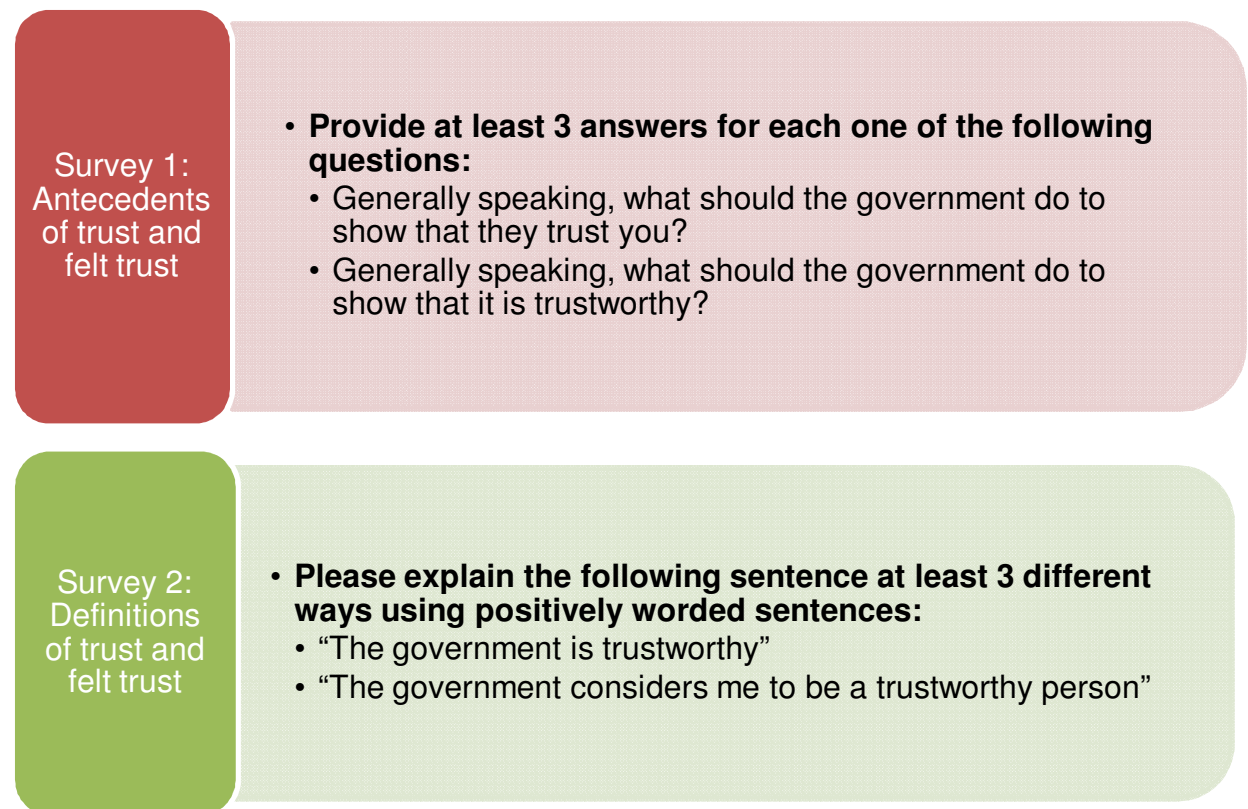
Survey items were adopted from the literature when available. Other items were generated following Moore and Benbasat's (1991) instrument-development process of item creation, scale development and instrument testing.

4.2.1 Item Generation

Three sources were used to generate survey items. First, trust measure inventories, such as the Wrightsman (1991) chapter examined by McKnight et al. (2002a), were reviewed. Relevant items were then augmented with feedback collected from focus group participants, as recommended by Churchill (1979). Finally, Hinkin's (1998) inductive approach was applied to generate other items that could have been overlooked during the first and second approaches.

Straub (1989) called for obtaining feedback from participants from diverse backgrounds, so 282 participants from diverse backgrounds were recruited. Half of the participants were allocated between two surveys asking them about the antecedents of trust and felt trust, while the other half was provided with definitions of the trust and felt trust constructs and asked to reword these definitions three different ways (figure 9).

Figure 9: Questions used in generating additional items for trust and felt trust



After removing duplicate statements, 202 new items were reviewed by two faculty members and two graduate students to judge the items' face validity¹⁴. Items that were deemed too long or complicated were reworded. Trochim (2001) recommended using judges to rate items' applicability in the domain of interest before they are used in the final study, so twelve MIS graduate students judged the items' applicability in the e-government context. Items that were not relevant were dropped (e.g., “e-government walks its talk”, “e-government is not working for its own pockets”, “e-government considers me a friend, not a stranger”), leaving 76 items in the final pool of measures for trust, felt trust and their antecedents (table 8).

¹⁴ According to Trochim (2001), face validity refers to whether the operationalization of the construct “on its face seems like a good translation of the construct” (p. 67).

Table 8: Items used to measure trust, felt trust, and their antecedents

Construct	Items	Source
Autonomy	<ul style="list-style-type: none"> • Canada's e-government does not interfere with how I use the site. • Canada's e-government gives me the freedom to do what ever I want over the site. • Canada's e-government lets me learn on my own. • When browsing through the website, Canada's e-government permits me to visit any page I want. • Canada's e-government lets me work on things on my own. 	Developed
Felt trust from e-government	<p>Canada's e-government considers me...</p> <ul style="list-style-type: none"> • Someone who sincerely wants to help it. • Someone who genuinely cares about it. • Someone who is concerned about its wellbeing. • Fair in my dealings. • Someone of integrity. • Someone who is always honest. • Capable of using the different design features on its website. • Someone who knows how to select the right online service. • Someone who is good at getting optimal results from it online services. • Trusts me. • Trustworthy. • A user it can trust. 	Some items were developed while others were adapted from McKnight et al. (2002a)
Felt trust from government	<p>Generally speaking, the Canadian government considers me...</p> <ul style="list-style-type: none"> • Fair in my dealings. • Someone of integrity. • Someone who is always honest. • Competent in obeying its laws. • Someone who knows how to select the right services. • Someone good at getting optimal results form its services. • Someone who sincerely wants to help it. • Someone who is concerned about its wellbeing. • Someone who genuinely cares about it. • Someone who can be trusted. • Trustworthy. • Someone it trusts 	Some items were developed while others were adapted from McKnight et al. (2002a)

Construct	Items	Source
Fiduciary responsibility	<ul style="list-style-type: none"> • Canada's e-government is obligated to act in trustworthy manner over the electronic medium. • Canada's e-government should be helpful at all time. • Canada's e-government is mandated by law to be moral when serving the public over the Internet. • It is Canada's e-government job to be competent in providing services online. 	Developed
Influence acceptance	<ul style="list-style-type: none"> • Canada's e-government takes my opinion into consideration before making any decision. • Canada's e-government acts on my suggestions or comments. • Canada's e-government follows my recommendations. • Canada's e-government takes my feedback seriously. 	Developed
Reputation	<ul style="list-style-type: none"> • Canada's e-government websites are well known. • Canada's e-government websites have good reputation. • Canada's e-government websites are popular. • I have heard a lot of good things about Canada's e-government websites. 	Developed
Similarity	<ul style="list-style-type: none"> • Canada's e-government and I are similar. • Canada's e-government and I adhere to the same principles. • Canada's e-government and I act the same way. • Canada's e-government and I have something in common. 	Developed
Situational normality	<ul style="list-style-type: none"> • The steps required to search for and order services over Canada's e-government websites are typical of other websites. • The information requested of me at Canada's e-government website is the type of information most websites request. • The nature of the interaction with Canada's e-government website is typical of other websites. 	Adapted from McKnight et al. (2002a)
Structural assurance	<ul style="list-style-type: none"> • I feel assured that technological structures protect me from problems on the Internet. • I feel confident that technological advances on the Internet make it safe to use. • The Internet is now a robust and safe environment to use. • The Internet has enough safeguards to make me feel comfortable about using it. 	Adopted from McKnight et al. (2002a)

Construct	Items	Source
Trust in e-government	Canada's e-government ... <ul style="list-style-type: none"> • Is fair in its online dealings. • Keeps it promises. • Does not try to take advantage of anyone. • Sincerely wants to help me. • Genuinely cares about me. • Is concerned about my wellbeing. • Is capable of delivering services online. • Knows how to efficiently deliver its online services. • Has the expertise required to do its job. • Is something I trust. • Can be trusted. • Is trustworthy. 	Some items were developed while others were adapted from McKnight et al. (2002a)
Trust in government	Generally speaking, the Canadian Government... <ul style="list-style-type: none"> • Is fair in its dealings. • Keeps it promises. • Does not try to take advantage of anyone. • Is capable of doing its job. • Knows to how efficiently deliver its services. • Is efficient with resources used in providing its services. • Sincerely wants to help me. • Is a government I trust. • Can be trusted. • Is trustworthy. 	Some items were developed while others were adapted from McKnight et al. (2002a)

4.2.2 Scale Development: Card Sort Studies

The purpose of card sort studies is to check the scales' convergent and discriminant validity prior to any survey data collection by inviting participants to place different cards with different items into similar construct categories (Moore and Benbasat, 1991). The items pool went through multiple rounds of card sorting exercises using both open and closed sorts as suggested by Moore and Benbasat (1991). In open-sort studies, participants arrange items into different groups according to similarity and then label those groups. In close-sort studies, participants are given a definition of each construct and asked to categorize the items under these different constructs with the ability to place it under "Ambiguous" if the item was deemed vague.

Open-sort using labelled cards was first conducted with only trust and felt trust items. Judges, 10 undergraduate students at a university in western Canada, were asked to write down what each item meant in order to examine their comprehension of the items and to investigate qualitatively the conceptual differences between “government” and “e-government”. Then, closed card sort study with another 10 students was carried out, from which a satisfactory “hit ratio” was obtained (e.g., > 80%) for the four theoretical categories used in this card sort (felt trust by government, felt trust by e-government, trust in government and trust in e-government). Hit ratio refers to “overall frequency with which all judges placed items within the intended theoretical construct” (Moore and Benbasat, 1991, p.201).

An online web sort¹⁵ exercise was conducted with another 10 students recruited from the same university. The hit ratio was satisfactory and similar to what was achieved in the paper-based approach. To ensure that the results were not confounded by education level, a panel of participants from a marketing company’s pool of subjects was invited to participate in online card-sorting studies. The 76 items were split between two studies (n=17, and n=19), one for the 48 trust and felt trust items and the other for the 28 items related to the antecedents of these constructs since previous judges indicated that more than 50 items was cognitively demanding and could discourage participation. Table 9 shows how participants distinguished between government and e-government items (hit ratios were 94% and 88%, respectively). Participants were also able to separate “trust” items from “felt trust” items for both government and e-government with hit ratios ranging between 71% and 80%.

¹⁵ Optimalsort.com was used for this purpose.

Table 9: Card sort results (N=17)

ITEMS FOR TRUST AND FELT TRUST OF GOVERNMENT AND E-GOVERNMENT		Gov		Egov		N/A
#	Item wording	Trust	Felt trust	Trust	Felt Trust	
FTEG1	E-Government considers me someone of integrity.		1	2	13	1
FTEG2	E-Government considers me fair in my dealings.		2	1	14	
FTEG3	E-Government considers me someone who is always honest.	2	13		2	
FTEG4	E-Government considers me capable using the different design features on its website.	1		2	14	
FTEG5	E-Government considers me someone who knows how to select the right online service.	1	1	2	13	
FTEG6	E-Government considers me someone who is good at getting optimal results from it online services.			3	13	1
FTEG7	E-Government considers me someone who genuinely cares about it.	1		4	10	2
FTEG8	E-Government considers me someone who sincerely wants to help it.			1	16	
FTEG9	E-Government considers me someone who is concerned about its wellbeing.		1	1	15	
FTEG 0	E-Government trusts me.			3	12	2
FTEG11	E-Government considers me trustworthy.		1	3	13	
FTEG12	E-Government considers me a person it trusts.		1	2	14	
TEG1	E-Government is fair in its online dealings.		2	14	1	
TEG2	E-Government keeps its promises.	1		11	5	
TEG3	E-Government does not try to take advantage of anyone.	1		12	3	1
TEG4	E-Government knows how to efficiently deliver its online services.			14	3	
TEG5	E-Government has the expertise required to do its job.			15	2	
TEG6	E-Government is capable of delivering services online.	1	1	12	3	
TEG7	E-Government sincerely wants to help me.	3		10	4	
TEG8	E-Government genuinely cares about me.			13	3	1
TEG9	E-Government is concerned about my wellbeing.		2	12	3	
TEG10	E-Government is something I trust.	1		11	2	3
TEG11	E-Government can be trusted.			12	5	
TEG12	Overall, e-Government is trustworthy.		1	10	4	2
TG1	Government is fair in its dealings.	13	2		1	1
TG2	Government keeps its promises.	11	5			1
TG3	Government does not try to take advantage of anyone.	12	3	1		1
TG4	Government is capable of doing its job.	12	3	1		1
TG5	Government knows how to efficiently deliver its services.	13	3	1		
TG6	Government is efficient with resources used in providing its services.	13	3		1	
TG7	Government sincerely wants to help me.	9	7			1
TG8	Government genuinely cares about me.	10	6			1

ITEMS FOR TRUST AND FELT TRUST OF GOVERNMENT AND E-GOVERNMENT		Gov		Egov		
#	Item wording	Trust	Felt trust	Trust	Felt Trust	N/A
TG9	Government is concerned about my wellbeing.	11	6			
TG10	I trust government.	14	2			1
TG11	Government can be trusted.	13	4			
TG12	Overall, government is trustworthy.	13	2	1		1
FTG1	Government considers me someone of integrity.	2	14			1
FTG2	Government considers me fair in my dealings.	2	14	1		
FTG3	Government considers me someone who is always honest.	2	14			1
FTG4	Government considers me competent in obeying its law.	2	15			
FTG5	Government considers me someone who knows how to select the right service.	3	12		1	1
FTG6	Government considers me someone who is good at getting optimal results from it services.	3	13			1
FTG7	Government considers me someone who sincerely wants to help it.	2	14			1
FTG8	Government considers me someone who is concerned about its wellbeing.	3	14			
FTG9	Government considers me someone who genuinely cares about it.	2	14	1		
FTG10	Overall, government considers me trustworthy.	4	11			2
FTG11	Government considers me someone it trusts.	1	16			
FTG12	Government considers me someone who can be trusted.	4	13			
Hit Ratio For trust and felt trust*		71%	80%	72%	73%	
Hit Ratio for Government and E-government*		94%		88%		

*The numbers for each row represent how many judges placed the item in the category listed. The number in each row should add up to 17 (i.e. the number of judges recruited). A hit ratio is calculated based on the actual number of judges placing the items over the intended construct (the shaded area) divided by the maximum placement permitted. For example, felt trust from government hit ratio was calculated to be 80% by the following equation:

$$\frac{\sum \text{Construct items score}}{\text{Number of Judges} \times \text{Number of items}} = \frac{14 + 14 + 14 + 15 + 12 + 13 + 14 + 14 + 14 + 11 + 16 + 13}{17 \times 12} = \frac{164}{204}$$

Table Legend

TG: Trust in government
 FTG: Felt trust from Government
 TEG: Trust in E-government
 FTEG: Felt trust from E-government
 N/A: The actual study used "Ambiguous".

The hit ratios for the antecedents of trust and felt trust were between 70% and 88% (table 10). Moore and Benbasat (1991) stated that high hit ratios are indicative of valid and reliable scales. A hit ratio is also a qualitative assessment of construct validity. Structural assurance and situational normality items adapted from McKnight et al. (2003) were included in the card-sort exercises for the antecedents of trust in e-government, while other constructs, like perceived ease of use, perceived usefulness, perceived risk, attitude toward using e-government and intention to use, were adapted from existing measures (Davis, 1989; Hung et al., 2006; Wu and Chen, 2005) and were included in the survey but excluded from the scale development process. Items used a 7-point Likert scale (strongly disagree-strongly agree).

Table 10: Card sort results (N=19)

ITEMS FOR THE ANTECEDENTS OF TRUST AND FELT TRUST									
#	Item wording	SN	SA	FID	REP	SIM	AUT	INFACC	N/A
SN1	The steps required to search for and use e-government services are typical of other websites.	18	0	0	0	0	0	0	1
SN2	The information requested of me by e-government is the type of information most websites request.	15	1	1	0	0	1	1	0
SN3	The nature of the interaction with e-government is typical of other websites.	17	0	1	0	0	0	0	1
SA1	I feel assured that the technological structures protect me from problem on the internet.	0	18	0	1	0	0	0	0
SA2	I feel confident that technological advances on the internet make it safe to use.	0	14	4	1	0	0	0	0
SA3	The internet is now robust and safe environment to use.	0	15	1	3	0	0	0	0
SA4	The internet has enough safeguards to make me feel comfortable about using it.	0	16	2	1	0	0	0	0
FR1	E-government is obligated to act in trustworthy manner over the electronic medium.	0	1	17	1	0	0	0	0
FR2	E-government should be helpful at all times.	2	1	11	1	0	0	1	3
FR3	E-government is mandated by law to be moral when serving the public over the internet.	1	1	13	2	0	0	1	1
FR4	It is E-government's job to be competent in providing services online.	1	2	13	3	0	0	0	0
REP1	E-government is well known.	0	0	1	15	0	1	1	1
REP2	E-government has good reputation.	0	0	2	15	1	0	0	1
REP3	E-government is popular.	3	0	2	10	0	0	3	1
REP4	I have heard a lot of good things about e-government.	0	1	1	15	0	0	2	0
SIM1	E-government and I are similar.	0	0	1	0	18	0	0	0
SIM2	E-government and I adhere to the same principles.	0	0	2	1	15	1	0	0
SIM3	E-government and I act the same way.	0	0	0	0	18	0	0	1
SIM4	E-government and I have something in common.	0	0	1	0	17	0	0	1
AUT1	E-government does not interfere with how I use the site.	0	1	0	1	0	14	3	0
AUT2	E-government gives me the freedom to do what ever I want over the site.	1	0	3	1	1	11	1	1
AUT3	E-government lets me learn on my own.	0	0	0	0	1	14	2	2

ITEMS FOR THE ANTECEDENTS OF TRUST AND FELT TRUST									
#	Item wording	SN	SA	FID	REP	SIM	AUT	INFACC	N/A
AUT4	When browsing through the website, E-government permits me to visit any page I want.	1	0	0	3	0	13	2	0
AUT5	E-government lets me work on things on my own.	0	0	1	1	1	15	1	0
IA1	E-government takes my opinion into consideration before making any decision.	0	0	1	1	0	1	14	2
IA2	E-government acts on my suggestions or comments.	3	0	1	1	1	0	12	1
IA3	E-government follows my recommendations.	0	0	1	2	0	0	15	1
IA4	E-government takes my feedback seriously.	1	0	2	2	0	0	12	2
Hit ratio*		88%	83%	71%	72%	89%	71%	70%	

*The numbers for each row represent how many judges placed the item in the category listed. The numbers in each row should add up to 19 (i.e. the number of judges recruited). A hit ratio is calculated based on the actual number of judges placing the items over the intended construct (the shaded area) divided by the maximum placement permitted. For example, Influence Acceptance hit ratio was calculated to be 70% by the following equation:

$$\frac{\sum \text{Construct items score}}{\text{Number of Judges} \times \text{Number of items}} = \frac{14 + 12 + 15 + 12}{19 \times 4} = \frac{53}{76}$$

Table Legend	SA:	Structural Assurance
	SN:	Situational Normality
	FR:	Fiduciary Responsibility
	REP:	Reputation
	SIM:	Similarity
	AUT:	Autonomy
	IA:	Influence Acceptance
	N/A	The actual study used "Ambiguous".

4.2.3 Item Testing: Pilot Studies

Prior to launching the final version of the questionnaire, I conducted a series of pilot tests with students (n=5) and a representative sample of online community from the marketing pool company (n=5) with the goal of soliciting feedback on survey length, survey structure, and wording, as recommended by McMillan and Schumacher (2001). The number of items used to measure trust and felt trust constructs was reduced to 6 from 12 because participants in these pilot studies expressed boredom and fatigue when answering 48 questions that were almost similar. Trust and felt trust scales had three items in measuring the three dimensions of trust (ability, benevolence, and integrity) and three items to measure general trust, as is common practice in information systems trust literature (Kim, 2005). The decision was justified by Havey, Billings, and Nilan's (1985) recommendation to use 4 to 6 items to measure a construct (c.f. Hinkin, 1998). The final instrument is attached in Appendix D.

4.3 Sample Description

Two hundred and fifty-four subjects participated in this study, which is sufficient to detect medium size effects¹⁶. Thirty-five percent of the participants were female, and most participants ranged in age from 36 to 45, had an average annual income of CDN 40K to 55K, worked full time, and held college degrees. Participants' demographics are relatively similar to those obtained by surveys carried out by research companies (e.g., Forrester Research, Inc. and Stats Canada) with regard to users of Canada's e-government websites (average age between 39 and 42, annual income between CDN 46K and 59K, employed full time, and graduated from college).

¹⁶ G*power software was used to calculate the required sample size as 103 subjects for $\alpha=0.05$, power=80% and medium effect size $f^2 = 0.15$.

4.4 Empirical Procedures

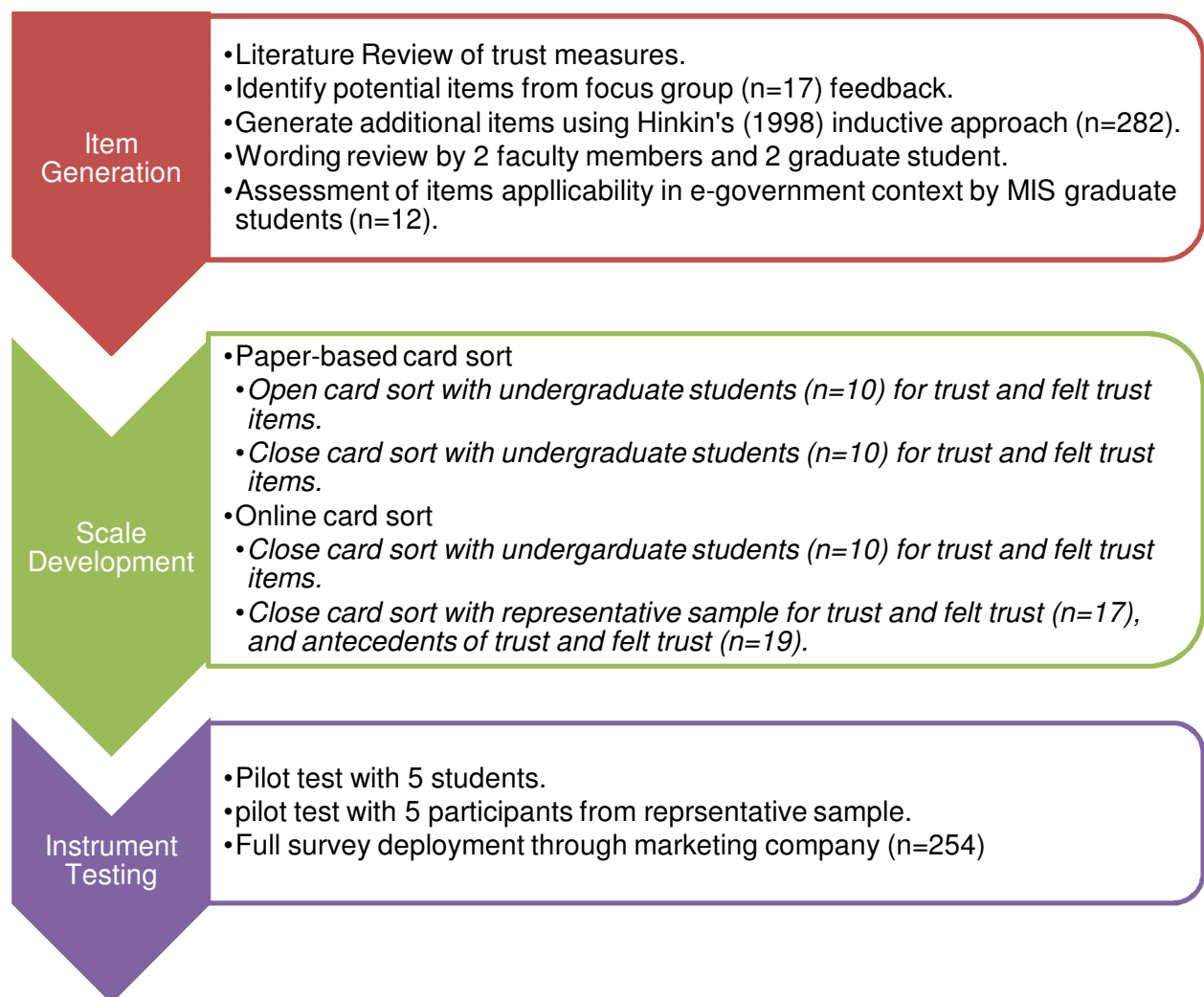
The study was carried out online by a marketing research company (MarketTools, Inc.) that randomly selected and invited subjects who met the criteria specified (Canadian residents over 19 years of age) for the sample size needed (250 participants). The company has conducted extensive research in the past on designing invitations in a way that optimizes response rates without increasing self-selection bias. There were about 375,000 subjects in the potential subject pool and 275 were randomly selected to participate¹⁷. Participants received electronic points, which are redeemable for merchandise on the marketing research company website, for completing the survey. The incentives offered by the marketing research company were set after the firm asked members of the subject pool to share their thoughts about what would constitute fair compensation for their time, so the incentives should have not influenced the type of people who agreed to participate in the study.

The survey was designed in away to overcome the lack of experience for some participants, and prevail over the limitations of using a single website for this research. A video clip was embedded over the survey demonstrating the different features and functionalities of a government website with the objective of familiarizing those who never had any interaction with the government using web based technology. The website demonstrated was chosen based on the scope of public services and applications available so as to bring about variances for the different constructs in the theoretical framework. Participants viewed screenshots and a video clip of the Service Canada website (<http://www.servicecanada.gc.ca>), a single-window access to a

¹⁷ The marketing research company invites 10% more than the required sample size to guarantee the number of participants sought.

plethora of e-government (e.g., federal, and provincial) services for citizens, and then answered questions pertaining to that website. This website can be used for information (e.g., looking for government jobs), interaction (e.g., calculate residency), or transactional purposes (e.g., file taxes online) ¹⁸. On average, it took participants about 30 minutes to answer the survey and view the message enclosed in the video clip. Figure 10 provides a summary of the research methodology in graphic form.

Figure 10: Methodology procedure summary



¹⁸ According to Baum and Di Maio (2000), e-government goes through four stages of development: 1) only information is available at the first stage 2) the "interactive" stage allows users to download forms and interact with the website (e.g. search for information using search engine) 3) the "transaction" stage allows users to complete transactions online and 4) the last stage is "transformational"; online services between different government levels and branches are integrated at this stage.

4.5 Analysis

Responses were downloaded and converted to a format compatible with a statistical analysis package (PASW 18) and a Structural Equation Modeling (SEM) package employing Partial Least Squares (PLS) software (SmartPLS 2.0(M3) Beta) (Ringle, Wende, and Will, 2005). SEM investigates the measurement and structural models simultaneously, so it runs factor analysis and hypothesis testing at the same time (Gefen, Straub, and Boudreau, 2000). PLS was used rather than covariance-based SEM (e.g., LISREL) because PLS is particularly appropriate for exploratory theory-testing research (Gefen et al., 2000).

4.6 Descriptive Statistics

PASW 18 was used to obtain descriptive statistics for the constructs (table 11). All constructs are normally distributed when examined graphically by box plots and frequency diagrams. However, graphical examination is a subjective and informal approach for testing normality. A more formal test was conducted (i.e., a 1-sample Kolmogorov–Smirnov test) which indicated that some constructs were not normally distributed as indicated by the significant levels (i.e., values < 0.05) in last column of table 11. This is attributed to the existence of outliers which were retained in the final analysis because the results remained the same even after the removal of the outliers. Nonetheless, Partial Least Squares (PLS) is relatively robust when multivariate normal distribution is violated (Gefen et al., 2000). Table 11 also indicates that there was sufficient variation on each construct, even through there was no variation within the treatment (i.e., using only a single website demonstrated through a video clip).

Table 11: Descriptive statistics

Construct	Mean	Std. Dev	Variance	Skewness	Kurtosis	Asymp. Sig.
Attitude	5.00	1.23	1.52	-0.73	1.21	.017
Autonomy	4.97	1.01	1.02	-0.02	0.47	.029
Fiduciary Responsibility	5.67	1.14	1.30	-1.13	2.13	.001
Reputation	4.15	1.15	1.31	0.09	0.54	.035
Felt Trust E-government	4.84	1.17	1.37	-0.31	0.29	.080
Felt Trust Government	5.03	1.39	1.95	-0.71	0.14	.014
Influence Acceptance	3.84	1.18	1.39	-0.22	0.54	.000
Intentions	5.26	1.36	1.85	-1.00	1.24	.000
Perceived Ease of Use	4.90	1.27	1.61	-0.66	0.35	.005
Perceived Risk	3.31	1.27	1.62	0.29	0.31	.001
Perceived Usefulness	5.16	1.23	1.52	-0.79	1.28	.015
Structural Assurance	4.08	1.37	1.88	-0.29	-0.51	.040
Similarity	3.86	1.28	1.64	-0.28	0.27	.000
Situational Normality	4.70	1.20	1.43	-0.35	0.32	.006
Trust E-government	4.79	1.20	1.44	-0.37	0.48	.004
Trust government	3.89	1.53	2.34	-0.20	-0.71	.144

4.7 Measurement Model

Internal consistency, convergent and discriminant validity were examined by testing the measurement model using SmartPLS 2.0 (M3) Beta (Ringle et al., 2005). Cronbach's alpha, composite reliabilities and Average Variance Extracted (AVE) were used to examine internal consistency (table 12), and all exceeded the recommended threshold values: 0.70 for Cronbach's alpha (Nunnally and Bernstein, 1994), 0.70 for composite reliabilities (Fornell and Larcker, 1981) and .50 for AVE (Fornell and Larcker, 1981).

Table 12: Internal consistency figures

Construct	AVE	Composite Reliability	Cronbachs Alpha
Autonomy	0.74	0.94	0.91
Felt trust from E-government	0.82	0.96	0.96
Felt trust from Government	0.83	0.97	0.96
Fiduciary Responsibility	0.78	0.93	0.91
Reputation	0.77	0.93	0.90
Influence Acceptance	0.86	0.96	0.94
Intentions	0.74	0.92	0.82
Perceived Ease of Use	0.91	0.98	0.97
Perceived Risk	0.88	0.96	0.93
Perceived Usefulness	0.91	0.98	0.97
Structural Assurance	0.85	0.96	0.94
Situational Normality	0.85	0.94	0.91

Construct	AVE	Composite Reliability	Cronbachs Alpha
Similarity	0.84	0.95	0.94
Trust in E-government	0.84	0.97	0.96
Trust in Government	0.87	0.98	0.97
Attitude	0.87	0.95	0.93

To establish construct discriminant validity, Fornell and Larcker (1981) stated that the square root of Average Variance Extracted (AVE) must be higher for that construct than any other correlation with other constructs. The inter-construct correlation matrix is illustrated in table 13 with the square root of Average Variance Extracted (AVE) in the diagonal components. Further examination of the item loadings and cross loadings (Appendix E) showed that all items loaded highly on their intended constructs (>0.707) and weakly on the others, thus supporting our measurement model's convergent and discriminant validities (Gefen and Straub, 2005).

Common Method bias was tested using Harman's single-factor test with Principal Component Analysis (PCA) and Podsakoff et al.'s (2003) method for controlling the effects of a single unmeasured latent method factor test, as implemented with Liang et al.'s (2007) procedure for PLS. The results of both tests confirmed the low likelihood of a common method bias (Appendix F).

Table 13: Inter-construct correlation matrix

Constructs*	AUT	FTEG	FTG	FR	REP	IA	INT	PEOU	PR	PU	SA	SN	SIM	TEG	TG	ATT
AUT	0.86															
FTEG	0.61	0.91														
FTG	0.30	0.53	0.91													
FR	0.47	0.46	0.20	0.88												
REP	0.51	0.46	0.25	0.33	0.88											
IA	0.51	0.50	0.24	0.18	0.50	0.93										
INT	0.40	0.40	0.18	0.48	0.36	0.23	0.86									
PEOU	0.53	0.49	0.26	0.39	0.57	0.44	0.41	0.95								
PR	-0.38	-0.36	-0.20	-0.21	-0.32	-0.23	-0.39	-0.31	0.94							
PU	0.54	0.55	0.23	0.49	0.42	0.45	0.71	0.62	-0.39	0.95						
SA	0.21	0.27	0.26	0.17	0.22	0.16	0.26	0.21	-0.45	0.26	0.92					
SN	0.51	0.40	0.20	0.38	0.47	0.40	0.31	0.61	-0.21	0.46	0.11**	0.92				
SIM	0.37	0.47	0.27	0.29	0.60	0.53	0.46	0.45	-0.21	0.52	0.25	0.41	0.92			
TEG	0.59	0.67	0.36	0.56	0.54	0.51	0.60	0.58	-0.48	0.69	0.37	0.52	0.61	0.92		
TG	0.30	0.36	0.52	0.18	0.34	0.39	0.29	0.28	-0.32	0.30	0.41	0.23	0.46	0.50	0.93	
ATT	0.45	0.42	0.24	0.40	0.49	0.38	0.81	0.51	-0.43	0.76	0.27	0.42	0.54	0.63	0.35	0.94

*AUT: Autonomy, FTEG: Felt trust from e-government, FTG: Felt trust from government, FR: Fiduciary Responsibility, REP: Reputation, IA: Influence Acceptance, INT: Intentions, PEOU: Perceived Ease of Use, PR: Perceived Risk, PU: Perceived Usefulness, SA: Structural Assurance, SN: Situational Normality, SIM: Similarity, TEG: Trust in E-government, ATT: Attitude.

**Correlations lower than 0.12 are insignificant (e.g. the correlation between structural assurance and situational normality was 0.11 insignificant at $p < 0.05$).

4.8 Structural Model

A structural model is assessed through standardized path coefficients and t-values. The standardized path coefficients shown in figure 11 indicate the relative strength of the statistical relationships (Gefen et al., 2000), but figure 11 also indicates a potential problem with multicollinearity based on the path coefficient between perceived ease of use and attitude, which was much lower than the correlation value reported in table 13. Multicollinearity can be examined by comparing zero order and partial and part correlations, and examining tolerance values, Variance Inflation Factors (VIFs), and Condition Indexes (Cohen et al., 2003). Multicollinearity was confirmed as not being a threat in this research (Appendix G).

As figure 11 shows, all hypothesised relationships were significant except for that between perceived ease of use and attitude (the impact of perceived ease of use on attitude is mediated by perceived usefulness), and that between reputation with trust in e-government (table 14).

Figure 11 also indicates that felt trust from e-government has the largest affect on trust in e-government of all antecedents of trust in government ($\beta = 0.281$ at $p < 0.001$). For example, felt trust from e-government had an even bigger role in fostering trust in e-government than did users' level of trust in government in the offline environment.

Figure 11: Structural model

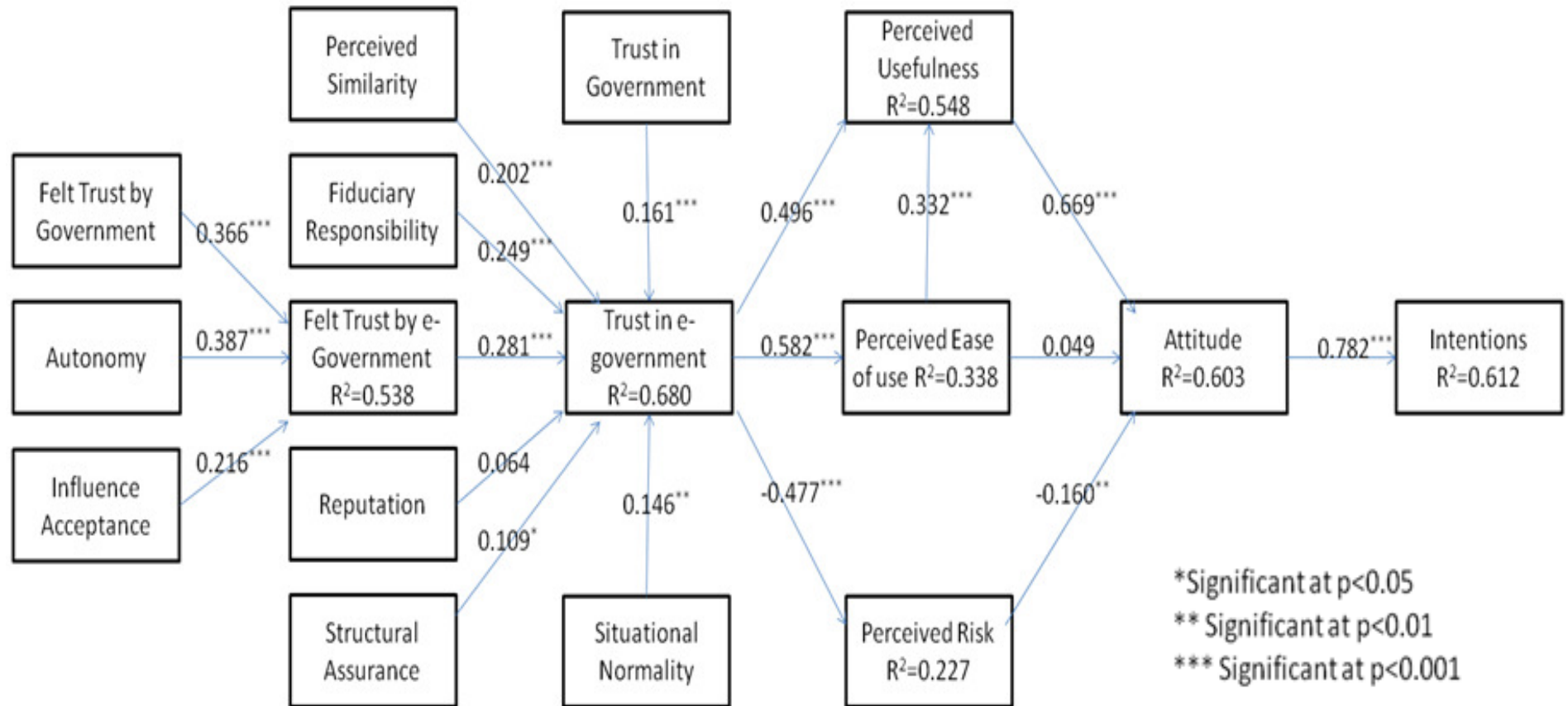
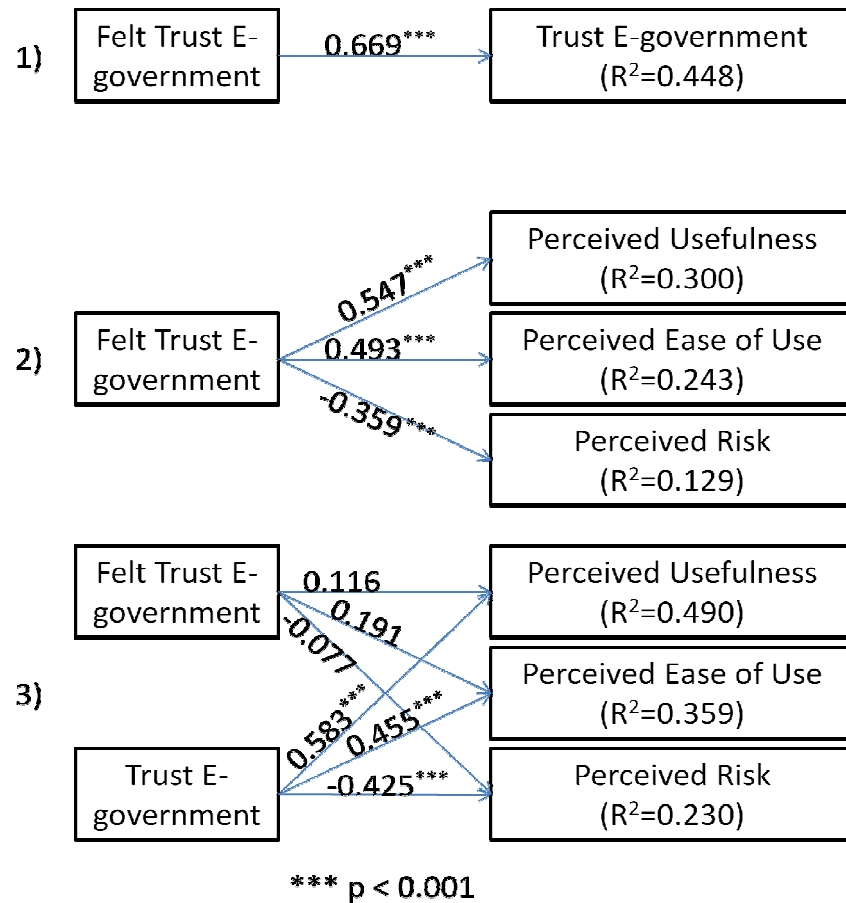


Table 14: Study results

Hypothesis	Result
Hypothesis-1: reputation of e-government website positively affects user's trust in e-government.	Not Supported
Hypothesis-2: trust in government in the offline world will have a positive effect on trust in e-government.	Supported
Hypothesis-3: structural assurance will have a positive effect on trust in e-government.	Supported
Hypothesis-4: situational normality will have a positive effect on trust in e-government.	Supported
Hypothesis-5: perceived similarity will have a positive effect on trust in e-government.	Supported
Hypothesis-6: fiduciary responsibility will have a positive effect on trust in e-government.	Supported
Hypothesis-7: felt trust from e-government positively affects trust in e-government.	Supported
Hypothesis-8: perceived influence acceptance positively affects felt trust from e-government.	Supported
Hypothesis-9: perceived autonomy positively affects felt trust from e-government.	Supported
Hypothesis-10: felt trust government positively affects felt trust from e-government.	Supported
Hypothesis -11: trust in e-government positively affects perceived ease of use of e-government.	Supported
Hypothesis-12: trust in e-government positively affects perceived usefulness of e-government.	Supported
Hypothesis-13: trust in e-government negatively affects perceived risk.	Supported
Hypothesis-14: perceived usefulness positively affects positive attitude adoption.	Supported
Hypothesis-15: perceived ease of use positively affects positive attitude toward adoption.	Not Supported
Hypothesis-16: perceived ease of use positively affects perceived usefulness	Supported
Hypothesis-17: perceived risk negatively affects positive attitude toward adoption.	Supported
Hypothesis-18: positive attitude toward adoption will positively affect intentions to adopt.	Supported

Felt trust from e-government positively affects trust in e-government, which, in turn, fully mediates felt trust's impact on the outcome variables of perceived usefulness, perceived ease of use, and perceived risk. Mediation occurs when a variable mediates the relationship between an independent variable and dependent variable (Baron and Kenny, 1986). To test for mediation, I analyzed three regression models: 1) felt trust from e-government as the independent variable and trust in e-government as the dependent variable 2) felt trust from e-government as the independent variable and perceived usefulness, perceived ease of use and perceived risk as the dependent variables and 3) felt trust from and trust in e-government as the independent variables and perceived usefulness, perceived ease of use and perceived risk as the dependent variables (figure 12).

Figure 12: Mediation test



Mediation analysis was conducted using SmartPLS 2.0(M3) Beta (Ringle et al., 2005). Structural Equation Modeling (SEM) techniques are acceptable to use for mediation tests (Baron and Kenny, 1986). The results illustrated in figure 12 show that felt trust (the independent variable) has an effect on trust (the mediator) and that felt trust affects perceived usefulness, perceived ease of use and perceived risk (dependent variables), but its impact decreases significantly when the mediator is introduced, as shown by the third equation in figure 12. Hence, trust in e-government mediates the relationship between felt trust from e-government and the outcome variables within the nomological network of e-government adoption.

4.9 Discussion

The significant contribution of felt trust from e-government in explaining variances goes over and above the antecedents of trust in e-government (table 15). Users who felt that public servants trust them, as demonstrated through online features, were also more likely to trust e-government.

Table 15: The impact of felt trust inclusion in model

Model	$R^2(\text{trust})$	ΔR^2	Effect size (f^2)
Without felt trust	0.632	-	-
With felt trust	0.680	0.048	$= \frac{(R^2_{\text{trust+felt trust}} - R^2_{\text{trust}})}{(1 - R^2_{\text{trust}})} = \left(\frac{0.048}{1 - 0.632} \right) = 0.13 \approx \text{medium effect size}^{**}$

* Significant at $p < 0.001$

** (Cohen, 1977)

Certainly, one way to build trust in e-government is by acting in a trustworthy manner, such as by improving structural assurance, situational normality, fiduciary responsibility, and perceived similarity. However, the approach to building trust in e-government that was shown to be more influential is to show that e-government trusts users. Giving users freedom to act without any restrictions and taking users' opinions into consideration before making decisions shows users that e-government trusts them. "Felt trust" beliefs prime users' "obligations" to reciprocate trust back to e-government.

This research also demonstrates that the way government acts in the offline world impacts how people perceive the government's website, but the online and offline realms are not quite the same because the online environment employs staff that have different sets of skills, goals and agendas. The results for the measurement model confirmed this difference when users distinguished among constructs of felt trust online, felt trust offline, trust online and trust offline.

Consistent with Wixom and Todd's (2005) framework, trust in e-government (an object-based belief) influences users' perceptions about the outcomes of using e-government. Trust was found to have a positive effect on perceived usefulness and perceived ease of use and a negative effect on perceived risk. In other words, when users trust e-government, they will perceive using e-government as more advantageous and easier than transacting with the government in the offline environment. Trust in e-government also decreases users' perceptions of the likelihood of negative outcomes from using e-government.

I also found that perceived ease of use has a positive effect on perceived usefulness, which is consistent with findings in the e-government adoption literature (Fu, Farn, and Chao, 2006; Phang et al., 2006; Wang, 2003; Wu and Chen, 2005), but the results obtained from this study indicated that perceived ease of use had no significant impact on attitude toward using e-government¹⁹. On the other hand, other behaviour-based beliefs (perceived usefulness and perceived risk) did have significant impacts on attitude toward using e-government; perceived usefulness was found to have a positive effect, while perceived risk had a negative effect on attitude toward using e-government. Finally, users who believed that using e-government was a good idea and who held a favourable opinion about it were also willing to use it in the future.

Chapter 5 will highlight the lessons learned, outline the theoretical and managerial contributions of this thesis, and address the limitations and possible opportunities for future research.

¹⁹ This could be attributed to the fact that subjects were from online community and hence familiar with web technology.

5 CONCLUSION TO THE DISSERTATION AND FUTURE RESEARCH

Felt trust, which is new to the IS literature, has received scholars' attention in other disciplines and their empirical work have shown that perceptions of bestowed trust leads to trust-related behavior and other considerations (e.g., satisfaction and loyalty). Trust formation processes commonly found in trust literature were utilized in arriving at trust antecedent whereas a series of qualitative studies were conducted to identify felt trust's antecedents, and how it was manifested through the current design elements and web functionalities of e-government. The causal relationship between felt trust and trust was examined in an experiment recruiting 122 subjects. Additionally, the roles of trust, felt trust, and their antecedents were investigated within the nomological network of e-government adoption through feedback collected from 254 participants in a survey of Canadian Government Service portal. Results obtained from the thesis different studies provide answers to the research questions outlined in chapter 1:

What is felt trust? What is the relationship between felt trust from e-government and the users' level of trust in e-government? Are the antecedents of felt trust from e-government different from those of trust in e-government?

Felt trust was defined as an object-based attitudinal belief reflecting a citizen's perception that e-government is designed in a way as if it evaluates her to be trustworthy. The relationship between felt trust and trust is causal in nature (Appendix A) but unidirectional (i.e., e-government's trust of the user generates the user's trust in e-government, but not vice versa). Furthermore, the antecedents of felt trust are different from those of trust, as illustrated by the results obtained from 282 subjects during the item-generations stage (Chapter 4).

Is felt trust a salient phenomenon that users experience when they visit and transact with e-government websites?

A focus group study with 17 subjects who reviewed the design elements of three e-government websites, along with feedback collected from 38 participants in a survey of 31 web functionalities commonly deployed over e-government led to answers to this research question (Chapter 3). The preliminary results of these two studies were summarized in a preliminary typology of website design features and a 2x2 matrix of web functionalities that can be used to manipulate the saliency of trust, felt trust, or both.

Where does felt trust fit within the nomological network of e-government adoption?

A survey about the Service Canada website (<http://www.servicecanada.gc.ca>) collected feedback from 254 subjects (Chapter 4). The results demonstrated felt trust's role as the most important factor in building trust and that it fully mediates felt trust's impact on antecedents of adoption (perceived usefulness, perceived ease of use and perceived risk). The convergent and discriminant validities demonstrated the difference between felt trust and trust as constructs and between these constructs in the online and offline environments.

Findings reported in this thesis should be of interest to public administrators and web designers, as well as to the academic community interested in e-government topics.

5.1 Contributions

5.1.1 Theoretical Contributions

The research makes a number of theoretical contributions. Primarily, this research introduced the construct of felt trust and confirmed its role as an important determinant

of users' evaluations of e-government. This construct has been largely overlooked in management research and completely ignored in information systems research. Felt trust is distinguished from the plethora of constructs delineated in traditional adoption models by focusing not only on users' beliefs about the e-service provider, but further on the subset of these beliefs concerning how the e-service provider views them. Hence, its inclusion, and the confirmation of its important role, not only help enhance our understanding of the factors affecting how users evaluate and use e-government, but also elucidate the reciprocal nature of users' interactions with e-government in specific, and other e-service providers in general.

The thesis also makes a general contribution to adoption research that relates to the role of trust. Trust in e-government (or any e-service provider) is a critical factor that improves users' adoption intentions. However, the literature on trust in e-government examined only few antecedents like trust in government and technology (e.g., Bélanger and Carter, 2008; Carter and Bélanger, 2005; Horst et al., 2007). This research broadens our understanding about the causes of trust. First, it supports Sztompka's (1999) trust antecedents' categorization as outlined in chapter 1 (i.e., anticipative, responsive, and reciprocal factors). Based on trust formation processes commonly found in the trust literature, this thesis revealed that trust in e-government is not only a function of trust in technology (i.e., structural assurance and situational normality) and in government, but also based on perceived e-government's responsibility, its desirable "in-group" attributes that users can identify with (i.e., perceived similarity), and users' perceptions about the level of trust bestowed by e-government through its different design features, functionalities, and processes (i.e., felt trust from e-government).

Second, this reciprocal factor (i.e. felt trust) was shown to be more important in building trust in e-government than any of the other trust antecedents. It corroborates Lester and Brower's (2003) findings²⁰ on the e-domain context. Consequently, embracing reciprocal-based trust as a crucial trust antecedent is now warranted given the results obtained from the different studies conducted in this thesis.

Third, by using Correspondence Inference Theory (Jones and Davis, 1965), I identified the antecedents of felt trust and differentiated them symmetrically from those used in building trust in e-government. All together were investigated over the nomological network of e-government adoption model. However, the identification and inclusion of the different antecedents of trust and felt trust significantly alters our way of thinking about why IT artifacts promote user's trust. Some IT artifacts have a direct impact on trust (i.e., escrows and seals of approval) because they materialize the antecedents of trust (i.e., structural assurance), while other IT artifacts (i.e., customization) indirectly influence trust by operationalising the antecedents of felt trust (i.e., autonomy). It was users' perceptions of felt trust from e-government that lead to the development of trust in e-government.

Finally, this thesis makes a more specific contribution that relates to the effects of felt trust. The causal relationship between felt trust and trust was assessed empirically by testing hypotheses advanced by arguments from Social Exchange Theory (Blau, 1964) and Norm of Reciprocity (Gouldner, 1960). In accordance with these theories, I confirmed that felt trust leads to trust, but trust does not lead to felt trust. Hence, not

²⁰ They found that felt trust was more important than trustworthiness in the subordinate-manager relationship.

only have I appended existing adoption models with new variables (i.e., other trust antecedents and felt trust antecedents), but I also confirmed the theory used in delineating the relationship between trust and felt trust. The findings also demonstrate that trust reciprocity is relevant in the virtual environment as much as in the offline environment.

Overall, this research introduced a new construct (felt trust) to the IS community, extended adoption models currently used in predicting usage intentions, corroborated findings from other disciplines, and significantly altered current understanding of the causes of virtual trust.

5.1.2 Managerial Implications

Public managers who launch online initiatives aimed at improving citizens' adoption rates of e-government can accomplish their goal by designing trustworthy websites and by bestowing trust in users, the latter of which was shown to be more influential.

This research developed a preliminary typology and a 2x2 matrix (Chapter 3) for web design features and functionalities that can be employed by public managers in building trust and felt trust. If a public manager's goal is to improve e-government trustworthiness, the site can provide information about third-party involvement (web functionality) by showing third-party escrows/logos linked to the third party's websites (design feature). On the other hand, if the goal is to improve felt trust, public managers should allow users to create a personal web domain (web functionality) by deploying personalization tools over the e-government portal (design feature). Thus, this research provides public managers with insights about what should be done (web functionalities to include) and how to achieve it (design features to use).

Finally, the instrument developed for this research can be used by public managers to monitor their online initiatives. Items used to operationalize the constructs in the nomological network of e-government adoption can be tracked like a scorecard that public managers can inspect periodically to highlight the areas in which e-government websites thrived and others that require further attention. Obviously, it would be unrealistic to ask all users to spend 30 minutes to complete a survey, but a shorter version of the instrument could be devised by operationalising each construct with a single item. By doing so, public managers will be able to evaluate their online initiatives and generate more felt trust amongst users of e-government.

5.2 Limitations

Using a survey in studying trust reciprocity is correlational in nature and thus limited to establishing correlations between the antecedents and felt trust from e-government and trust in e-government. Future studies can establish the causal link between those antecedents and the outcome variables (e.g., trust and felt trust) by manipulating information technology artifacts that operationalize them. Only then would the causal link between the antecedents and felt trust and trust be confirmed. Steps toward achieving this confirmation were taken in a supplementary analysis (Appendix A), but a full examination fell outside the scope of this thesis because the objective was to investigate the important role of felt trust in e-government adoption, while researching IT artifacts that would improve it was left to future studies.

The preliminary typology of website design elements and the 2x2 matrix of web functionalities reported in Chapter 3 were developed after examining feedback collected from participants who reviewed only three websites and 31 web functionalities. Thus, findings are limited to the e-government context and may not be applicable to other

domains. In addition, my goal was to investigate whether “felt trust” is a phenomenon that users of e-government experience when visiting a government website rather than specify all IT artifacts that could potentially build trust or felt trust. It would be very difficult to cover the different IT artifacts that would yield such outcomes, because technology (and design elements for that matter) are always evolving and frequently changing. Also, these IT artifacts could trigger other outcomes that were not measured in this study and to assume that they exclusively instil trust or felt trust would be overly optimistic.

The items in this survey used the term “e-government”, which could be thought of as a group of people administrating the website or a single webmaster running the back-end operations. The question concerning whether people perceive e-government to be holistic or dyadic was not examined closely but could be answered by future research.

5.3 Future Research

This research showed “trust” as a commodity is reciprocated in the virtual world where parties are not directly “visible” to one another. The IS research community can dedicate more attention to this under-researched construct by investigating its impact on outcome variables like trust, and other variable like satisfaction with trustees. IS researchers can also investigate the antecedents to this construct and identify ways to manipulate or create it in a variety of contexts. Trust reciprocity also opens the door to examination of its dimensions (ability, benevolence, and integrity) in terms of reciprocation. Further examination is required to determine whether reciprocity occurs at the micro level (e.g., perceptions that the trustee admires the trustor’s knowledge improve the trustor’s perceptions about the trustee’s competence level).

Research on felt trust could improve our understanding of inter-organizational knowledge-sharing, the productivity of virtual teams, outsourcing relationships and the dynamics within online communities and online market places. In fact, further establishing the importance of felt trust could lead to a paradigm shift in how online vendors design their portals, the issues IS managers address in outsourcing relationships, and the structures and procedures to implement within knowledge management systems to promote distributed teamwork.

Finally, existing IS research findings can be re-evaluated in light of the introduction of this new construct in order to determine whether existing IT artifacts used or systems implemented to build trust were successful because they improved trust directly, or whether they were successful because they triggered felt trust, which improved trust. Differentiating trust-enhancing IT artifacts from those that build felt trust can lead to the development of a typology that online vendors can employ in designing their websites. However, technology evolves quickly, and such a task would be beneficial only in the short term; nevertheless, one can use the findings of this thesis as a starting point for design guidelines.

REFERENCES

- Aberg, J., & Shahmehri, N. (2000). The role of human web assistants in E-commerce: An analysis and a usability study. *Internet Research*, 10(2), 114-125.
- Aberg, J., & Shahmehri, N. (2001). An empirical study of human web assistants: Implications for user support in web information systems. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, Seattle, Washington. , 3(1) 404-411.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl, & J. Beckmann (Eds.), *Action-control: From cognition to behavior* (pp. 11-39). Heidelberg, Berlin: Springer.
- Ajzen, I. (2006). *Constructing a TpB questionnaire: Conceptual and methodological considerations*. Retrieved Summer, 2004, from <http://www.people.umass.edu/aizen/pdf/tpb.measurement.pdf>
- Ajzen, I., & Fishbein, M. (2005). The influence of attitude on behavior. In D. Albarracin, B. T. Johnson & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 173-221). Mahwah, NJ: Erlbaum.
- Akhter, F., Hobbs, D., & Maamar, Z. (2004). Determining the factors which engender customer trust in business-to-consumer (B2C) electronic commerce. *2004 IEEE International Conference on E-Commerce Technology (CEC'04)*, San Diego, California. 291-294.
- Ba, S., & Pavlou, P. (2002). Evidence of the effect of trust building technology in electronic markets: Price premium and buyer behavior. *MIS Quarterly*, 26(3), 243-268.
- Balasubramanian, S., Konana, P., & Menon, N. (2003). Customer satisfaction in virtual environments: A study of online investing. *Management Science*, 49(7), 871-889.
- Baron, R., & Kenny, D. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Bart, Y., Shankar, V., Sultan, F., & Urban, G. (2005). Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study. *Journal of Marketing*, 69(4), 133-152.
- Baum, C., & Di Maio, A. (2000). Gartner's Four Phases of E-Government Model, Gartner Group. Available from <http://www.gartner.com>. Accessed July, 2005.
- Basso, A., Goldberg, D., Greenspan, S., & Weimer, D. (2001). First impressions: Emotional and cognitive factors underlying judgments of trust e-commerce. *Proceedings of the ACM Conference on Electronic Commerce*, Tampa, FL. 137-143.
- Bélanger, F., Hiller, J., & Smith, W. (2002). Trustworthiness in electronic commerce: The role of privacy, security, and site attributes. *The Journal of Strategic Information Systems*, 11(3), 245-270.
- Bélanger, F., & Carter, L. (2008). Trust and risk in e-government adoption. *The Journal of Strategic Information Systems*, 17(2), 165-176.

- Benbasat, I. (2006). Human-computer interaction for electronic commerce: A program of studies to improve the communication between customers and online stores. In D. Galletta, & P. Zhang (Eds.), *Human-computer interaction and management information systems: Applications* (pp. 17-28). Armonk, NY: M.E. Sharpe.
- Blau, P. (1964). *Exchange and power in social life*. New York, NY: Wiley.
- Bolton, G., Katok, E., & Ockenfels, A. (2004). How effective are electronic reputation mechanisms? an experimental investigation. *Management Science*, 50(11), 1587-1602.
- Borchers, A. (2001). Trust in internet shopping: A test of A measurement instrument. *Proceedings of the Americas Conference on Information Systems (AMCIS 2001)*, Boston, MA. 799-803.
- Braithwaite, V., Braithwaite, J., Gibson, D., & Makkai, T. (1994). Regulatory styles, motivational postures and nursing home compliance. *Law & Policy*, 16(4), 363-394.
- Butler, J. (1986). Reciprocity of dyadic trust in close male-female relationships. *Journal of Social Psychology*, 126(5), 579-591.
- Butler, J. (1991). Toward understanding and measuring conditions of trust: Evolution of a condition of trust inventory. *Journal of Management*, 17(3), 643-663.
- Cardin, L., & Holmes, B. (2006). *Canadians prefer phone and in-person channels for critical government interactions*. Forrester Research Inc.
- Carnevale, D. (1988). *Organizational trust: A test of a model of its determinants*. Unpublished Doctoral Dissertation, Florida State University, Tallahassee, FL.
- Carnevale, D., & Wechsler, B. (1992). Trust in the public sector: Individual and organizational determinants. *Administration & Society*, 23(4), 471-494.
- Carter, L. (2008). E-government diffusion: A comparison of adoption constructs. *Transforming Government: People, Process and Policy*, 2(3), 147-161.
- Carter, L., & Bélanger, F. (2005). The utilization of e-government services: Citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15(1), 5-25.
- Carter, L., & Weerakkody, V. (2008). E-government adoption: A cultural comparison. *Information Systems Frontiers*, 10(4), 473-482.
- Chang, M., Cheung, W., & Lai, V. (2005). Literature derived reference models for the adoption of online shopping. *Information & Management*, 42(4), 543-559.
- Chau, P., Hu, P., Lee, B., & Au, A. (2007). Examining customers' trust in online vendors and their dropout decisions: An empirical study. *Electronic Commerce Research and Applications*, 6(2), 171-182.
- Chellappa, R., & Pavlou, P. (2002). Perceived information security, financial liability and consumer trust in electronic commerce transactions. *Logistics Information Management*, 15(5/6), 358-368.
- Cho, V. (2006). A study of the roles of trusts and risks in information-oriented online legal services using an integrated model. *Information Management*, 43(4), 502-520.
- Churchill, G. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64-73.

- Citrin, J. (1974). Comment: The Political Relevance of Trust in Government. *The American Political Science Review*, 68(3), 973-988.
- Cohen, J. (1977). *Statistical power analysis for the behavioural sciences*. New York, NY: Academic Press.
- Cohen, J., Cohen, P., West, S., & Aiken, L. (2003). In Riegert D. (Ed.), *Applied multiple regression/correlation analysis for the behavioural sciences* (3rd ed.). Mahwah, N.J.: Lawrence Erlbaum Associates, Inc.
- Colesca, S. (2009). Increasing E-trust: A solution to minimize risk in E-government adoption. *Journal of Applied Quantitative Methods*, 4(1), 31-44.
- Corbitt, B., Thanasankit, T., & Yi, H. (2003). Trust and e-commerce: A study of consumer perceptions. *Electronic Commerce Research and Applications*, 2(3), 203-215.
- Corritore, C., Kracher, B., & Wiedenbeck, S. (2003). On-line trust: Concepts, evolving themes, a model. *International Journal of Human-Computer Studies*, 58(6), 737-758.
- Creswell, J. (2003). In Laughton D., Axelsen D. and Sobczak A. (Eds.), *Research design: Qualitative, quantitative, and mixed method approaches* (2nd ed.). Thousand Oaks, CA: Sage Publications Inc.
- Dahl, D., & Moreau, C. (2007). Thinking inside the box: Why consumers enjoy constrained creative experiences. *Journal of Marketing Research*, 44(3), 357-369.
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-339.
- Dawson, J., & Darst, R. (2006). Meeting the challenge of permanent nuclear waste disposal in an expanding Europe: Transparency, trust and democracy. *Environmental Politics*, 15(4), 610-627.
- De Wall, F. (2003). The chimpanzee's service economy: Evidence for cognition-based reciprocal exchange. In E. Ostorm, & J. Walker (Eds.), *Trust and reciprocity: Interdisciplinary lessons from experimental research* (pp. 128-143). New York: Russell Sage Foundation.
- Deutsch-Salamon, S. (2004). *Trust that binds: The influence of collective felt trust on responsibility norms and organizational outcomes*. Unpublished Doctoral Dissertation, The University of British Columbia, Vancouver, British Columbia.
- Deutsch-Salamon, S., & Robinson, S. (2008). Trust that binds: The impact of collective felt trust on organizational performance. *Journal of Applied Psychology*, 93(3), 593-601.
- Doney, P., & Cannon, J. (1997). An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing*, 61(2), 35-51.
- Doney, P., Cannon, J., & Mullen, M. (1998). Understanding the influence of national culture on the development of trust. *Academy of Management Review*, 23(3), 601-620.
- Fehr, E., & Gächter, S. (2000). Fairness and retaliation: The economics of reciprocity. *Journal of Economic Perspectives*, 14(3), 159-181.

- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Flanagin, A., Tiyaamornwong, V., O'Connor, J., & Seibold, D. (2002). Computer-mediated group work: The interaction of member sex and anonymity. *Communication Research*, 29(1), 66-93.
- Flavian, C., Guinaliu, M., & Gurrea, R. (2006). The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management*, 43(1), 1-14.
- Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Fox, A. (1974). *Beyond contract: Work, power, and trust relations*. London: Faber and Faber.
- Freidman, B., Kahn, P., & Howe, D. (2000). Trust Online. *Communications of ACM*, 43(12), 34-40.
- Fu, J., Farn, C., & Chao, W. (2006). Acceptance of electronic tax filing: A study of taxpayer intentions. *Information & Management*, 43(1), 109-126.
- Gefen, D. (2000). E-commerce: The role of familiarity and trust. *OMEGA*, 28(6), 725-737.
- Gefen, D., Karahanna, E., & Straub, D. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51-90.
- Gefen, D., Pavlou, P., Warkentin, M., & Rose, G. (2002). EGovernment adoption. *Americas Conference on Information Systems (AMCIS 2002)*, Dallas, TX. 569-576.
- Gefen, D., Rose, G., Warkentin, M., & Pavlou, P. (2005). Cultural diversity and trust in IT adoption: A comparison of potential e-voters in the USA and South Africa. *Journal of Global Information Management*, 13(1), 54-78.
- Gefen, D., & Straub, D. (2005). A practical guide to factorial validity using PLS-GRAPH: Tutorial and annotated example. *Communications of the Association for Information Systems*, 16(2005), 91-109.
- Gefen, D., Straub, D., & Boudreau, M. (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of the Association for Information Systems*, 4(7), 1-77.
- Gilbert, D., Balestrini, P., & Littleboy, D. (2004). Barriers and benefits in the adoption of e-government. *The International Journal of Public Sector Management*, 17(4/5), 286-301.
- Glover, S. (2008). *The influence of risk reducing information technology tools on E-commerce transaction perceived risk*. Unpublished Doctoral Dissertation, The University of British Columbia, Vancouver, British Columbia.
- Gouldner, A. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25(2), 161-178.

- Grazioli, S., & Jarvenpaa, S. (2000). Perils of internet fraud: An empirical investigation of deception and trust with experienced internet consumers. *IEEE Transactions on Systems, Man, and Cybernetics—PART A: Systems and Humans*, 30(4), 395-410.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82.
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Prentice Hall.
- Harbaugh, W., Krause, K., Liday, S., & Vesterlund, L. (2003). Trust in children. In E. Ostrom, & J. Walker (Eds.), *Trust and reciprocity: Interdisciplinary lessons from experimental research* (pp. 302-322). New York: Russell Sage Foundation.
- Harrell, W., & Hartnagel, T. (1976). The impact of Machiavellianism and the trustfulness of the victim on laboratory theft. *Sociometry*, 39(2), 157-165.
- Harvey, R., Billings, R., & Nilan, K. (1985). Confirmatory factor analysis of the job diagnostic survey: Good news and bad news. *Journal of Applied Psychology*, 70(3), 461-468.
- Haveez, S. (2004). *UN global E-government readiness report 2004: Towards access for opportunity*. New York: United Nations.
- Heider, F. (1958). *The psychology of interpersonal relations*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Helson, H. (1964). *Adaptation-level theory; an experimental and systematic approach to behavior*. New York, NY: Harper & Row.
- Hinkin, T. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1(1), 104-121.
- Horst, M., Kuttschreuter, M., & Gutteling, J. (2007). Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in the Netherlands. *Computers in Human Behavior*, 23(4), 1838-1852.
- Hung, S., Chang, C., & Yu, T. (2006). Determinants of user acceptance of the e-government services: The case of online tax filing and payment system. *Government Information Quarterly*, 23(1), 97-122.
- Jarvenpaa, S., & Tractinsky, N. (1999). Consumer trust in an internet store: A cross-cultural validation. *Journal of Computer-Mediated Communication*, 5(2), Available at <http://jcmc.indiana.edu/vol5/issue2/jarvenpaa.html>.
- Jarvenpaa, S., Tractinsky, N., & Vitale, M. (2000). Consumer trust in an internet store. *Information Technology and Management*, 1(1), 45-71.
- Jiang, Z., & Benbasat, I. (2004). Virtual product experience: Effects of visual and functional control of products on perceived diagnosticity and flow in electronic shopping. *Journal of Management Information Systems*, 21(3), 111-147.
- Jones, E., & Davis, K. (1965). A theory of correspondent inferences: From acts to dispositions. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 219-266). New York, NY: Academic Press.
- Jones, G., & George, J. (1998). The experience and evolution of trust: Implications for cooperation and teamwork. *Academy of Management Review*, 23(3), 531-546.

- Kim, D. (2003). Short arguments for seals of approval and portal affiliation: Building consumer trust in online shopping. *Ninth Americas Conference on Information Systems (AMCIS 2003)*, Tampa, FL. 2194-2198.
- Kim, D. (2005). Trust-assuring arguments to enhance consumer trust in internet stores: An experimental investigation. (Ph.D., The University of British Columbia (Canada)).
- Kim, D., & Benbasat, I. (2003). The effect of trust-assuring arguments on consumer trust in internet stores. *Proceedings of the International Conference on Information Systems (ICIS 2003)*, Seattle, WA. 767-773.
- Kim, D., & Benbasat, I. (2006). The effects of trust-assuring arguments on consumer trust in internet stores: Application of toulmin's model of argumentation. *Information Systems Research*, 17(3), 286-300.
- Kim, K., & Prabhakar, B. (2000). Initial trust, perceived risk, and the adoption of internet banking. *Proceedings of the Twenty First International Conference on Information Systems*, Brisbane, Queensland. 537-543.
- Kim, K., & Prabhakar, B. (2004). Initial trust and the adoption of B2C e-commerce: The case of internet banking. *ACM SIGMIS Database*, 35(2), 50-64.
- Kim, M., & Ahn, J. (2005). A model for buyer's trust in the e-marketplace. *Proceedings of the 7th International Conference on Electronic Commerce*, Xi'an, China. 195-200.
- Kim, S. (2005). The role of trust in the modern administrative state - an integrative model. *Administration & Society*, 37(5), 611-635.
- Kimery, K., & McCord, M. (2002). Third party assurance: The road to trust in online retailing. *Proceedings of the 35th Hawaii International Conference on System Sciences*, Big Island, HI. 1-10.
- Klitzman, R., & Weiss, J. (2006). Disclosures of illness by doctors to their patients: A qualitative study of doctors with HIV and other serious disorders. *Patient Education and Counselling*, 64(1), 277-284.
- Komiak, S., & Benbasat, I. (2006). The effects of internalization and familiarity on trust and use of recommendation agents. *MIS Quarterly*, 30(4), 941-960.
- Komiak, S., & Benbasat, I. (2008). A two-process view of trust and distrust building in recommendation agents: A process-tracing study. *Journal of the Association for Information Systems*, 9(12), 727-747.
- Komiak, S., Wang, W., & Benbasat, I. (2004). Trust building in virtual salespersons versus in human salespersons: Similarities and differences. *E-Service Journal*, 3(3), 49-63.
- Komiak, S., Wang, W., & Benbasat, I. (2005). Trust building in virtual sales person versus in human sales person: Similarities and differences. *Proceedings of the 38th Hawaii International Conference on System Sciences*, Big Island, HI. 1-9.
- Koufaris, M., & Hampton-Sosa, W. (2004). The development of initial trust in an online company by new customers. *Information Management*, 41(3), 377-397.
- Kramer, R. (1999). Trust and distrust in organizations: Emerging perspectives, enduring questions. *Annual Review of Psychology*, 50(1), 569-598.

- Kramer, R., Brewer, M., & Hanna, B. (1996). Collective trust and collective action: The decision to trust as a social decision. In R. Kramer, & T. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 357-389). Thousand Oaks, CA: Sage Publications, Inc.
- Lagace, R. (1991). An exploratory study of reciprocal trust between sales managers and salespersons. *The Journal of Personal Selling & Sales Management*, 11(2), 49-58.
- Lee, C., & Lei, U. (2007). Adoption of e-government services in Macao. *Proceedings of the International Conference on Theory and Practice of Electronic Governance (ICEGOV '07)*, Macao, China. 217-220.
- Lee, J., Braynov, S., & Rao, H. (2003). Effects of a public emergency on citizens' usage intentions toward E-government: A study in the context of war in Iraq. *Proceedings of the International Conference on Information Systems (ICIS 2003)*, Washington, DC. 896-902.
- Lee, J., & Rao, H. (2007). Perceived risks, counter-beliefs, and intentions to use anti-counter-terrorism websites: An exploratory study of government-citizens online interactions in a turbulent environment. *Decision Support Systems*, 43(4), 1431-1449.
- Lee, J., & Rao, H. (2009). Task complexity and different decision criteria for online service acceptance: A comparison of two e-government compliance service domains. *Decision Support Systems*, 47(4), 424-435.
- Lee, K., Kang, I., & McKnight, D. (2007). Transfer from offline trust to key online perceptions: An empirical study. *IEEE Transactions on Engineering Management*, 54(4), 729-741.
- Lester, S., & Brower, H. (2003). In the eyes of the beholder: The relationship between subordinates' felt trustworthiness and their work attitudes and behaviours. *Journal of Leadership & Organizational Studies*, 10(2), 17-33.
- Levi, M. (1998). A state of trust. In A. Braithwaite, & M. Levi (Eds.), *Trust and governance* (pp. 77-101). New York, NY: Russell Sage.
- Levi, M., & Stoker, L. (2000). Political trust and trustworthiness. *Annual Review of Political Science*, 3(1), 475-507.
- Lewicki, R., & Bunker, B. (1996). Developing and maintaining trust in work relationships. In R. M. Kramer, & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 114-139). Thousand Oaks, CA: Sage.
- Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of enterprise systems: The effect of institutional pressures and the mediating role of top management. *MIS Quarterly*, 31(1), 59-87.
- Liang, H., Xue, Y., Laoethakul, K., & Metha, N. (2004). Trust in online prescription filling. *Proceedings of the Tenth Americas Conference on Information Systems (AMCIS 2004)*, New York, NY. 253-261.
- Lines, R., Selart, M., Espedal, B., & Johansen, S. (2005). The production of trust during organizational change. *Journal of Change Management*, 5(2), 221-245.

- Liu, C., Marchewka, J., & Ku, C. (2004). American and Taiwanese perceptions concerning privacy, trust, and behavioural intentions in electronic commerce. *Journal of Global Information Management*, 12(1), 18-40.
- Liu, C., Marchewka, J., Lu, J., & Yu, C. (2004). Beyond concern: A privacy-trust-behavioural intention model of electronic commerce. *Information & Management*, 42(1), 127-142.
- Luo, W., & Najdawi, M. (2004). Trust-building measures: A review of consumer health portals. *Communications of the ACM*, 47(1), 108-113.
- Luo, X. (2002). Trust production and privacy concerns on the internet: A framework based on relationship marketing and social exchange theory. *Industrial Marketing Management*, 31(2), 111-118.
- Maeda, Y., & Miyahara, M. (2003). Determinants of Trust in Industry, Government, and Citizen's Groups in Japan. *Risk Analysis: An International Journal*, 23(2), 303-310.
- Malhotra, N., Kim, S., & Agarwal, J. (2004). Internet users' information privacy concerns(IUIPC): The construct, the scale, and a causal model. *Information Systems Research*, 15(4), 336-355.
- Mayer, R., Davis, J., & Schoorman, F. (1995). An integrative model of organizational trust. *The Academy of Management Review*, 20(3), 709-734.
- McAllister, D. (1995). Affect-and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38, 24-24.
- McCauley, D., & Kugner, K. (1992). A theoretical review and empirical investigation of employee trust in management. *Public Administration Quarterly*, 16(2), 265-285.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2000). Trust in e-commerce vendors: A two-stage model. *Proceedings of the Twenty First International Conference on Information Systems (ICIS 2000)*, Brisbane, Queensland. 532-536.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002a). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3), 334-359.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002b). The impact of initial consumer trust on intentions to transact with a web site: A trust building model. *Journal of Strategic Information Systems*, 11(3-4), 297-323.
- McKnight, D. H., Kacmar, C., & Choudhury, V. (2003). Whoops... did I use the wrong concept to predict e-commerce trust? modeling the risk-related effects of trust versus distrust concepts. *Proceedings of the 36th Hawaii International Conference on Systems Sciences (HICSS 2003)*, Big Island, HI. 1-10.
- McKnight, D. H., Kacmar, C., & Choudhury, V. (2004). Shifting factors and the ineffectiveness of third party assurance seals: A two-stage model of initial trust in a web business. *Electronic Markets*, 14(3), 252-266.
- McMillan, J., & Schumacher, S. (2001). In Schumacher S. (Ed.), *Research in education: A conceptual introduction* (5th ed.). New York, NY : Longman.
- Miller, A. (1974). Political Issues and Trust in Government: 1964-1970. *The American Political Science Review*, 68(3), 951-972.

- Miller, A., & Borrelli, S. (1991). Confidence in Government During the 1980s. *American Politics Quarterly*, 19(2), 147-173.
- Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perception of adopting an information technology innovation. *Information Systems Research*, 2(3), 192-222.
- Murnighan, J., Malhotra, D., & Weber, J. (2004). Paradoxes of trust: Empirical and theoretical departures from a traditional model. In R. Kramer, & K. Cook (Eds.), *Trust and distrust in organizations: Dilemmas and approaches* (pp. 293-326). New York: Russell Sage Foundation.
- Murphy, K. (2003). Procedural justice and tax compliance. *Australian Journal of Social Issues*, 38(3), 379-407.
- Murphy, K. (2004). The role of trust in nurturing compliance: A study of accused tax avoiders. *Law and Human Behavior*, 28(2), 187-209.
- Myers, M. (1997). Qualitative research in information systems. *MIS Quarterly*, 21(2), 241-242.
- Newsted, P., Huff, S., & Munro, M. (1998). Survey instruments in information systems. *MIS Quarterly*, 22(4), 553-554.
- Nunnally, J., & Bernstein, I. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.
- Nyhan, R. (2000). Changing the paradigm: Trust and its role in public sector organizations. *The American Review of Public Administration*, 30(1), 87-109.
- Ostom, E. (2003). Toward a behavioural theory: linking trust, reciprocity, and reputation. In E. Ostom, & J. Walker (Eds.), *Trust and reciprocity: Interdisciplinary lessons from experimental research* (pp. 19-79). New York: Russell Sage Foundation.
- Park, R. (2008). Measuring factors that influence the success of E-government initiatives. *Proceedings of the Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008)*, Big Island, HI. 218-227.
- Pavlou, P. (2001). Integrating trust in electronic commerce with the technology acceptance model: Model development and validation. *Proceedings of the Americas Conference on Information Systems (AMCIS 2001)*, Boston, MA. 818-820.
- Pavlou, P. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 101-134.
- Pavlou, P., & Gefen, D. (2004). Building effective online marketplaces with institution-based trust. *Information Systems Research*, 15(1), 37-59.
- Peel, M. (1995). *Good times, hard times: the past and the future in Elizabeth*. Carlton, Victoria: Melbourne University Press.
- Pennington, R., Wilcox, H., & Grover, V. (2003). The role of system trust in business-to-consumer transactions. *Journal of Management Information Systems*, 20(3), 197-226.

- Pettit, P. (1995). The cunning of trust. *Philosophy Public Affairs*, 24(3), 202-225.
- Phang, C., Li, Y., Sutanto, J., & Kankanhalli, A. (2005). Senior citizens' adoption of E-government: In quest of the antecedents of perceived usefulness. *Proceedings of the Hawaii International Conference on System Sciences (HICSS 2005)*, Big Island, Hawaii. 1-8.
- Phang, C., Sutanto, J., Kankanhalli, A., Li, Y., Tan, B., & Teo, H. (2006). Senior citizens' acceptance of information systems: A study in the context of e-government services. *IEEE Transactions on Engineering Management*, 53(4), 555-569.
- Pinsonneault, A., & Kraemer, K. (1993). Survey research methodology in management information systems: An assessment. *Journal of Management Information Systems*, 10(2), 75-105.
- Podsakoff, P., MacKenzie, S., Lee, J., & Podsakoff, N. (2003). Common method biases in behavioural research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Qiu, L., & Benbasat, I. (2004). The effects of text-to-speech and 3D avatars on consumer trust in the design of live help interface of electronic commerce. *Proceedings of the Americas Conference on Information Systems (AMCIS 2004)*, New York, NY. 3165-3173.
- Rafalowska, H. (2005). Building the reputation of a statistical office through effective communication. *Statistical Journal of the United Nations Economic Commission for Europe*, 22(2), 147-156.
- Rahn, W., & Rudolph, T. (2005). A tale of political trust in American cities. *Public Opinion Quarterly*, 69(4), 530-560.
- Reeves, B., & Nass, C. (1996). *The media equation: How people treat computers, televisions, and new media like real people and places*. Cambridge, NY: Cambridge University Press.
- Reid, D., & Reid, F. (2005). Online focus groups: an in-depth comparison of computer-mediated and conventional focus group discussions. *International Journal of Market Research*, 47(2), 131-162.
- Richardson, H., Simmering, M., & Sturman, M. (2009). A tale of three perspectives: Examining post hoc statistical techniques for detection and correction of common method variance. *Organizational Research Methods*, 12(4), 762-800.
- Riegelsberger, J., Sasse, M., & McCarthy, J. (2002). Eye-catcher or blind spot? the effect of photographs of faces on e-commerce sites. *Proceedings of the IFIP Conference on Towards the Knowledge Society: E-Commerce, E-Business, E-Government*, Lisbon, Portugal. 383-398.
- Riegelsberger, J., Sasse, M., & McCarthy, J. (2003). Shiny happy people building trust? photos on e-commerce websites and consumer trust. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* Ft. Lauderdale, FL. 121-128.
- Rifon, N., LaRose, R., & Choi, S. (2005). Your privacy is sealed: Effects of web privacy seals on trust and personal disclosures. *Journal of Consumer Affairs*, 39(2), 339-362.
- Ringle, C., Wende, S., & Will, A. (2005). SmartPLS.2.0 (beta)

- Robinson, S. (1996). Trust and breach of the psychological contract. *Administrative Science Quarterly*, 41(4), 574-599.
- Rohleder, S., & Jupp, V. (2004). *eGovernment leadership: High performance, maximum value*. Accenture.
- Roy, M., Dewit, O., & Aubert, B. (2001). The impact of interface usability on trust in web retailers. *Internet Research*, 11(5), 388-398.
- Schneider, S., Kerwin, J., Frechtling, J., & Vivari, B. (2002). Characteristics of the discussion in online and face-to-face focus groups. *Social Science Computer Review*, 20(1), 31-42.
- Schoorman, F., Mayer, R., & Davis, J. (2007). An integrative model of organizational trust: Past, present, and future. *Academy of Management Review*, 32(2), 344-354.
- Sharma, S., & Gupta, J. (2003). Building blocks of an E-Government—A framework. *Journal of Electronic Commerce in Organizations*, 1(4), 1-15.
- Sia, C., Lim, K., Leung, K., Lee, M., Huang, W., & Benbasat, I. (2009). Web strategies to promote internet shopping: Is cultural-customization needed? *MIS Quarterly*, 33(3), 491-512.
- Sillence, E., Birggs, P., Fishwick, L., & Harris, P. (2005). Guidelines for developing trust in health websites. *International World Wide Web Conference*, Chiba, Japan. 1026-1027.
- Sinha, R., & Swearingen, K. (2002). The role of transparency in recommender systems. *Proceedings of the Conference on Human Factors in Computing Systems (CHI '02)*, Minneapolis, MN. 830-831.
- Stewart, K. (1999). Transference as a means of building trust in world wide web sites. *Proceeding of the International Conference on Information Systems (ICIS 1999)*, Charlotte, NC. 459-464.
- Stewart, K. (2003). Trust transfer on the world wide web. *Organization Science*, 14(1), 5-17.
- Stewart, K. (2006). How hypertext links influence consumer perceptions to build and degrade trust online. *Journal of Management Information Systems*, 23(1), 183-210.
- Stone, E. (1978). *Research methods in organizational behavior*. Glenview, IL: Scott, Foresman and Company.
- Straub, D. (1989). Validating instruments in MIS research. *MIS Quarterly*, 13(2), 147-169.
- Sztompka, P. (1999). *Trust : A sociological theory*. Cambridge, NY: Cambridge University Press.
- Tajfel, H. (1982). *Social identity and intergroup relations*. Cambridge, NY: Cambridge University Press.
- Tan, C., & Benbasat, I. (2009). IT mediated customer services in E-government: A citizen's perspective. *Communications of the Association for Information Systems*, 24(1), 175-198.
- Tan, C., Benbasat, I., & Cenfetelli, R. (2008). Building citizen trust towards E-government services: Do high quality websites matter? *Proceedings of the Annual*

Hawaii International Conference on System Sciences (HICSS 2008), Big Island, HI. 217-227.

- Teo, T., Srivastava, S., & Jiang, L. (2008). Trust and electronic government success: An empirical study. *Journal of Management Information Systems*, 25(3), 99-131.
- Treiblmaier, H., Pinterits, A., & Floh, A. (2004). Antecedents of the adoption of E-payment services in the public sector. *Proceedings of the International Conference on Information Systems (ICIS 2004)*, Washington, DC. 65-76.
- Trochim, W. (2001). *The research methods knowledge base*, (2nd ed.). Cincinnati, OH: Atomic Dog Publishing.
- Ulbig, S. (2002). Policies, procedures, and people: Sources of support for government? *Social Science Quarterly*, 83(3), 789-809.
- Underhill, C., & Ladds, C. (2007). *Connecting with Canadians: Assessing the use of government on-line*. Ottawa, Ontario: Statistics Canada.
- Urban, G., Sultan, F., & Qualls, W. (2000). Placing trust at the center of your internet strategy. *Sloan Management Review*, 42(1), 39-48.
- Vance, A., Elie-Dit-Cosaque, C., & Straub, D. (2008). Examining trust in information technology artifacts: The effects of system quality and culture. *Journal of Management Information Systems*, 24(4), 73-100.
- Van der Heijden, H., Verhagen, T., & Creemers, M. (2003). Understanding online purchase intentions: Contributions from technology and trust perspectives. *European Journal of Information Systems*, 12(1), 41-48.
- Wakefield, R., Stocks, M., & Wilder, W. (2004). The role of web site characteristics in initial trust formation. *Journal of Computer Information Systems*, 45(1), 94-103.
- Wang, W., & Benbasat, I. (2005). Trust in and adoption of online recommendation agents. *Journal of the Association for Information Systems*, 6(3), 72-101.
- Wang, W., & Benbasat, I. (2008). Attributions of trust in decision support technologies: A study of recommendation agents for E-commerce. *Journal of Management Information Systems*, 24(4), 249-273.
- Wang, Y. (2003). The adoption of electronic tax filing systems: An empirical study. *Government Information Quarterly*, 20(4), 333-352.
- Warkentin, M., Gefen, D., Pavlou, P., & Rose, G. (2002). Encouraging citizen adoption of e-government by building trust. *Electronic Markets*, 12(3), 157-162.
- Webber, A., Leganza, G., & Baer, A. (2006). *Citizens' concerns for eGovernment privacy and security run high*. Forrester Research Inc.
- Webber, A., Leganza, G., Hanson, J., Baer, A., & McHarg, T. (2006). *eGovernment adoption levels: 2006*. Forrester Research Inc.
- Webber, A., Leganza, G., Schadler, T., Lo, H., & Lawson, A. (2007). *Benchmark 2007: Minimal progress in eGovernment adoption*. Forrester Research Inc.
- Welch, E., Hinnant, C., & Moon, M. (2005). Linking citizen satisfaction with e-government and trust in government. *Journal of Public Administration Research and Theory*, 15(3), 371-391.

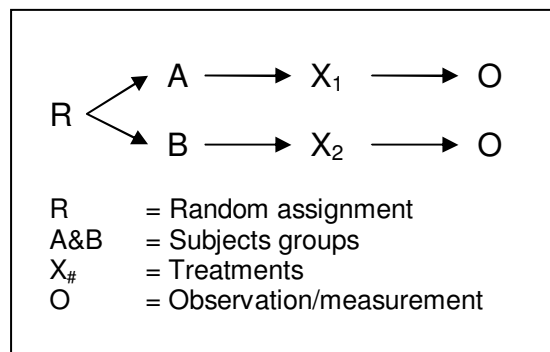
- Wixom, B., & Todd, P. (2005). A theoretical integration of user satisfaction and technology acceptance. *Information Systems Research*, 16(1), 85-102.
- Wrightsman, L. (1991). Interpersonal trust and attitudes toward human nature. In J. Robinson, P. Shaver & L. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 373-412). San Diego, CA: Academic Press.
- Wu, I., & Chen, J. (2005). An extension of trust and TAM model with TPB in the initial adoption of on-line tax: An empirical study. *International Journal of Human-Computer Studies*, 62(6), 784-808.
- Yang, K. (2005). Public administrators' trust in citizens: A missing link in citizen involvement efforts. *Public Administration Review*, 65(3), 273-285.
- Yang, Y., Hu, Y., & Chen, J. (2005). A web trust-inducing model for e-commerce and empirical research. *Proceedings of the International Conference on Electronic Commerce*, Xi'an, China. 188-194.
- Yoon, S. (2002). The antecedents and consequences of trust in online-purchase decisions. *Journal of Interactive Marketing*, 16(2), 47-63.
- Zand, D. (1972). Trust and managerial problem solving. *Administrative Science Quarterly*, 17(2), 229-239.
- Zucker, L. (1986). Production of trust: Institutional sources of economic structure, 1840-1920. *Research in Organizational Behaviour*, 8(1), 53-111.

APPENDICES

Appendix A Testing The Causal Relationship Between Felt Trust And Trust

Investigating causal relationship between felt trust, trust and intentions requires conducting experiments to see if the manipulated treatments (i.e., IT artifacts operationalising the independent variables) are associated with the proposed outcomes (have an impact on the dependent variables). A true experimental posttest group design (McMillan and Schumacher, 2001) was followed in planning the experiment (figure A1).

Figure A1: Experiment design



The choice of this design was made after reviewing and pilot testing other experimental designs. The problem with the repeated measures/within group design was subject attrition; subjects were dropping out after becoming bored with the study and having to answer the same questions twice, even though I changed the treatment of the independent variable. Subjects were also able to guess the hypothesis being tested once they answered the questions a second time, so there was a learning effect. The post-test control group design did not yield the anticipated results possibly because subjects had prior experiences with e-government and used that experience when responding to the survey. Therefore, I decided to include the control treatment and to

ask subjects to use it as a reference point when submitting their answers, thereby unifying the reference used when evaluating the independent variables treatments, following the rationale of Adaptation Level Theory developed by Helson (1964) (c.f. Kim, 2005; Jiang and Benbasat 2004).

This experiment still follows a post-test group design in spite of viewing both websites by each participant (control and treatment artifacts) because participants answer survey items using a differential scale to compare the websites.

Methodology

Sample

The sample size required for each group in this experiment was calculated to be 27 participants²¹. Since the objective of this research is to find ways to improve trust in e-government, using only students for this experiment would not be representative of the target population. To improve external generalizability of the results obtained, members of the online community were randomly sampled and assigned to the different treatments in this experiment.

A marketing research company was employed to invite a randomly selected, representative sample of the online community to participate in the research. The marketing company ensures that the sample will not suffer from self-selection bias, the effects of professional survey-takers, or duplicate respondents. Participants were also validated to ensure authentic responses (e.g., the survey was not taken by a secretary

²¹ G*power software was used in calculating the sample size required. A one sample-different from constant t-test was specified. Power was set to 0.80, effect size to medium (i.e., 0.50) and α to 0.05 which is commonly used by researchers to achieve confidence in the results of their experiments (Creswell, 2003).

instructed by her boss to participate in the experiment on the boss's behalf). Participants chosen were randomly assigned to the different treatments in order to reduce threats to external validity.

Participants received electronic points, redeemable for merchandise from the marketing company's website, for completing the survey. The incentives offered by the marketing research company were set after asking members of the participant pool to share their thoughts about what constitutes fair compensation for their time, so the incentives should have not influenced the type of people who agreed to participate in the study.

According to Forrester Research group and Stats Canada, e-government users average 40 years old on average, about half are male, 27% have university degrees, and 56% hold a full-time job. They are familiar with technology (i.e., they have over 5 years of experience) and connect to the web daily using a high-speed internet connection (Cardin and Holmes, 2006; Underhill and Ladds, 2007). Of those in the sample recruited for this experiment ($n=122$), 46% male, 87% are between the ages of 36 and 45, 28% have a college degree and 53% are employed full-time. Almost 90% are familiar with technology (at least 5 years of experience) and 96% use the internet daily with a high-speed internet connection. Therefore, the demographics of the randomly sampled participants represent those of e-government users, as described by industrial and governmental surveys (Forrester research group and Stats Canada). Therefore, the results obtained from this study can be generalized to the target population (e-government users).

Design, Procedure And Task Requirement

The experiment was administered online because online surveys offer many advantages over other environments, such as labs. Using online administration minimizes missing data and reduces researchers' effects, since it is left completely up to potential participants to participate or withdraw from the study at any stage. The experiment was designed to take only 15 minutes to complete since response quality is maintained when the experiment is short and straightforward. Participants used the comments/suggestion section at the end of the survey to voice their contentment with the experimental procedure.

The marketing company randomly selected potential subjects via email inviting them to participate in this experiment. Once subjects received the invitation email message, they clicked on the link provided in the email message to access the study. Before signing the consent form, subjects viewed a picture (figure A2) at the beginning indicating that the research was not conducted on behalf of any government but rather it is for purely academic purposes. This step was crucial because prior pilots indicated that participants were under the impression that the study was conducted on behalf of a government agency and hence self selection bias posed a threat (i.e., subjects dropped out as a result of their discomfort with answering sensitive questions dealing with trust and government while those taking part of the study had favourable impression of government operations in general).

Figure A2: Experiment notification



Subjects who decided to participate in the study were asked to sign the consent form electronically. If they refused to participate, they could close the window or click on “do not agree” button²². After agreeing to participate in the study, participants were randomly assigned to the different treatments by the survey platform’s branching functionality. There were eight branches for this experiment; four utilized screenshots of websites that manipulated felt trust, and four employed screenshots of websites that manipulated trust (figures A3 and A4).

²² Only 1 subject abandoned the survey/refused to participate.

Figure A3: Websites used in trust treatment

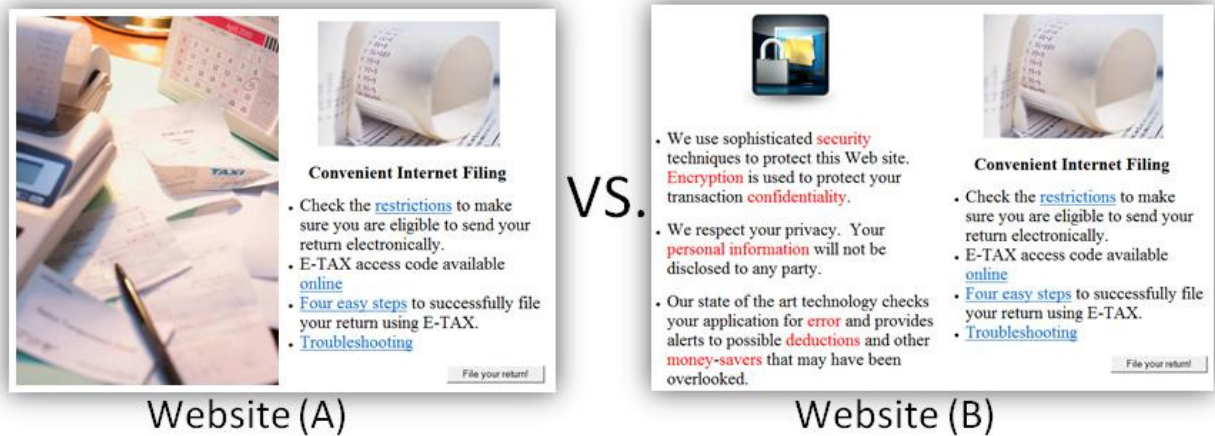


Figure A4: Websites used in felt trust treatment

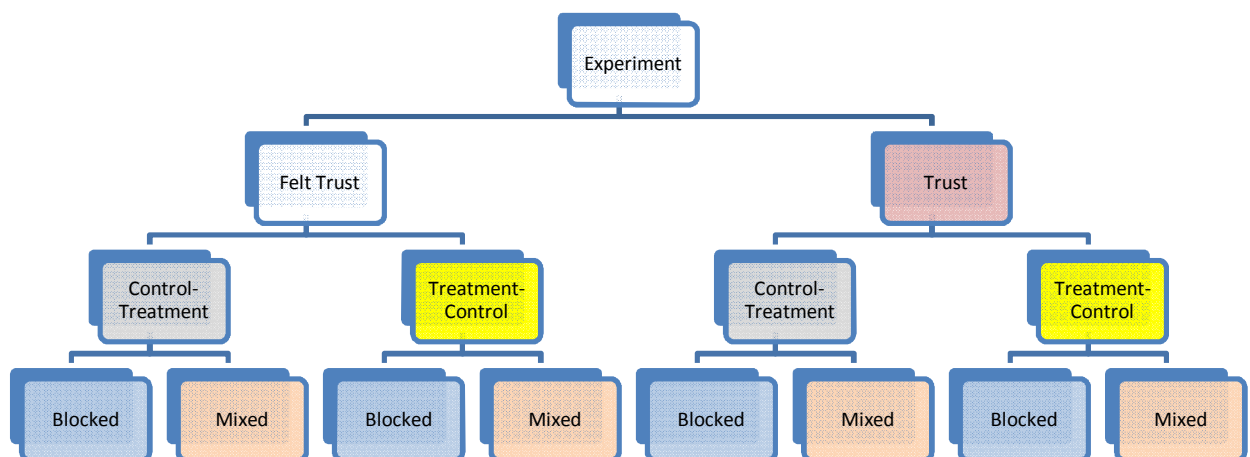


Tax-filing websites were examined before designing the treatments used in this experiment. Each website's image was split in two, where the right side contained a message similar to the one currently used on Canada's tax-filing website (NETFILE) and the left side manipulated the constructs of trust and felt trust. All three trustworthiness dimensions (ability, benevolence, and integrity) were included for both trust and felt trust treatments. For the trust manipulation, the control treatment (website A in figure A3) had only a file picture that did not refer to any trust measures. For the felt trust manipulation, the control treatment (website A in figure A4) had a message conveying distrust. It would not be realistic to have an untrustworthy website since the government would not intentionally look untrustworthy and we were not interested in

testing the effectiveness of untrustworthy websites, but it is realistic for a website to indicate a lack of trust, thereby generating no felt trust. (This sample website was based on the United Kingdom's tax-filing website from July 2009.)

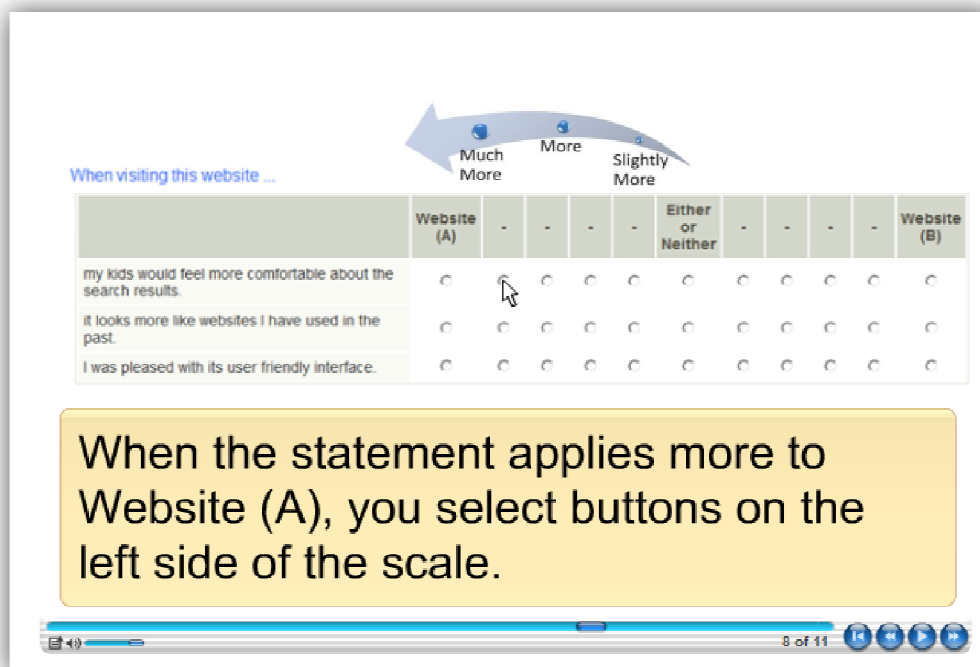
The order of the side-by-side websites was controlled so that some participants first observed the control and then the treatment websites, while others observed the reverse order. In addition, two versions of the measurement instrument were administered; one version had items that operationalized only the intended constructs of interests (blocked items), while the other version mixed the items with other irrelevant questions. The ordering of websites and instrumentation types was included to test for method bias. Figure A5 illustrates the hierarchy of the branches applied.

Figure A5: Hierarchy of branches



Participants first read a definition of e-government, followed by a 45-second video (figure A6) that explained the task requirements and instructions. The video was developed using Flash Demo Builder 2.0; 97% of the participants understood its content, while 3% needed to view the instructions in text form, which was provided upon their request.

Figure A6: Short video explaining task requirement



Participants reviewed screenshots of two websites placed side-by-side (figures A3 and A4) and answered “manipulation check” questions (e.g., “what are these websites used for? A) Tax filing, B) Car rentals, C) Hotel Reservations”, “which one of these websites does not require submitting receipts?”, and “Which one of these websites has a picture of a padlock?” Those who failed to answer these obvious questions or who answered them incorrectly were screened out as survey speeders and were not asked to continue with the survey. Participants were then instructed to answer the remainder of the questions based only on the demonstrated websites (control and treatment) and to disregard any prior experience when providing answers. Participants had access to the demonstrated websites throughout the experiment so they could refer to them when needed. Groups of questions pertaining to felt trust, trust, and other irrelevant questions, were placed randomly on the pages of the instrument. After answering all

the questions, participants responded to demographic questions²³ before being debriefed on the objectives of the study.

Instrument

The items used an 11-point differential scale with two websites (control and treatment websites) as polar ends (figure A6). The mid-point was labelled “either or neither”, and participants chose this option if the item was not applicable or equally applicable to both websites (if they had no preference for one website over the other). Table A1 lists the constructs and the items used in measuring them:

Table A1: Items used in the instrument

Constructs	Items used
Trust	<p>When filing taxes online through this website, e-government clearly conveys that it ...</p> <ul style="list-style-type: none"> • is honest. • has the expertise required to do its job. • wants me to be satisfied with the website. • is something I trust.
Felt trust	<p>When filing taxes online through this website, e-government clearly considers me ...</p> <ul style="list-style-type: none"> • someone who behaves ethically when filing taxes online. • someone who is capable of comprehending online tax filing procedure. • someone who wants to help them with processing tax applications. • someone who can be trusted.

Trust and felt trust measures were constructed after reviewing existing scales in leading journals in the IS literature. The scales for these constructs were assembled using four items covering the three trustworthiness dimensions (ability, integrity, and benevolence) and a general trust/felt trust item. As table A1 shows, the only difference between felt trust and trust measures is the object of trust (e-government vs. self).

The instrument also included “irrelevant” items (e.g. “the website is designed to show my progress”, “the website allows me to communicate with other users”, “the website lets me visit any page I want”) to disguise the purpose of the survey and prevent

²³ Experience with e-government, internet experience, gender, age, income, education, employment and marital status were all measured. A MANOVA analysis showed that these factors and covariates had no significant impact on trust in e-government or felt trust from e-government.

participants from guessing the hypotheses being tested. The irrelevant items were placed randomly throughout the instrument to show participants that some items may not be applicable to the treatments being manipulated so they were not always required to choose one website over the other. Examining the responses obtained for these items could also indicate which participants were providing feedback based simply on what they thought is expected of them.

Several trapping questions were also included to filter survey speeders and ensure response quality. These questions asked participants to select answers specified by the researchers for that question and, if they answered, incorrectly their surveys were flagged.

Results

Responses collected were downloaded and converted to format compatible with PASW 18 that was utilized for analysis. Structural Equation Modeling (SEM) employing Partial Least Square (PLS) analysis was conducted using SmartPLS 2.0(M3) Beta (Ringle et al., 2005). SEM assesses the measurement and structural models simultaneously thus running factor analysis and hypothesis testing at the same time (Gefen et al., 2000). PLS was used rather than covariance-based SEM because it is particularly appropriate for exploratory theory-testing research (Gefen et al., 2000).

Measurement Model

To validate the measurement model, I assessed both convergent and discriminant validities. Convergent validity was supported after examining Cronbach's alpha, composite reliabilities, Average Variance Extracted (AVE), and item loadings which all exceeded the recommended threshold values: 0.70 for composite reliabilities (Fornell and Larcker, 1981), 0.70 for Cronbach's alpha, 50% for Average Variance Extracted

(AVE), and 0.707 for items loadings (Hair et al., 2006), as shown in table A2 and table A3. All items loaded on their intended construct as highlighted.

Table A2: Internal validity figures

Construct	AVE	Composite Reliability	Cronbachs Alpha
Felt Trust	0.649	0.881	0.824
Trust	0.580	0.846	0.757

Table A3: Item loadings

Items	Trust	Felt Trust
Wants me to be satisfied with the website	0.742	0.361
Has the expertise required to do its job	0.727	0.234
Is honest	0.707	0.265
Is something I trust	0.862	0.393
Someone who behaves ethically when filing taxes online	0.244	0.763
Someone who can be trusted	0.324	0.833
Someone who is capable of comprehending online tax filing procedures	0.378	0.805
Someone who wants to help them with processing tax applications	0.370	0.820

To establish construct discriminant validity, Fornell & Larcker (1981) state that the square root of Average Variance Extracted (AVE) needs to be higher for that construct than its correlation with other constructs. The inter-construct correlation matrix is illustrated in table A4 with square root of Average Variance Extracted (AVE) presented in bold.

Table A4: Correlation matrix

	Felt Trust	Trust
Felt Trust	0.806	
Trust	0.419	0.762

Latent variables scores obtained through SmartPLS 2.0(M3) Beta (Ringle et al., 2005) were analysed using PASW 18. The data was split between the two treatments (i.e., felt trust and trust websites comparison groups) and then a 1-sample t-test was conducted using 6 (mid point) as the test value. The felt trust treatment was shown to have all constructs significantly different from the mid point, whereas the trust treatment was associated with significant trust but not felt trust, thereby establishing the unidirectional cause-effect relationship between felt trust and trust. In other words, the

manipulation of felt trust lead to increase in trust (statistically significant at $p < 0.05$) but the manipulation of trust did not lead to increase in felt trust (not statistically significant at $p < 0.05$). Even though felt trust is almost significant for the trust treatment group, the difference of 0.27 is less than a quarter of the size of the impact of felt trust on trust (i.e., 1.44). Furthermore, since two tests are carried out within the same experiment, p-value should be adjusted accordingly to 0.025 further confirming that felt trust did not significantly increase when trust was manipulated. Tables A5 and A6 list the statistics and significant levels of the t-tests for each treatment.

Both the trust and the felt trust treatments had similar effects on the dependent variable (trust), with mean values of 7.23 and 7.44, respectively, but the felt trust treatment led a 36% change in felt trust when compared to trust treatment.

Table A5: Groups statistics

Group	Constructs	N	Mean	Std. Deviation	Std. Error Mean
Trust Treatment	Felt Trust	53	6.27	0.99	0.14
	Trust	53	7.23	1.31	0.18
Felt Trust Treatment	Felt Trust	69	8.52	1.90	0.23
	Trust	69	7.44	1.76	0.21

Table A6: T-test results

Group	Construct	T	Df	Sig. (2-tailed)	Mean Difference
Trust Treatment	Felt Trust	1.999	52	.051	0.27
	Trust	6.823	52	.000	1.23
Felt Trust Treatment	Felt Trust	11.010	68	.000	2.52
	Trust	6.779	68	.000	1.44

The final issue was to check for method bias from the order of displayed websites and the grouping of items in the instrument. I conducted a MANOVA analysis on the factor scores obtained by SmartPLS 2.0 (M3) Beta (Ringle et al., 2005) to check for these effects, again splitting the data between the two treatment groups (trust and felt trust) and using the order of the pictures displayed and the type of instrument as fixed factors (splitting the responses into different groups). The results showed no evidence of either

type of bias on the dependent variables (felt trust, and trust) for the trust treatment group. There was some indication of method bias for the felt trust treatment because the instrument type (mixed or blocked) had an impact on the results obtained for felt trust as a dependent variable (table A7).

Table A7: MANOVA results

Group	Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Trust Treatment	Corrected Model	Felt Trust	3.637	3	1.212	1.266	.296
		Trust	2.943	3	.981	.559	.645
	Intercept	Felt Trust	2023.392	1	2023.392	2112.658	.000
		Trust	2668.490	1	2668.490	1520.754	.000
	LHHL	Felt Trust	.315	1	.315	.329	.569
		Trust	.921	1	.921	.525	.472
	MixBlock	Felt Trust	.261	1	.261	.272	.604
		Trust	.458	1	.458	.261	.612
	LHHL * MixBlock	Felt Trust	2.910	1	2.910	3.038	.088
		Trust	1.231	1	1.231	.702	.406
	Error	Felt Trust	46.930	49	.958		
		Trust	85.981	49	1.755		
	Corrected Total	Felt Trust	50.566	52			
		Trust	88.924	52			
Felt Trust Treatment	Corrected Model	Felt Trust	20.819	3	6.940	2.000	.123
		Trust	12.887	3	4.296	1.404	.250
	Intercept	Felt Trust	4873.229	1	4873.229	1404.086	.000
		Trust	3707.787	1	3707.787	1211.824	.000
	LHHL	Felt Trust	5.523	1	5.523	1.591	.212
		Trust	10.746	1	10.746	3.512	.065
	MixBlock	Felt Trust	16.238	1	16.238	4.679	.034
		Trust	.557	1	.557	.182	.671
	LHHL * MixBlock	Felt Trust	.407	1	.407	.117	.733
		Trust	2.472	1	2.472	.808	.372
	Error	Felt Trust	225.599	65	3.471		
		Trust	198.879	65	3.060		
	Corrected Total	Felt Trust	246.418	68			
		Trust	211.766	68			

Although interpretations of this experiment results should be made with caution, the method bias for felt trust in the felt trust treatment group should not be a concern, given the hypotheses tested for the dependent variable (trust in e-government) for that group. Participants scored higher when the instrument was using blocked items (mean = 8.96) than when it used items mixed with non-relevant questions (mean = 7.98). On the other hand, the order of the website display and the instrument used had no impact on the

dependent variable (trust), so the conclusions reached for this part of the experiment should still be valid.

Summary

Overall, the experiment provided additional assurance for the causal relationship proposed in the body of the thesis. Specifically, felt trust from e-government influences trust in e-government but not vice versa. In addition, the results show that trust in e-government can be built by introducing trust-enhancing design features to promote anticipative trust or by incorporating felt-trust-enhancing design features to inspire reciprocal trust.

Appendix B Focus Group Study Task And Discussion Guide

Participants Task

Dear #USERNAME#:

My name is (Moderator) and I am the moderator who will be leading our online bulletin board discussion this week on e-government websites. I'm sure you'll find the experience both interesting and fun.

As part of our discussion I'll be asking for your feedback on some specific e-government websites. Therefore, I have a couple of tasks I'd like you to do that will help you prepare for our discussion. These tasks should not take much time to complete, but will help you to better respond to some of my questions in the bulletin board. The tasks are as follows:

Task 1 – Filing Income Taxes Online

Please login to the Canadian Government website and find out how you can file your income taxes online (you will not submit the application, but only gather information). If you don't know how to find information on filing taxes online, please use the following steps:

1. Visit www.gc.ca portal (click on English to proceed)
2. On the left, you will see Services category (click on "Service Canada")
3. Examine the website for a short period of time.
4. Scroll down until you see "Other Useful Sites" on the right (click on "Taxes: Individual")
5. Click on the "All about your tax return" link
6. Click on "Sending"
7. You'll see three different options for sending a tax return (you can read the description if you wish)

8. Then click on “NETFILE”

9. Examine the links on the left under “NETFILE” tab.

Remember, you are not required to register or file taxes for this task, only gather information.

Task 2 - Singapore & Dubai E-government Websites

Please login to both the Singapore (www.gov.sg) and Dubai (www.duabi.ae) e-government websites and have a look around. In both cases, I just want you to focus on government products/services provided to citizens. You do not need to complete any transactions or register with the website, simply take note of similarities and differences with the Canadian e-government website.

Keep in mind that you can have these e-government websites open in a separate browser while you're logged into the bulletin board, so you can refer back to websites at any time (do not need to work from memory).

Thank you very much and I look forward to chatting with you online tomorrow.

Regards,

Group Moderator

Discussion Guide

1.0 Instructions

1.1. Welcome to our bulletin board and thank you for joining us. My name is (Moderator) and I will be leading our discussion over the next few days. This bulletin board is very easy and intuitive to use. To participate in the discussion, simply click on the question labels in the left margin (e.g. 2.1). This will link you into the questions, visuals, and postings for that particular question. To answer the question or comment, simply click on “Reply to This Question”. For each question, you’ll need to post your “reply” first and then you’ll see what other people have said. Once you’ve posted your reply, you should feel free to read the other answers and post questions and/or comments to your fellow participants. It is best to answer the questions in the order they are presented (answer 2.2 before proceeding to 2.3). Remember, you have all day to complete Day 1’s questions, so take advantage of the flexibility of the bulletin board format and login when it’s most convenient for you. Please click on 1.2 to continue...

1.2. My postings are written with several questions combined together. Think about them together, as a theme. Try to answer each posting in its entirety addressing most or all of the parts in your reply. I’ll even add a follow up question or two, so check in often to catch the latest posting. We ask that you sign in at least twice a day for each of the three days (although we hope you will be able to login more often). If, for some reason, you can’t make one of the days, please join us for the other days. For each day in which you participate, you will receive \$20. Please click on 1.3 to continue...

1.3. Each morning I’ll post a new set of questions. Please login and answer each of these new questions first. Then take some time to read what other participants have written and feel free to respond to their comments. You can also review the previous day's postings at any time. So I encourage you to check back for any new questions or

comments you may have missed. Overall, the goal of this bulletin board is to create an extended, interactive conversation between all of us. Please click on 1.4 to continue...

1.4. I want to reassure you that all your responses will be kept strictly confidential and the information you share with me is only for the purposes of this study. What's important to me is what is said, not who says it. Please be aware that I'm an independent research consultant and do not work directly for UBC or the government. So feel free to speak your mind – you can't hurt my feelings. Please click on 1.5 to continue...

1.5. Finally, I would like to thank each of you for taking time from your week to help us with this study. I think you will find it interesting and fun. Click on 2.1 to introduce yourself...

2.0 Introductions

2.1. The first thing I would like to do is a warm-up question to get everyone familiar with each other and get you used to how the bulletin board works. Why don't you start off by telling us the city/town you live in, your occupation and what things you like to do in your free time? I'll start us off. I'm from Saskatoon and I'm a marketing research consultant. In my free time I like to travel, play golf and go camping. Now let's hear from the rest of you...

2.2. It's nice to meet all of you and now we are ready to begin our discussion. Please click on 3.1 to see our first question...

3.0 Day 1

3.1. To start off I'd like to know a little about your "Internet Behavior". Please tell us how much time you spend online per day and the websites you visit most often. What are your main reasons for visiting these websites (i.e. information, entertainment, shopping, etc.).

3.2. Now I'd like to focus on "e-commerce" websites specifically. If not already mentioned, which e-commerce websites do you visit regularly and what is it about these websites that you find appealing (e.g. things you like most about them)?

3.3. Now I'd like you to think back to the last time you made a purchase online from an e-commerce website and tell us about your experience. How long ago was it? What did you buy? What motivated you to buy it online? Did you have any problems during the process?

3.4. Prior to making your online purchase, did you have any concerns about buying goods/services from an e-commerce website (i.e. security, delivery time, fraud, etc.)? If so, what were your main concerns and why? What was it that helped you overcome your concerns and make your online purchase? Was there anything on the e-commerce website specifically that made you feel more "secure" or "trusting"?

3.5. Now I'd like you to think about other e-commerce websites you visit regularly. What (if anything) do these e-commerce websites do to instil "trust" with their customers? What elements of these websites communicate "trustworthiness" to you? Well that brings us to the end of Day 1's questions. Please remember to login again later to see if I've asked you any follow up questions.

Thank you for your feedback so far and I look forward to chatting with you again tomorrow.

4.0 Day 2

4.1. Welcome to Day 2 everyone. Today we will continue to discuss "internet behavior", but with a focus on government websites. However before we begin, I encourage you to take a minute to check back to Day 1's questions to see if there's any follow up questions you missed. Then click on 4.2 to continue...

4.2. To start off, let me define e-government. E-government websites are designed to provide information and to facilitate the exchange of goods and services between government and citizens. Now, I'd like you to think back to the last time you visited an e-government website (federal, provincial, or municipal) and tell us about your experience. What website did you visit? What was the purpose of your visit? What features did you find most useful and why? Was there anything you didn't like about the process? Was there anything on the website you'd like to see changed and why?

4.3. In the whiteboard is a list of transactions that can often be completed on e-government websites. Do any of these transactions surprise you? Are there any transactions you were not aware could be done online?

4.4. Have you ever done any of these transactions online? If so, which ones and why? If not, are there any you would consider doing online and why? Are there any transactions in the list that you would "never" do online and why? Are there any services (not already mentioned above) that you would like to see online in the future? If so, what services and why?

- Apply for grants (e.g. for academic, industrial, or residents renovation purposes...etc)
- Apply for permits (e.g. immigration visas, fishing license, work permit...etc)
- Apply for life event forms (e.g. birth certificate, marriage certificate, death certificate)
- Apply for identification documents (e.g. Social Insurance Number, passport...etc)
- Modify status (e.g. change of address, marital status, name change...etc)
- Apply for benefits (e.g. employment insurance, old age security, benefits for new comers to Canada...etc)
- Renew drivers license, or automobile documentation (e.g. registration, insurance...etc)

- Pay parking tickets or other automobile related violation
- Purchase items from government auctions website
- File income taxes online

4.5. Now we are going to discuss the Government of Canada website specifically. But before we begin, I have some background information...

According to recent reports, Canada is one of the leading countries in developing its e-government website. However, people continue to use it mostly for information purposes and rely on other channels (e.g. telephone, mail, and in-person) for critical government transactions. Why do you think people are reluctant to do transactions on the Canada e-government website? What do you feel are the main barriers that keep people from doing more government transactions online and why?

4.6. For the remainder of today's discussion we will be examining the Canada e-government website specifically. I recommend opening the Canada e-government website (www.gc.ca) in a separate browser so you can quickly click back and forth between this discussion board and the e-government site while answering the following questions. Click on 4.7 to continue...

4.7. In the whiteboard is a screenshot of the "Service Canada" portal on the Canada e-government website. You were asked to take some time to explore this portal prior to logging in today and to find out how you can file your income taxes online (if you haven't, please do so now). After examining the Service Canada portal and NETFILE links, how do feel about the process of filing income taxes online? Do you feel you can "trust" this website to properly process your income tax? Would you consider filing you income taxes online in the future? Why or why not?

4.8. What specific elements of the website (if any) communicate “trustworthiness” to you and why? Is there anything that could be added or removed that would make the Canada e-government website appear more trustworthy? If so, what would you add or remove and why?

4.9. Yesterday I asked if retailers should trust their customers. How do you feel about government? Should the Canadian government trust its people to be honest when doing transactions online, or is it always best to be cautious when dealing with people in general?

4.10. Is there anything on the Canadian government website that communicates that it “trusts” you to be honest? If so, what communicates this and why? On the other hand, is there anything on the Canadian government website that communicates that it is “cautious” and does not trust you to be honest? If so, what communicates this and why?

4.11. Overall, would you prefer the Canadian government website to be more “trusting” or more “cautious” with you and why? Is there anything you feel could be added to, or removed from the website to communicate this?

4.12. Well that brings us to the end of Day 2’s questions. Thank you for all your hard work and I look forward to hearing your thoughts and ideas again tomorrow.

5.0 Day 3

5.1. Welcome to our third and final day everyone. Before we begin, I once again encourage you to take a minute to check back to Day 2’s questions to see if there’s anything you missed. Then click on 5.2 to continue...

5.2. Today we are going to examine two other e-government websites and compare them to the Canada e-government website we examined yesterday. You were asked to take some time and check out the Singapore and Dubai e-government websites prior to logging in today (if you haven’t, please do so now). Let’s begin with the Singapore e-

government site. After examining the Singapore site, how do you feel about it? What do you like and why? What would you change and why? Overall do you prefer the Canada or Singapore website and why?

5.3. Now I'd like you to compare the Singapore e-government site to the Canada site with a focus on the following:

- Would you trust the Singapore website more, less or about the same as the Canada site and why?
- Do you feel the Singapore website appears to be more "cautious in dealing with people", less or about the same as the Canada site and why?

5.4. Now let's move on to the Dubai e-government website. After examining the Dubai site, how do you feel about it? What do you like and why? What would you change and why? Overall do you prefer the Canadian or Dubai website and why?

5.5 Now I'd like you to compare the Dubai e-government site to the Canada site with a focus on the following:

- Would you trust the Dubai website more, less or about the same as the Canada site and why?
- Do you feel the Dubai website appears to be more "cautious in dealing with people", less or about the same as the Canada site and why?

5.6. Below is a list of statements. Please select which statement best describes how you feel about doing transactions on e-government websites and why?

- For me to transact with the government website, it must demonstrate first that it is trustworthy.
- For me to transact with the government website, it must demonstrate first that it trusts me.
- For me to transact with the government website, it must be trustworthy and

demonstrate that it trusts me.

- For me to transact with the government website, I don't need to be trusted or trust the website.
- I will never transact with the government website for other reasons.

5.7. That brings us to the end of our discussion. Thank you very much for your excellent participation - your feedback has been very valuable to us. Your more formal "thank you" should arrive in the mail shortly. It takes some time to process, so you can expect your honorarium to arrive in 2-3 weeks.

As you may recall from the recruiting survey, this discussion group is part of a research project for a doctoral dissertation at the University of British Columbia. The goal is to investigate ways to help citizens feel secure in providing information (financial and/or personal) over public administration websites when transacting online.

If any of you are interested in participating in further research on this topic, please let me know and I can forward your contact information to Dr. Paul Chwelos at UBC. I want to emphasize that there is no obligation to participate and I will keep your contact information confidential unless you provide confirmation below.

Once again thank you very much for all your great feedback and have a great week!

Appendix C Classification Study Survey Items

Survey Items - Adopted From Tan and Benbasat (2009)

An online government website with the ability to ...	Makes me...		
	Trust online government	Neither trust nor feel trusted by online government	Feel trusted by online government
provide personalized tracking system (allowing me track the processing status of a transaction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
clarify transactional prerequisites (allowing me to comprehend the minimum requirements for a transaction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
control administrative procedures (allowing me to control aspects of public administration when conducting transactions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
provide summary of transactional activities (allowing me to review archival records of completed transactions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
collect feedback (allowing me to interact proactively with public agencies to offer comments and feedback)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
localize press releases regarding transactional matters (allowing me to review, from a single localized domain, updates or information regarding new service developments)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
identify third party involved in transaction (allowing me to identify any third party involved in transaction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
create personal web domain (allowing me to conduct personalized transactions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
prompt news updates regarding transactional matters (allowing me to authorize proactive prompting of new service developments through various electronic means)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
address common needs (allowing me to access content addressing common transactional needs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
provide virtual trial-run (allowing me to perform a complete walkthrough of the intended transaction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

An online government website with the ability to ...	Makes me...		
	Trust online government	Neither trust nor feel trusted by online government	Feel trusted by online government
modify online service request after submission (allowing me to change aspects of a transaction even after it is deemed to have been completed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
offer different payment options (allowing me to choose among various payment options for a transaction)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
record transactional proceedings (allowing me to archive transactional proceedings in a personalized domain that is accessible by all involved parties)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
complete transaction online (allowing me to conduct the intended transaction)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
provide information on involved third party (allowing me to review information on the credentials and role of any third party involved in a transaction)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
profile services (allowing me to customize services based on individual and/or demographic profiles to facilitate ready access from a consolidated web-space)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
offer various trial-run options (allowing me to choose among different trial-run options for the intended transaction based on specified preferences)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
specify administrative preferences (allowing me to specify administrative procedures for a transaction)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
provide privacy protection statement (allowing me to review clarifications on how disclosed transactional information will be utilized and protected)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
anticipate common needs (allowing me to seek clarification regarding common transactional needs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
create online personal identity (allowing me to establish individual identity in the online government domain)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

An online government website with the ability to ...	Makes me...		
	Trust online government	Neither trust nor feel trusted by online government	Feel trusted by online government
provide proactive prompting of transactional deadlines (allowing me to authorize proactive prompting of transactional deadlines through various electronic means)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
submit service request online (allowing me to submit necessary information and requirements for a transaction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
modify personal information (allowing me to update personal information to maintain the relevance of service offerings)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
register disputes with transactional outcomes (allowing me to communicate and log disagreements with transactional outcomes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
provide comprehensive schedule on availability of services (allowing me to review time schedule pertaining to the availability of government services due to system maintenance and/or upgrades)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pre-authorize recurring transaction/payments (allowing me to choose among various options by which recurring transactions and/or payments is to proceed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
provide deadlines for specific transactions (allowing me to review deadlines for the completion of specific transactions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
allow access of transactions online (allowing me to complete the transaction online)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
provide at least one mode of direct electronic payment (allowing me to have at least one mode of payment authorizing fund transfer via the internet and/or other electronic means)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix D Survey Items

Felt Trust Government – From Item Generation Step And Adapted From McKnight et al. (2002a)

Generally speaking, the Canadian government considers me...

- fair in my dealings.
- competent in obeying its laws.
- a person who sincerely wants to help it.
- someone who can be trusted.
- trustworthy.
- a person it trusts.

Structural Assurance – Adopted From McKnight et al. (2002a)

- I feel assured that technological structures protect me from problems on the Internet.
- I feel confident that technological advances on the Internet make it safe to use.
- The Internet is now a robust and safe environment to use.
- The Internet has enough safeguards to make me feel comfortable about using it.

Trust In Government – From Item Generation Step And Adapted From McKnight et al. (2002a)

Generally speaking, the Canadian Government...

- is fair in its dealings.
- is capable of doing its job.
- sincerely wants to help me.
- is a government I trust.
- can be trusted.
- is trustworthy.

Intentions to use E-government – Adapted From Wu and Chen (2005) And Hung et al. (2006)

If I have to deal with the Canadian government (e.g., find information, interact and/or transact with the government):

- I intend to use Canada's e-government websites.
- I am likely to use Canada's e-government websites.
- I will use Canada's e-government websites.

Attitude – Adapted From Wu and Chen (2005) and Hung et al. (2006)

- I like using Canada's e-government websites when dealing with government matters.
- Using Canada's e-government websites is a good idea.
- I have a favourable opinion about the idea of using Canada's e-government websites.

Perceived Risk - Developed

- The degree of risk associated with using Canada's e-government websites is high.
- The likelihood of problems associated with using Canada's e-government websites is high
- Generally speaking, it is risky to use Canada's e-government websites.

Perceived Usefulness – Adapted From Davis (1989)

- Using Canada's e-government websites would make the process easier.

- Using Canada's e-government websites would help me accomplish my goals in a timely fashion.
- Using Canada's e-government websites would enhance my effectiveness.
- Using Canada's e-government websites would be useful overall.

Perceived Ease Of Use – Adapted From Davis (1989)

- Using Canada's e-government websites is a clear and understandable process.
- Learning how to use Canada's e-government websites is easy.
- Becoming skilful at using Canada's e-government websites is not difficult.
- Overall, it is easy to use Canada's e-government websites.

Felt Trust E-government – From Item Generation Step And Adapted From McKnight et al. (2002a)

Canada's e-government considers me...

- a user who sincerely wants to help it.
- fair in my dealings.
- capable of using the different design features on its website.
- trusts me.
- trustworthy.
- a user it can trust.

Autonomy – Developed

- Canada's e-government does not interfere with how I use the site.
- Canada's e-government gives me the freedom to do what ever I want over the site.
- Canada's e-government lets me learn on my own.
- When browsing through the website, Canada's e-government permits me to visit any page I want.
- Canada's e-government lets me work on things on my own.

Influence Acceptance – Developed

- Canada's e-government takes my opinion into consideration before making any decision.
- Canada's e-government acts on my suggestions or comments.
- Canada's e-government follows my recommendations.
- Canada's e-government takes my feedback seriously.

Trust In E-government – From Item Generation Step And Adapted From McKnight et al. (2002a)

Canada's e-government ...

- is fair in its online dealings.
- sincerely wants to help me.
- is capable of delivering services online.
- is something I trust.
- can be trusted.
- is trustworthy.

Situational Normality – Adapted From McKnight et al. (2002a)

- The steps required to search for and order services over Canada's e-government websites are typical of other websites.
- The information requested of me at Canada's e-government website is the type of information most websites request.

- The nature of the interaction with Canada's e-government website is typical of other websites.

Fiduciary Responsibility - Developed

- Canada's e-government is obligated to act in trustworthy manner over the electronic medium.
- Canada's e-government should be helpful at all time.
- Canada's e-government is mandated by law to be moral when serving the public over the Internet.
- It is Canada's e-government job to be competent in providing services online.

Reputation – Developed

- Canada's e-government websites are well known.
- Canada's e-government websites have good reputation.
- Canada's e-government websites are popular.
- I have heard a lot of good things about Canada's e-government websites.

Similarity – Developed

- Canada's e-government and I are similar.
- Canada's e-government and I adhere to the same principles.
- Canada's e-government and I act the same way.
- Canada's e-government and I have something in common.

Appendix E Items Loadings And Cross Loadings

Table E1: Item loading and internal consistency statistics

Construct (Cronbach's α , composite reliability, and AVE)	Item Loadings
Felt Trust Government (0.96, 0.97, 0.83) (Prefix) Generally speaking, the Canadian government considers me...	
fair in my dealings.	0.850
competent in obeying its laws.	0.868
a person who sincerely wants to help it.	0.877
someone who can be trusted.	0.941
trustworthy.	0.954
a person it trusts.	0.959
Autonomy (0.91, 0.94, 0.74)	
Canada's e-government does not interfere with how I use the site.	0.819
Canada's e-government gives me the freedom to do what ever I want over the site.	0.841
Canada's e-government lets me learn on my own.	0.856
When browsing through the website, Canada's e-government permits me to visit any page I want.	0.894
Canada's e-government lets me work on things on my own.	0.896
Influence Acceptance (0.94, 0.96, 0.86)	
Canada's e-government takes my opinion into consideration before making any decision.	0.897
Canada's e-government acts on my suggestions or comments.	0.920
Canada's e-government follows my recommendations.	0.938
Canada's e-government takes my feedback seriously.	0.951
Felt Trust E-government (0.96, 0.96, 0.82) (Prefix) Canada's e-government considers me...	
a user who sincerely wants to help it.	0.816
fair in my dealings.	0.818
capable of using the different design features on its website.	0.925
trusts me.	0.949
trustworthy.	0.953
a user it can trust.	0.960
Structural Assurance (0.94, 0.96, 0.85)	
I feel assured that technological structures protect me from problems on the Internet.	0.902
I feel confident that technological advances on the Internet make it safe to use.	0.902
The Internet is now a robust and safe environment to use.	0.936
The Internet has enough safeguards to make me feel comfortable about using it.	0.955
Situational Normality (0.94, 0.91, 0.85)	
The steps required to search for and order services over Canada's e-government websites are typical of other websites.	0.875
The information requested of me at Canada's e-government website is the type of information most websites request.	0.925

Construct (Cronbach's α , composite reliability, and AVE)	Item Loadings
The nature of the interaction with Canada's e-government website is typical of other websites.	0.962
Similarity (0.94, 0.95, 0.84)	
Canada's e-government and I are similar.	0.885
Canada's e-government and I adhere to the same principles.	0.912
Canada's e-government and I act the same way.	0.922
Canada's e-government and I have something in common.	0.945
Trust in E-government (0.96, 0.97, 0.84) (Prefix) <i>Canada's e-government ...</i>	
is fair in its online dealings.	0.851
sincerely wants to help me.	0.867
is capable of delivering services online.	0.922
is something I trust.	0.953
can be trusted.	0.954
is trustworthy.	0.956
Trust in Government (0.97, 0.98, 0.87) (Prefix) <i>Generally speaking, the Canadian Government...</i>	
is fair in its dealings.	0.896
is capable of doing its job.	0.902
sincerely wants to help me.	0.915
is a government I trust.	0.955
can be trusted.	0.958
is trustworthy.	0.960
Fiduciary Responsibility (0.91, 0.93, 0.78)	
Canada's e-government is obligated to act in trustworthy manner over the electronic medium.	0.826
Canada's e-government should be helpful at all time.	0.895
Canada's e-government is mandated by law to be moral when serving the public over the Internet.	0.902
It is Canada's e-government job to be competent in providing services online.	0.908
Reputation (0.90, 0.93, 0.78)	
Canada's e-government websites are well known.	0.846
Canada's e-government websites have good reputation.	0.846
Canada's e-government websites are popular.	0.881
I have heard a lot of good things about Canada's e-government websites.	0.932
Perceived Ease of Use (0.97, 0.98, 0.91)	
Using Canada's e-government websites is a clear and understandable process.	0.940
Learning how to use Canada's e-government websites is easy.	0.941
Becoming skilful at using Canada's e-government websites is not difficult.	0.964
Overall, it is easy to use Canada's e-government websites.	0.965
Perceived Risk (0.93, 0.96, 0.88)	
The degree of risk associated with using Canada's e-government websites is high.	0.935

Construct (Cronbach's α , composite reliability, and AVE)	Item Loadings
The likelihood of problems associated with using Canada's e-government websites is high	0.936
Generally speaking, it is risky to use Canada's e-government websites.	0.941
Perceived Usefulness (0.97, 0.98, 0.91)	
Using Canada's e-government websites would make the process easier.	0.934
Using Canada's e-government websites would help me accomplish my goals in a timely fashion.	0.958
Using Canada's e-government websites would enhance my effectiveness.	0.958
Using Canada's e-government websites would be useful overall.	0.962
Attitude(0.93, 0.95, 0.87)	
I like using Canada's e-government websites when dealing with government matters.	0.912
Using Canada's e-government websites is a good idea.	0.941
I have a favourable opinion about the idea of using Canada's e-government websites.	0.953
Intentions To use E-government (0.96, 0.97, 0.92)	
I intend to use Canada's e-government websites.	0.939
I am likely to use Canada's e-government websites.	0.966
I will use Canada's e-government websites.	0.976

Table E2: Item cross loadings

Items	Constructs															
	ATT	AUT	FR	FTEG	FTG	IA	INT	PEOU	PR	PU	REP	SA	SIM	SN	TEG	TG
ATT1	0.911	0.406	0.380	0.370	0.237	0.341	0.718	0.526	-0.386	0.649	0.489	0.233	0.503	0.448	0.559	0.320
ATT2	0.942	0.424	0.374	0.404	0.220	0.378	0.782	0.445	-0.407	0.728	0.458	0.246	0.508	0.348	0.584	0.341
ATT3	0.953	0.439	0.372	0.404	0.223	0.360	0.784	0.473	-0.425	0.754	0.441	0.281	0.516	0.390	0.632	0.313
AUT1	0.333	0.856	0.409	0.524	0.281	0.429	0.305	0.419	-0.310	0.450	0.445	0.210	0.311	0.398	0.477	0.258
AUT2	0.337	0.819	0.300	0.486	0.262	0.487	0.285	0.400	-0.260	0.366	0.447	0.174	0.336	0.440	0.470	0.246
AUT3	0.454	0.896	0.459	0.542	0.241	0.433	0.365	0.494	-0.364	0.508	0.446	0.179	0.343	0.453	0.562	0.255
AUT4	0.324	0.841	0.382	0.478	0.213	0.436	0.283	0.491	-0.303	0.412	0.426	0.147	0.258	0.473	0.452	0.253
AUT5	0.485	0.894	0.471	0.577	0.280	0.433	0.450	0.464	-0.377	0.556	0.439	0.183	0.342	0.440	0.583	0.279
FR1	0.434	0.453	0.895	0.434	0.215	0.215	0.468	0.396	-0.254	0.484	0.323	0.184	0.306	0.387	0.559	0.216
FR2	0.318	0.397	0.902	0.349	0.120	0.064	0.409	0.361	-0.155	0.395	0.234	0.157	0.138	0.323	0.440	0.094
FR3	0.308	0.400	0.826	0.408	0.174	0.197	0.382	0.290	-0.181	0.420	0.340	0.121	0.366	0.298	0.462	0.180
FR4	0.340	0.412	0.908	0.420	0.189	0.138	0.423	0.307	-0.156	0.415	0.253	0.120	0.201	0.338	0.501	0.129
FTEG1	0.291	0.456	0.357	0.816	0.391	0.482	0.290	0.363	-0.271	0.433	0.366	0.218	0.411	0.313	0.568	0.349
FTEG2	0.378	0.541	0.418	0.925	0.516	0.452	0.370	0.408	-0.341	0.492	0.415	0.236	0.442	0.379	0.619	0.372
FTEG3	0.417	0.561	0.455	0.818	0.355	0.352	0.353	0.525	-0.314	0.501	0.377	0.169	0.318	0.429	0.515	0.217
FTEG4	0.390	0.584	0.409	0.949	0.517	0.491	0.388	0.453	-0.348	0.521	0.426	0.269	0.468	0.356	0.639	0.370
FTEG5	0.398	0.581	0.428	0.960	0.533	0.475	0.384	0.452	-0.340	0.508	0.453	0.281	0.461	0.361	0.630	0.316
FTEG6	0.409	0.574	0.432	0.953	0.550	0.468	0.385	0.461	-0.333	0.509	0.445	0.258	0.447	0.369	0.638	0.339
FTG1	0.216	0.296	0.172	0.444	0.850	0.176	0.176	0.207	-0.212	0.236	0.158	0.276	0.271	0.200	0.325	0.413
FTG2	0.207	0.288	0.193	0.459	0.868	0.242	0.164	0.231	-0.207	0.223	0.176	0.195	0.194	0.186	0.326	0.431
FTG3	0.245	0.266	0.148	0.437	0.877	0.232	0.186	0.248	-0.171	0.199	0.252	0.244	0.249	0.168	0.307	0.479
FTG4	0.207	0.252	0.201	0.528	0.954	0.213	0.153	0.244	-0.174	0.217	0.254	0.249	0.276	0.180	0.349	0.492
FTG5	0.194	0.244	0.191	0.509	0.959	0.196	0.118	0.225	-0.164	0.170	0.247	0.218	0.224	0.163	0.300	0.486
FTG6	0.255	0.284	0.187	0.516	0.941	0.233	0.189	0.284	-0.187	0.237	0.280	0.248	0.270	0.202	0.356	0.525
IA1	0.296	0.475	0.147	0.456	0.205	0.897	0.171	0.391	-0.175	0.381	0.457	0.141	0.432	0.371	0.422	0.310
IA2	0.357	0.460	0.167	0.457	0.233	0.951	0.204	0.416	-0.195	0.422	0.476	0.148	0.498	0.368	0.469	0.351
IA3	0.347	0.478	0.141	0.479	0.211	0.938	0.197	0.399	-0.215	0.405	0.462	0.150	0.504	0.364	0.464	0.380
IA4	0.425	0.489	0.205	0.467	0.226	0.920	0.281	0.431	-0.280	0.470	0.469	0.151	0.523	0.383	0.536	0.401
INT1	0.710	0.353	0.392	0.311	0.160	0.186	0.966	0.369	-0.327	0.586	0.349	0.220	0.400	0.332	0.490	0.262

Items	Constructs															
	ATT	AUT	FR	FTEG	FTG	IA	INT	PEOU	PR	PU	REP	SA	SIM	SN	TEG	TG
INT2	0.767	0.376	0.451	0.362	0.150	0.230	0.976	0.393	-0.334	0.668	0.338	0.204	0.420	0.301	0.578	0.266
INT3	0.774	0.396	0.447	0.397	0.182	0.246	0.939	0.402	-0.371	0.647	0.359	0.229	0.439	0.278	0.583	0.308
PEOU1	0.516	0.553	0.379	0.477	0.253	0.428	0.423	0.941	-0.285	0.631	0.543	0.197	0.428	0.599	0.575	0.287
PEOU2	0.480	0.499	0.358	0.481	0.276	0.419	0.395	0.964	-0.316	0.595	0.553	0.190	0.440	0.583	0.545	0.272
PEOU3	0.460	0.466	0.376	0.425	0.205	0.398	0.367	0.940	-0.243	0.543	0.531	0.190	0.389	0.560	0.513	0.222
PEOU4	0.494	0.483	0.356	0.473	0.267	0.435	0.386	0.965	-0.323	0.590	0.559	0.206	0.449	0.578	0.578	0.270
PR1	-0.353	-0.314	-0.162	-0.302	-0.186	-0.171	-0.327	-0.258	0.941	-0.353	-0.234	-0.468	-0.175	-0.167	-0.407	-0.282
PR2	-0.395	-0.367	-0.176	-0.353	-0.190	-0.250	-0.353	-0.320	0.936	-0.351	-0.341	-0.404	-0.211	-0.226	-0.444	-0.301
PR3	-0.462	-0.374	-0.254	-0.349	-0.193	-0.230	-0.414	-0.284	0.935	-0.386	-0.304	-0.406	-0.198	-0.194	-0.481	-0.301
PU1	0.731	0.497	0.454	0.503	0.240	0.421	0.683	0.579	-0.356	0.934	0.407	0.206	0.477	0.449	0.634	0.238
PU2	0.711	0.521	0.442	0.523	0.211	0.449	0.654	0.598	-0.362	0.962	0.431	0.269	0.532	0.446	0.676	0.303
PU3	0.726	0.521	0.450	0.521	0.201	0.464	0.664	0.593	-0.364	0.958	0.408	0.238	0.493	0.426	0.643	0.326
PU4	0.734	0.507	0.515	0.531	0.240	0.394	0.691	0.596	-0.400	0.958	0.353	0.264	0.485	0.430	0.675	0.286
REP1	0.313	0.384	0.288	0.308	0.181	0.376	0.228	0.479	-0.207	0.290	0.846	0.152	0.402	0.366	0.379	0.228
REP2	0.524	0.528	0.410	0.478	0.291	0.437	0.410	0.590	-0.343	0.437	0.932	0.247	0.575	0.482	0.590	0.350
REP3	0.366	0.458	0.244	0.333	0.128	0.439	0.258	0.441	-0.185	0.291	0.881	0.147	0.473	0.362	0.402	0.196
REP4	0.476	0.398	0.175	0.447	0.249	0.508	0.331	0.476	-0.331	0.414	0.846	0.184	0.616	0.414	0.478	0.371
SA1	0.265	0.221	0.167	0.287	0.322	0.169	0.229	0.193	-0.412	0.223	0.241	0.902	0.283	0.121	0.317	0.442
SA2	0.271	0.199	0.160	0.240	0.229	0.128	0.268	0.182	-0.425	0.257	0.205	0.955	0.231	0.108	0.372	0.358
SA3	0.205	0.171	0.105	0.250	0.264	0.148	0.212	0.194	-0.420	0.207	0.184	0.936	0.231	0.077	0.343	0.394
SA4	0.262	0.179	0.182	0.210	0.159	0.149	0.253	0.193	-0.416	0.259	0.169	0.902	0.196	0.106	0.343	0.343
SIM1	0.461	0.275	0.187	0.398	0.231	0.481	0.359	0.431	-0.171	0.439	0.564	0.226	0.885	0.381	0.498	0.406
SIM2	0.566	0.415	0.380	0.451	0.252	0.503	0.499	0.435	-0.226	0.546	0.536	0.230	0.912	0.394	0.609	0.422
SIM3	0.480	0.308	0.228	0.418	0.252	0.477	0.384	0.392	-0.192	0.449	0.588	0.231	0.945	0.353	0.529	0.434
SIM4	0.476	0.345	0.247	0.453	0.260	0.475	0.414	0.387	-0.171	0.466	0.516	0.241	0.922	0.372	0.575	0.436
SN1	0.387	0.488	0.384	0.391	0.177	0.362	0.263	0.629	-0.177	0.442	0.436	0.103	0.383	0.875	0.460	0.179
SN2	0.351	0.470	0.329	0.361	0.154	0.368	0.282	0.506	-0.187	0.375	0.436	0.099	0.339	0.925	0.461	0.218
SN3	0.423	0.455	0.349	0.366	0.222	0.379	0.314	0.552	-0.215	0.451	0.430	0.105	0.408	0.962	0.505	0.227
TEG1	0.537	0.533	0.532	0.628	0.330	0.447	0.497	0.511	-0.431	0.637	0.486	0.323	0.515	0.451	0.922	0.458
TEG2	0.529	0.535	0.488	0.644	0.318	0.580	0.484	0.495	-0.350	0.631	0.436	0.287	0.565	0.451	0.867	0.432

Items	Constructs															
	ATT	AUT	FR	FTEG	FTG	IA	INT	PEOU	PR	PU	REP	SA	SIM	SN	TEG	TG
TEG3	0.505	0.597	0.567	0.504	0.264	0.434	0.483	0.603	-0.350	0.576	0.495	0.272	0.460	0.553	0.851	0.371
TEG4	0.654	0.539	0.483	0.634	0.356	0.470	0.627	0.531	-0.506	0.670	0.514	0.388	0.605	0.471	0.956	0.501
TEG5	0.619	0.520	0.508	0.623	0.355	0.433	0.605	0.528	-0.489	0.628	0.515	0.376	0.583	0.459	0.953	0.496
TEG6	0.633	0.549	0.512	0.633	0.353	0.456	0.609	0.541	-0.487	0.652	0.531	0.396	0.605	0.466	0.954	0.495
TG1	0.370	0.330	0.194	0.355	0.527	0.383	0.301	0.305	-0.271	0.317	0.331	0.378	0.455	0.261	0.492	0.896
TG2	0.325	0.263	0.184	0.309	0.463	0.317	0.290	0.250	-0.322	0.285	0.276	0.395	0.406	0.189	0.447	0.915
TG3	0.299	0.282	0.159	0.340	0.486	0.373	0.244	0.250	-0.300	0.267	0.327	0.380	0.389	0.185	0.468	0.902
TG4	0.339	0.275	0.172	0.347	0.452	0.384	0.280	0.264	-0.296	0.295	0.322	0.383	0.459	0.209	0.482	0.955
TG5	0.304	0.274	0.148	0.349	0.492	0.367	0.244	0.250	-0.283	0.271	0.325	0.381	0.460	0.229	0.452	0.960
TG6	0.296	0.247	0.141	0.326	0.476	0.348	0.239	0.223	-0.290	0.250	0.298	0.396	0.417	0.187	0.455	0.958

*AUT: Autonomy, FTEG: Felt trust from e-government, FTG: Felt trust from government, FR: Fiduciary Responsibility, REP: Reputation, IA: Influence Acceptance, INT: Intentions, PEOU: Perceived Ease of Use, PR: Perceived Risk, PU: Perceived Usefulness, SA: Structural Assurance, SN: Situational Normality, SIM: Similarity, TEG: Trust in E-government, ATT: Attitude.

Appendix F Common Method Bias Analysis

Researchers are often urged to test for common method bias statistically (Podsakoff et al., 2003), although there is no easy way to do so (Richardson, Simmering, and Sturman, 2009). Two tests of common method bias were used in this thesis, and neither found any evidence of bias. First, Harman's single-factor test was conducted to determine the extent of any common method bias problem. Harman's single-factor test is a diagnostic assessment conducted by loading all items used in this survey in a Principal Component Analysis (PCA) without any rotation. Common method bias is present if PCA yields a factor that accounts for more than 50% of the covariance between the measures (Podsakoff et al., 2003). The results indicated that common method bias should not be a concern for this study because no single factor explains more than 50% of the variance (table F1). Nonetheless, this technique is fairly simplistic (Podsakoff et al., 2003) because it is unlikely that a single factor would emerge when one is conducting an exploratory factor analysis with a lot of items.

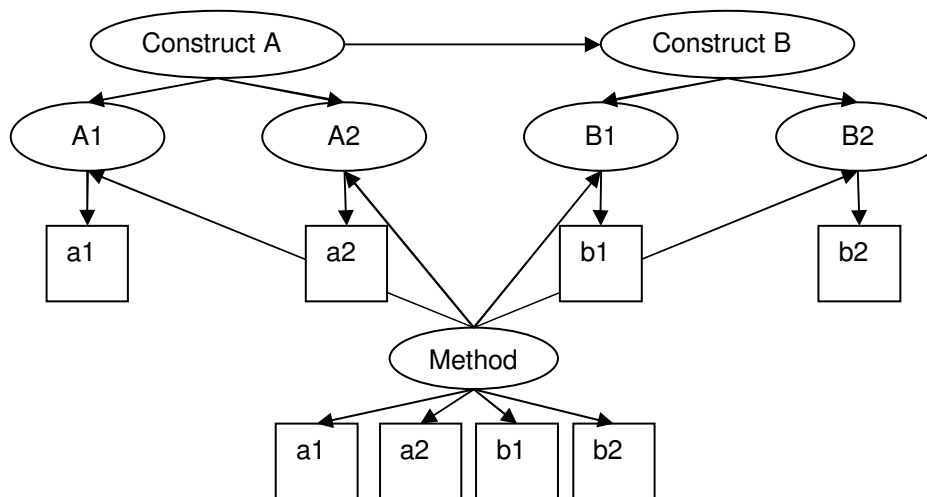
Table F1: Principal component analysis without rotation

Component		Initial Eigen values			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
dimension0	1	26.594	38.542	38.542	26.594	38.542	38.542
	2	6.148	8.911	47.453	6.148	8.911	47.453
	3	4.197	6.082	53.535	4.197	6.082	53.535
	4	3.790	5.493	59.027	3.790	5.493	59.027
	5	2.916	4.225	63.253	2.916	4.225	63.253
	6	2.454	3.556	66.809	2.454	3.556	66.809
	7	2.260	3.276	70.084	2.260	3.276	70.084
	8	2.031	2.944	73.029	2.031	2.944	73.029
	9	1.744	2.527	75.556	1.744	2.527	75.556
	10	1.515	2.196	77.752	1.515	2.196	77.752
	11	1.304	1.890	79.642	1.304	1.890	79.642
	12	1.196	1.734	81.376	1.196	1.734	81.376

Component		Initial Eigen values			Extraction Sums of Squared Loadings		
		Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	13	1.029	1.491	82.867	1.029	1.491	82.867
	14	1.023	1.482	84.349	1.023	1.482	84.349

Alternatively, Podsakoff et al. (2003) described a procedure for controlling for the effects of a single unmeasured latent method factor, following Liang et al.'s (2007) procedure for PLS. In this approach, a model is constructed with another latent variable, called "method", composed of all the items used in the study modelled as reflective measures. Then every item in the instrument is modelled reflectively as a single factor (e.g., one latent variable for every item), and a path is drawn between "method" and every item construct and between item constructs and the substantive construct (figure F1).

Figure F1: Common method bias modeling in PLS (Liang et al., 2007)



The model was constructed and analyzed through PLS software, and a loadings table was developed (table F2). According to Liang et al. (2007), common method bias is a concern if a lot of method factor loadings are significant and the items' substantive variances are not much greater than method's variances. As table F2 indicates, only 16 method loadings out of 69 loadings were significant, and the average substantive

variance is more than 200 times larger than method variance. Therefore, this test suggests that common method bias is unlikely to be a threat in this study.

Table F2: Common method bias analysis

Item*	Substantive Factor loading (R_1)	R_1^2	Method Factor Loading (R_2)	R_2^2
AUT1	0.876***	0.768	-0.028	0.001
AUT2	0.846***	0.715	-0.033	0.001
AUT3	0.873***	0.762	0.029	0.001
AUT4	0.893***	0.797	-0.064	0.004
AUT5	0.825***	0.681	0.089	0.008
REP1	0.957***	0.916	-0.143**	0.021
REP2	0.813***	0.661	0.161***	0.026
REP3	0.991***	0.982	-0.148***	0.022
REP4	0.754***	0.568	0.121*	0.015
FR1	0.823***	0.678	0.109*	0.012
FR2	0.971***	0.943	-0.106**	0.011
FR3	0.797***	0.635	0.046	0.002
FR4	0.937***	0.879	-0.043	0.002
FTEG1	0.824***	0.679	-0.010	0.000
FTEG2	0.931***	0.867	-0.008	0.000
FTEG3	0.807***	0.651	0.018	0.000
FTEG4	0.936***	0.877	0.016	0.000
FTEG5	0.973***	0.946	-0.017	0.000
FTEG6	0.951***	0.904	0.003	0.000
FTG1	0.845***	0.714	0.013	0.000
FTG2	0.867***	0.752	0.003	0.000
FTG3	0.876***	0.767	0.007	0.000
FTG4	0.955***	0.912	-0.004	0.000
FTG5	0.985***	0.970	-0.052*	0.003
FTG6	0.922***	0.849	0.036	0.001
IA1	0.923***	0.852	-0.041	0.002
IA2	0.970***	0.941	-0.028	0.001
IA3	0.946***	0.895	-0.014	0.000
IA4	0.866***	0.750	0.084*	0.007
INT1	0.969***	0.939	-0.045	0.002
INT2	0.977***	0.954	-0.002	0.000
INT3	0.935***	0.875	0.045*	0.002
PEOU1	0.890***	0.792	0.068	0.005
PEOU2	0.965***	0.930	-0.001	0.000
PEOU3	0.998***	0.997	-0.078**	0.006
PEOU4	0.959***	0.919	0.008	0.000
PR1	0.977***	0.955	0.058*	0.003
PR2	0.929***	0.864	-0.017	0.000
PR3	0.907***	0.822	-0.041	0.002
SA1	0.886***	0.785	0.044	0.002
SA2	0.958***	0.917	-0.009	0.000
SA3	0.945***	0.893	-0.021	0.000
SA4	0.905***	0.819	-0.013	0.000
SIM1	0.922***	0.850	-0.042	0.002
SIM2	0.824***	0.680	0.115*	0.013
SIM3	0.998***	0.996	-0.071*	0.005
SIM4	0.921***	0.848	-0.002	0.000

Item*	Substantive Factor loading (R_1)	R_1^2	Method Factor Loading (R_2)	R_2^2
SN1	0.955***	0.911	-0.044	0.002
SN1	0.840***	0.706	0.053	0.003
SN2	0.965***	0.932	-0.005	0.000
TEG1	0.982***	0.964	-0.089*	0.008
TEG2	0.793***	0.628	0.084	0.007
TEG3	0.848***	0.719	0.002	0.000
TEG4	0.929***	0.863	0.030	0.001
TEG5	0.994***	0.987	-0.046	0.002
TEG6	0.934***	0.873	0.023	0.001
TG1	0.834***	0.696	0.094*	0.009
TG2	0.924***	0.854	-0.013	0.000
TG3	0.892***	0.795	0.014	0.000
TG4	0.958***	0.917	-0.002	0.000
TG5	0.979***	0.958	-0.027	0.001
TG6	0.996***	0.992	-0.060**	0.004
Average	0.913***	0.838	0.000	0.004

*AUT: Autonomy, REP: Reputation, FR: Fiduciary Responsibility, FTEG: Felt trust from E-government, FTG: Felt Trust from Government, IA: Influence Acceptance, INT: Intentions, PEOU: Perceived Ease of Use, PR: Perceived Risk, SA: Structural Assurance, SIM: Similarity, SN: Situational Normality, TEG: Trust in E-government, TG: Trust in Government.

Appendix G Multicollinearity Analysis

Factor scores obtained by SmartPLS 2.0(M3) Beta (Ringle et al., 2005) were exported to PASW 18. A regression analysis was carried out using felt trust from e-government as the dependent variable with autonomy, influence acceptance and felt trust from government as the independent variables. A sharp decline for partial and part correlation from zero-order correlation values indicate a potential problem for multicollinearity but the tolerance values²⁴ are high and Variance Inflation Factor (VIF)²⁵ is less than 2²⁶ therefore multicollinearity should not be a concern for felt trust from e-government antecedents (table G1).

Table G1: Felt trust antecedents collinearity

Model*	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
(Constant)					
FTG	.530	.453	.346	.902	1.108
IA	.501	.261	.184	.728	1.373
AUT	.606	.431	.325	.704	1.421

*FTG: Felt trust from government, IA: Influence Acceptance, AUT: Autonomy

The collinearity diagnostics table demotes any concerns with multicollinearity for felt trust from e-government antecedents. The eigen values show that the antecedents are inter-correlated (values close to 0), but the condition index is still below 15²⁷ (table G2).

Table G2: Felt trust antecedents collinearity statistics

Dimension	Eigen Value	Condition Index
1	3.884	1.000
2	.061	7.965
3	.037	10.294
4	.018	14.558

²⁴ Tolerance refers to percentage of variance in a variable that is independent of other variables in the model (Cohen et al., 2003).

²⁵ Cohen et al. (2003) defines Variance Inflation Factor as an “index of the amount that the variance of each regression coefficient is increased relative to a situation in which all of the predictor variables are uncorrelated” (p.423) and is equal to $\frac{1}{\text{tolerance}}$.

²⁶ VIF values in the range of 5 or 10 are problematic (Mathieson, Peacock, and Chin, 2001)

²⁷ A condition index of 15 indicates a possible problem with multicollinearity while values larger than 30 indicate a server problem of multicollinearity Cohen et al. (2003).

Multicollinearity threat is also minimal amongst trust in e-government antecedents. The constructs are inter-correlated as indicated by eigen values with a possibility of multicollinearity problem (three dimensions with condition index between 15 and 20) but the VIF values were all below 2 while tolerance values are above 0.5 (tables G3 and G4).

Table G3: Trust antecedents collinearity

Model*	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
(Constant)					
FTEG	.666	.364	.222	.610	1.640
FR	.555	.352	.214	.740	1.352
REP	.529	.078	.044	.570	1.754
SA	.372	.168	.097	.806	1.241
SN	.516	.211	.122	.691	1.447
SIM	.603	.254	.149	.535	1.870
TG	.500	.230	.134	.677	1.476

*FTEG: Felt trust from e-government, FR: Fiduciary responsibility, REP: Reputation, SA: Structural Assurance, SN: Situational normality, SIM: Similarity, TG: Trust in government.

Table G4: Trust antecedent collinearity statistics

Dimension	Eigen value	Condition Index
1	7.646	1.000
2	.108	8.411
3	.082	9.675
4	.053	11.993
5	.035	14.799
6	.031	15.785
7	.027	16.897
8	.019	20.274

Antecedents of perceived usefulness had not multicollinearity problems either as there are no sudden changes in the correlations between zero-order and partial and part correlations; tolerance values are above 0.5; VIF values are below 2; and conditions index values are all below 15 (tables G5 and G6).

Table G5: Usefulness antecedents collinearity

Model*	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
(Constant)					
TEG	.689	.516	.405	.664	1.507
PEOU	.619	.372	.269	.664	1.507

*TEG: Trust in e-government, PEOU: Perceived ease of use

Table G6: Usefulness antecedents collinearity statistics

Dimension	Eigen Value	Condition Index
1	2.942	1.000
2	.033	9.471
3	.025	10.772

Finally, multicollinearity was not an issue for the antecedents of attitude toward using e-government, even with the change in the perceived ease of use construct. VIF values are all below 2; tolerance exceeds 0.5, and condition index values are mostly below 15 (tables G7 and G8).

Table G7: Attitude antecedents collinearity

Model*	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
(Constant)					
PEOU	.513	.064	.040	.611	1.636
PU	.760	.625	.506	.573	1.744
PR	-.430	-.221	-.143	.843	1.186

*PEOU: Perceived ease of use, PU: Perceived usefulness, PR: Perceived risk

Table G8: Attitude antecedents collinearity statistics

Dimension	Eigen Value	Condition Index
1	3.804	1.000
2	.157	4.928
3	.024	12.697
4	.016	15.423

Summary

Overall, no major evidence was found for multicollinearity. The data appear to be free from this potential threat.

Appendix H Ethical Approval Certificates



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK

PRINCIPAL INVESTIGATOR: Izak Benbasat	INSTITUTION / DEPARTMENT: UBC/Sauder School of Business/Management Information Systems	UBC BREB NUMBER: H10-00754
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution N/A		Site N/A
Other locations where the research will be conducted: The study will be conducted online by a marketing research company but the analysis will be conducted in the PhD lab of Donald Rix building at the University of British Columbia.		
CO-INVESTIGATOR(S): Ali E. Dashti		
SPONSORING AGENCIES: Canada Research Chairs		
PROJECT TITLE: E-government Service Life Cycle and Trust Reciprocity		

CERTIFICATE EXPIRY DATE: April 20, 2011

DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: April 20, 2010
Document Name	Version	Date
<u>Consent Forms:</u>		
Consent form	1	March 15, 2010
<u>Questionnaire, Questionnaire Cover Letter, Tests:</u>		
EGSLC Trust Felt Trust Survey	1	March 15, 2010
<u>Letter of Initial Contact:</u>		
letter of initial contact	1	March 15, 2010
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		
<p style="text-align: center;"><i>Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:</i></p> <div style="text-align: center;"> <hr/> <p>Dr. M. Judith Lynam, Chair Dr. Ken Craig, Chair Dr. Jim Rupert, Associate Chair Dr. Laurie Ford, Associate Chair Dr. Anita Ho, Associate Chair</p> </div>		



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - MINIMAL RISK

PRINCIPAL INVESTIGATOR: Izak Benbasat	INSTITUTION / DEPARTMENT: UBC/Sauder School of Business/Management Information Systems	UBC BREB NUMBER: H09-00418
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution N/A		Site N/A
Other locations where the research will be conducted: The study will be conducted online by a marketing research company but the analysis will be conducted in the PhD lab of Donald Rix building at the University of British Columbia.		
CO-INVESTIGATOR(S): Andrew Burton-Jones Ali E. Dashti		
SPONSORING AGENCIES: N/A		
PROJECT TITLE: DEVELOPING TRUST RECIPROCITY IN ELECTRONIC-GOVERNMENT: THE ROLE OF FELT TRUST		

CERTIFICATE EXPIRY DATE: March 23, 2010

DOCUMENTS INCLUDED IN THIS APPROVAL:	DATE APPROVED: March 23, 2009	
Document Name	Version	Date
Consent Forms:		
Consent form	1	February 9, 2009
Questionnaire, Questionnaire Cover Letter, Tests:		
survey	1	February 9, 2009
Letter of Initial Contact:		
Letter of initial contact	1	February 9, 2009
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		
<p style="text-align: center;">Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:</p> <hr/> <p style="text-align: center;">Dr. M. Judith Lynam, Chair Dr. Ken Craig, Chair Dr. Jim Rupert, Associate Chair Dr. Laurie Ford, Associate Chair Dr. Anita Ho, Associate Chair</p>		



The University of British Columbia
Office of Research Services
Behavioural Research Ethics Board
Suite 102, 6190 Agronomy Road,
Vancouver, B.C. V6T 1Z3

CERTIFICATE OF APPROVAL - FULL BOARD

PRINCIPAL INVESTIGATOR: Izak Benbasat	INSTITUTION / DEPARTMENT: UBC/Sauder School of Business/Management Information Systems	UBC BREB NUMBER: H08-01916
INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT:		
Institution N/A		Site N/A
Other locations where the research will be conducted: The study will be conducted online by a marketing research company but the analysis will be conducted in the PhD lab of Donald Rix building at the University of British Columbia.		
CO-INVESTIGATOR(S): Ali E. Dashti		
SPONSORING AGENCIES: N/A		
PROJECT TITLE: The Role of Felt Trust on the Adoption of E-government		
REB MEETING DATE: September 25, 2008	CERTIFICATE EXPIRY DATE: September 25, 2009	
DOCUMENTS INCLUDED IN THIS APPROVAL:		DATE APPROVED: October 14, 2008
Document Name	Version	Date
Consent Forms:		
Consent form	1	September 10, 2008
Questionnaire, Questionnaire Cover Letter, Tests:		
Survey Sept 10 08	1	September 10, 2008
Letter of Initial Contact:		
Letter of Initial contact	1	September 10, 2008
Other: http://www.servicecanada.gc.ca/en/home.shtml		
The application for ethical review and the document(s) listed above have been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.		
<p style="text-align: center;">Approval is issued on behalf of the Behavioural Research Ethics Board and signed electronically by one of the following:</p> <hr style="width: 60%; margin: auto;"/> <p style="text-align: center;">Dr. M. Judith Lynam, Chair Dr. Ken Craig, Chair Dr. Jim Rupert, Associate Chair Dr. Laurie Ford, Associate Chair Dr. Daniel Salhani, Associate Chair Dr. Anita Ho, Associate Chair</p>		

(H06-80678-0) B06-0678 - The Influence of Felt Trust on Trust in E-Government Portals

Principal Investigator (PI):	Paul D.N. Chwelos	Approval Department:	
Primary Contact:	Paul D.N. Chwelos	Department Approver:	
Type of Study:	Behavioural	Review Board:	UBC Behavioural Research Ethics Board
Minimal Risk:		Co-Investigators with Signing Authority:	There are no items to display
Initial Approved Date:	November 9, 2006	Date Expires:	November 9, 2007
Current Approval Certificate:		Version:	1.0
Type of Funding:	N/A		