

Understanding adoption of electronic G2C service: An extension to Technology Adoption Model

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Abstract

Successive governments have recognized e-Governance as an excellent opportunity for improve quality of government services to people with opportunities of providing equitable access to all sections of society. The increasing investment on e-Government services also raises concern towards citizen adoption and usage of online government services. Along with technology acceptance theories, citizen trust is proposed to be an important catalyst of e-Government adoption. The present study examines the relationship of perceived risk and its facets within the technology acceptance model (TAM) within the tax e-filing context. This paper proposes a conceptual model to further understand the role of perceived risk in influencing consumer behaviour throughout the adoption process. The model will serve as a useful guideline for strategies development in promoting e-government services, particularly the tax e-filing service. The study also proposes ways in which governments can increase citizen trust and thus encourage the adoption of this new and potentially significant mode of government service.

Keywords:

Perceived Risk, Trust, Technology Acceptance Model, Tax E-filing

Introduction

Government citizen centric plans focus on three broad areas which include governance that improve transparency, people participation and public services that should be cost-effective and accountable. Successive governments have recognized e-Governance (e-Gov) as an excellent opportunity for improve quality of government services to people with opportunity of providing equitable access to all sections of society to improve monitoring and introducing administrative reforms. It harnesses information and communication technologies (ICT) like internet and mobile computing to transform relations with citizens, businesses and amongst various arms of governments. The advantages of providing government services online are absolute. Online services are cheaper, faster and more readily available, especially from remote areas with fewer multitudes of human errors as compared to manual processing. It provides citizen and organizations with convenient access to government information. Government can offer delivery of public services to citizens, business partners and suppliers and even those working in the government sector (Turban et al. 2002). In contrast to traditional government processes, e-Government is notably characterized by the impersonal nature of the online environment, newness of the communication medium and the implicit uncertainty of using an open

technological infrastructure for transactions. These issues bring more concern about the reliability of the underlying Internet and related government infrastructure interfaces.

For better understanding of this adoption, the present study looks one of the offerings of e-government for filling of tax returns (further referred as e-filing in this paper). Through this system, taxpayers are able to submit their tax returns electronically to the tax authorities. E-filing provides many aspects of 'convenience' to taxpayers in respect to time and place to file, ease-of-use, information searching and reduction of calculation errors on the tax return that is not available through traditional channels. For the service providers, e-filing minimizes the workload and operational cost due to paperless transactions. It also reduces the cost of processing, storing and handling of tax returns. But there are some major challenges towards implementation of e-filing. One such issue is the public perception towards e-filing. The public may be burdened by learning a new system, technical issues of service failure, data confidentiality and privacy issues. Other concerns include electronic systems' reliability related to handling large amount of information especially during the peak period of e-filing, particularly as the deadline approaches. These issues could be translated into uncertainty and risks associated with current and potential adopters of e-filing system. Thus it is important for the tax authorities to understand the risk perceived by the taxpayers for successful implementation of e-filing system.

In particular, the paper proposes a model that examines the impact of ease of use and usefulness of technology with trust and perceived risk factor in the tax e-service adoption by taxpayers. Research adds to the existing e-service and e-government literature by focusing on the significance of the different facets of perceived risk and trust on the adoption of tax e-filing. The research is useful to tax authorities to identify types of risk that the taxpayers perceive in adoption of e-filing system. This model could be a useful guide to the service provider in their strategic development or improvement of their e-filing system. The paper is organized into the following parts. The first part provides the literature review. The second part, presents the proposed model and a set of research hypotheses based on the theories in the preceding section. Finally, the data analysis result together with the discussion on the implications of the research and future research direction.

Background

In an e-service environment, consumers have to interact with technology to purchase product or avail services. This gives rise to technical issues that have been the domain of information system IS and human computer interaction (HCI) researchers (O'Keefe et al., 2000). A greater degree of trust is required in this online environment than in a physical setup. Thus researches on consumer behavior online can benefit from research model that incorporate technology, trust and risk issues in particular. Following section examine the contributions of each of these aspects in detail.

a. Technology perspective

The technology perspective focuses on the consumer's assessment of the technology required to conduct a transaction online. The advent of internet has given rise to a number of studies that look at the consumer's intention to transact online. Many studies on

technology adoption in past build upon a well known theory of IS research called technology acceptance model (TAM). The positive relationship between behavioral intentions and actions is extensively described by the theory of reasoned action (Azen, 1980) and the theory of planned behavior (Azen, 1991). TAM is an adaptation of this theory of reasoned action (TRA) by Fishbein and Ajzen (1975) and was mainly designed for modeling user acceptance of information technology in the workplace (Davis, 1989; Davis et al., 1989). The model assumes that system use is directly determined by behavioral intention to use the system which is in turn influenced by users' attitudes toward using the system and the perceived usefulness of the system. Attitudes and perceived usefulness are also affected by perceived ease of use for the given system. Davis define the perceived usefulness as the degree to which a person believes that using a particular system would enhance his or her job performance and perceived ease-of-use is defined as the degree to which a person believes that using a particular system would be free of effort. Venkatesh and Davis (2000) and Venkatesh et al. (2003) updated this model with a number of antecedents of usefulness and ease-of-use, including subjective norms, experience, and output quality. Researchers have empirically validated the original TAM in a variety of settings including internet usage and website usage. This model that displays a high level prediction power of technology use. Factors identified are common in technology-usage settings and can be applied widely to solve the acceptance problem (Taylor and Todd, 1995; Teo et al., 1999) including business-to-customer model (Warkentin et al, 2002).

b. Contribution of trust and Risk

It is the impersonal nature of the online environment where the uncertainty and risk of using open infrastructures shape the citizen's trust (AlAwadhi et al., 2008). Trust in e-Government sites refers to individuals' perception of the trustworthiness of the technology used in delivering the governmental services (Mäntymäki, 2008) and it plays a vital role in helping citizens to overcome perceived complexity and risk (Alsaghier et al., 2009). Past empirical evidence suggests that trust on service provider negatively influences the perceived risk that is associated with the internet (Featherman, 2001; Pavlou, 2001). Researchers have been anxious with interpersonal trust and inter-organizational trust but less attention has been given to trust between people and organizations (Lee & Turban, 2001).

Belanger and Carter (2008), Reddick (2005), West (2004) and Warkentin et al. (2002) are the main promoter of Trust and empirically established different factors of trust in the citizen adoption of e-government services. Previous studies recognized the lack in trust as a major barrier to e-service adoption. Teo *et al.* (2008) claimed that trust and risk act responsibly when a citizen visits or transacts with an e-Government website and Karavasilis *et al.* (2010) argued that trust and perceived risk are key research constructs influencing directly or indirectly the intention to continue using e-Government websites. People develop trust online through a number of factors. One is the perceived size of the company, another is reputation of orgnaisaion (Jarvenpaa et al., 2000). Papadopoulou et al. (2010) proposed a trust typology and establishing seven variables of trust but for current research objective three trust constructs: trust in information, trust in transaction and trust in government organization have been

incorporated.

Perceived risk can be viewed as a consumer's subjective function of the magnitude of adverse consequences and the probabilities that consequences to occur if the product is acquired (Dowling & Staelin, 1994). Cunningham (1967) identified two major categories of perceived risk related to performance and psychosocial aspects. He further provided elaborate six dimensions on perceived risks like performance, financial, opportunity/time, safety and psychological. Considering the nature of e-governance services the present research considers performance, financial, convenience and security risk measures. The performance risk refers to losses incurred by malfunction of online websites. This could occur especially during the last minute rush to meet the tax return submission deadline. According to Yiu et al. (2007), sudden breakdown of web servers may lead to unexpected losses while transactions which reduce customers willingness to use websites (Littler and Melanthiou, 2006). Financial risk refers to the potential for monetary loss due to transaction errors like keying incorrect information in tax return format. Kuisma et al. (2007) indicated that many consumers resist using online services due to fear of such losses. Financial risk negatively influences attitudes towards the use of online services. Steven et al. (1999) reported on the importance of time considerations and its significance as predictor of online behavior. Some consumers are very time conscious and concerned about wasting time in implementing, learning and troubleshooting a new e-service (Featherman and Pavlou, 2003) like e-filing system. Security and privacy risk is being defined as a threat created by network and data transaction attacks or through unauthorized accesses. E-filing also involve transmission of personal information like salary, personal address, bank account etc. According to Milind (1999), security risk is a significant impediment to the adoption. There are numerous studies which state that the greatest challenge to the electronic service will be winning the trust of customers over the issues of privacy and security (Furnell et al., 1999). This infers that perceived risk is negatively influence the attitude towards internet usage (Jarvenpaa et al., 2000). Studies have found that perceived risk significantly affects the behavioural intention of current and potential users of e-services.

Other literature such as Carter et al. (2008) used the Unified Theory of Acceptance and Use of Technology (UTAT) and study by Wang et al. (2007) used the Innovation Diffusion Theory to observe e-filing adoption among taxpayers. There is very limited literature that focuses on the adoption of e-filing systems based on technology acceptance model (TAM) by Davis, 1989 with

inclusion of user perceived risk factor (Hsu and Chiu, 2004; Hung et al., 2006). But there is a significant gap in literature regarding studies that empirically establishes trust and risk as a factor in G2C e-governance adoption and acceptance. For these reasons, in present study trust and perceived risk are taken into consideration to explain citizens' intention to use e-Government services.

Method

To explore the contributions and the relative importance of each perspective an empirical study was conducted. The following sections describe the model, the measurement instrument, and the sampling technique.

a. Conceptual model and measurement instrument

The conceptual model for e-filing adoption, signs and directions of the relations between the constructs is depicted in Figure 1. The background of this model is the relation between antecedents of intention to use e-service and technology with trust and risk perspectives. Construct include technological and trust dimensions. The technological dimensions incorporate perceived usefulness and perceived ease-of-use factors adopted from Technology Adoption Model. Trust perspective is measured on measures of citizen trust in transaction, information and organization (service provider). Perceived risk constructs use scale items for performance, financial, convenience, security risk aspects. In order to increase reliability and ease of comparison with previous work, scale items are operationalised on each construct. The trust and risk constructs adapted from Jarvenpaa et al. (2000) and Featherman and Pavlou (2003) respectively. The operationalisations for the usefulness constructs were taken from study of Cheung et al. (2006) and Davis (1989). Author made modifications, most of which were adaptations to increase the applicability of the items to the local context.

Although all the items were stimulated by previous empirical studies, the actual scales were developed to capture the context of this research. A preliminary version of the instrument was reviewed by faculty and doctoral students for precision and clearness. Subsequently, the instrument was pretested by administering it to 10 taxpayers of different gender and age group in order to verify its appropriateness and comprehensiveness. The questionnaire was progressively refined, simplified, and shortened and the final measures for all principal constructs of this research are shown in table1. For majority of questions, responses were gathered in a 5 point Likert scale (1 for strongly disagree and 5 for strongly agree) on attributes explaining perceptions of citizen towards e-filing services.

Figure 1: Conceptual Model (adapted from Ajzen & Fishbein, 1980; Davis, 1989; Jarvenpaa et al., 2000)

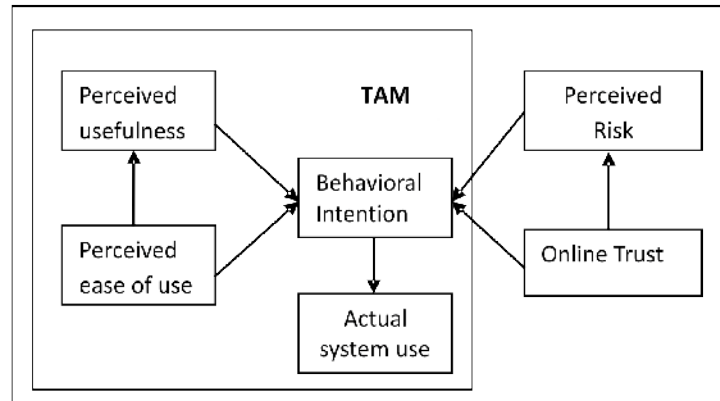


Table 1: Measurement Scales

Construct	Scale item	Primary Source
Perceived Ease of Use (PEOU)	Website is easy to use (PEOU1) Learning to use e-filing is easy for me (PEOU2) It is easy to interact with website (PEOU3) It is easy to locate information on site (PEOU4)	Cheung et al. (2006), Davis (1989)
Perceived Usefulness (PU)	E-filing enable me to accomplish my tax return more quickly (PU1) E-Filing system increases my effectiveness in filling tax return (PU2) Website improve my performance in tax filing tax (PU3) Overall I find website useful for me (PU4)	
Behavioral Intention (BI)	The website is valuable for me (BI1) I enjoyed using e-filing system (BI2) I would like to use website for e-filing tax return (BI3)	
Actual Intention (AI)	I would use the Web for gathering tax related information (AI1) I intend to use electronic filing system for future tax returns (AI2)	
Perceived Risk (PR)	Slow speed website or server overload during peak hours may negatively affect the performance (PR1) I often afraid of monetary loss while transacting (PR2) I feel unsafe providing my personal information over internet (PR3)	Featherman and Pavlou (2003)
Online Trust (OT)	I trust on information provided on income tax website (OT1) I feel safe conducting transaction online (OT2) I trust performing government transaction online (OT3)	Carter & Belanger (2005), Jarvenpaa et al. (2000)

b. Hypothesis development and data collection

Based on literature study, following hypothesizes were developed to include construct of Trust, Risk and TAM model.

H1: The perceived usefulness towards e-filing is positively related to perceived ease of use

H2: Consumer intention to transact is positively related to the perceived usefulness

H3: Perceived ease of use is positively related Consumer intention to transact

H4: Consumer trust towards online transaction is negatively related to perceived risk

H5: Consumer intention to transact is negatively related to perceived risk

H6: Consumer intentions to transact in positively related consumer trust online

H7: Consumer behavioral intention positively influence actual system use

Our sample consisted of a group of employed and business people in Udaipur city of Rajasthan state. Eventually, One hundred and nine individual tax payers took part in the survey (rather than agents which were given rights by clients to prepare their tax matters and e-filing). Respondents returned the questionnaires both through the internet or return them handwritten.

Results

Table 2 provide information on respondent demographics and internet experience. Profile detail in Table 2 shows that the group is relatively homogeneous in terms of age and balanced in terms of

occupation. The gender balance in the current sample is also appropriate with previous work. The electronic tax filing experience of the respondent is heterogeneous and this reveals a large set of inexperienced user and a very small experienced users.

Table 2: Respondent Profile, n=109

Measures	Item	Percentage
Education	Schooled	08
	Graduate	53
	Post-graduate	19
Profession	Private/ public sector employee	52
	Business	48
Gender	Male	57
	Female	43
Age	20-30	27
	30-40	62
	>40	11
No. of times tax return is filed electronically	Never	09
	Once	61
	Twice	27
	more than two	03

The process of analysis followed the intent of the study. First, validity of model use in the context of the e-portfolio inquiry was analysed. Having established validity and robust construct relationships, researchers' data results were then analysed. This is followed by testing of the hypotheses by assessing the model fit using various fit indices and evaluating the research model.

Reliability and Validity

The descriptive statistics of the four factors are shown in Table 3. Means above the midpoint of 3.0 shows a favorable response. The standard deviations indicate a narrow spread around the mean. Study uses Cronbach's alpha and EFA (exploratory factor analysis) to examine the reliability and unidimensionality of each construct. The factors were analysed using Cronbach's alpha as internal

reliability measure (Croanbach 1951, 1970). All of the measures employed in this study demonstrated internal consistency, ranging from 0.710 to 0.821 (Table 3), thereby exceeding the reliability estimates (≥ 0.70) recommended by Nunnally (1967). The result scales are unidimensional and sufficient reliable. For examining the construct validity, the dataset of 109 responses was examined using principal components analysis as the extraction technique and varimax as the method of rotation. An exploratory factor analysis found a 6-factor structure with 19 scales loading with eigenvalues greater than 1.0 that accounted for 83.58% of the total variance. Items intended to measure the same construct demonstrated higher factor loadings ($>.50$) on a single component as represented in Table 4. Consequently, the instrument of the study shows the adequate validity for further analysis.

Table 3: Descriptive statistics and reliability coefficient for each construct

Construct	Mean	SD	Number of Item	Cronbach's alpha
Ease of use	2.8	0.89	4	0.73
Usefulness	3.4	0.98	4	0.78
Trust	3.7	0.85	3	0.71
Risk	3.6	0.70	3	0.82
Behavioral Intention	3.4	0.89	3	0.75
Actual use	3.5	0.73	2	0.82

Table 4: Results of exploratory factor analysis with Varimax Rotation

Item	PEOU	PU	BI	AI	PR	OT
PEOU1	.896					
PEOU2	.912					
PEOU3	.723					
PEOU4	.978					
PU1		.990				
PU2		.963				
PU3		.810				
PU4		.783				
BI1			.967			
BI2			.918			
BI3			.867			
AI1				.948		
AI2				.866		
PR1					.923	
PR2					.848	
PR3					.950	
OT1						.948
OT2						.730
OT3						.757

Note: Only values above 0.50 are shown for clarity (Variance Explained 83.58%)
Extraction Method: Principal Component Analysis

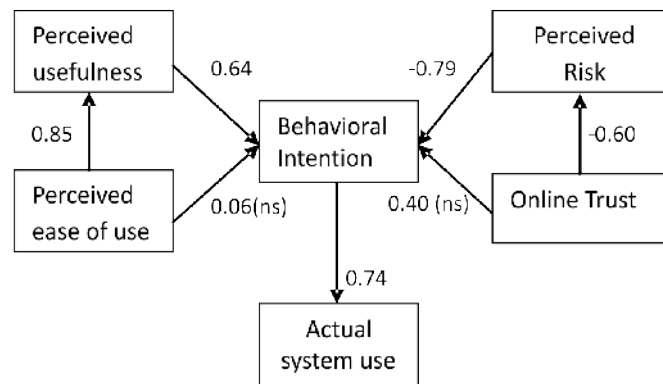
After assessing the eligibility of scale for measuring different variables, the next step is to test the hypothesized relationships, model parameters are estimated using structured equation modeling (SEM) using AMOS 19. The goodness-of-fit measures depicted in table 5 show good fit with the data to proceed with

analysis of path parameters. Figure 2 displays the path coefficient that the statistical package estimated. The data supported a strong positive relation between behavioral intention and intention for actual usage.

Table 5: Goodness-of-fit values

Goodness-of-fit measures	Acceptable value (Hair et al. ,1998)	Values
χ^2		115 (p<0.01)
CFI	>.80	0.88
GFI	>.90	0.91
RMSEA	<0.08	0.06

GFI: goodness of fit index, CFI : comparative fit index, RMSEA: Root Mean Square Error of Approximation

Figure 2: SEM estimation results. Paths are significant at $p < 0.05$, ns=not significant

Discussion

E-government is becoming increasingly more important for today's governments due to its effectiveness and applicability in various areas. Tax e-filing is also one of the e-government services that have been adopted by many developed countries where public performs their responsibility towards government via online tax filing. Despite the rapid adoption, researchers have argued that it is yet to establish a reliable and integrated system in developing countries like India where there is high perceived risk by the public related to online transaction. It is important to establish trust in online services for national and local governments to cut costs and improve services to be more responsive to their citizens. This research attempts to provide input on the adoption and evaluation of the e-filing system by users. It is predicted in the study that many of risk facets will be significant.

The result of this research suggests that perceived risk and perceived usefulness are antecedents of attitude towards online system usage. The effect of perceived risk was strongly negative and the effect of perceived usefulness was positive. Trust in store appears to be indirectly related to a positive attitude through its direct negative effect of perceived risk. Risks that could possibly be significant are performance risk and security risk. Past studies have shown that taxpayers tend to e-file near the tax deadline and this may lead to system crashes if the e-filing system is not tailored to accommodate this trend. Taxpayers may find themselves frustrated or anxious if a lot of time is spent learning about the e-filing system and then find that the system does not function as they had hoped it would. Privacy risk may possibly be a significant risk for e-filing adoption; this is because e-filing involves the transmission of taxpayers' confidential information through the Internet.

Our results are only partly in line with other TAM studies. The impact of perceived ease-of-use on perceived usefulness is in line with earlier research. This study looked at the impact of trust and perceived risk in a similar empirical setting. The study finds a positive effect of trust in the store on perceived risk, and an effect of perceived risk on the attitude towards online purchasing. In contrast, we did not find any effect of trust in the store on attitude. Being a government website, people usually has higher trust towards the information and services provided online.

Implications

The results of this study shed light on some important issues related to customer intentions toward e-governance that have not been addressed by previous studies. First, both perceived benefit and risk have a significant influence on intention. This finding is particularly important for managers as they decide how to allocate resources to retain and expand their current user base. However, building a risk-free online transaction environment is much more difficult than providing benefits to customers. First, risk reducing strategies could be formulated to encourage e-filing adoption such as improved security features for the user interface. The risk-reducing strategies could be developed to cater to the facets of risk that are the most prevalent in e-filing adoption. For example, the tax authorities could develop several methods of helping taxpayers e-file such as offering a web-based tutorial or a video that guides the taxpayers throughout the e-filing process.

The adoption of e-Government processes is a critical component in the creation of an efficient and responsive system. Process reengineering can also ensure the widespread adoption of electronic interactions throughout national and local government agencies that can create a fundamentally different sort of government that provides much more value to citizens. Government might start with online communities that have a strong sense of community commitment. It may be advisable to seek individuals who may be more open to adoption, which are technology-savvy users or risk takers. Each success story can help the process grow by 'word of mouth' communication. Governments can also take many actions that can facilitate the success of these initiatives by building trust and making the public knowledgeable about the system. In terms of theory building, this study attempts to develop a new theory by grounding new variables in an integration of technology acceptance model and risk factors, and applying them into a new context. It is important to note that the two new variables – perceived risk benefit and online trust– are compatible with the TAM framework (Davis, 1989). This approach is likely to ensure a stable theory development. Hence, the proposed model makes an important contribution to the emerging literature on e-governance adoption.

Future Research

An important limitation of our empirical study is the relatively

large proportion of inexperienced online users. The generalisability of the results to larger, more experienced populations is limited. For this reason, other researchers should be encouraged to replicate and extend this study in settings with more experienced online users. This research could also be expanded to include different types of respondents such as paid tax preparers and different types of taxpayers. Paid tax preparers are given the rights by their clients to prepare their tax matters. They use the e-filing system for different types of clients and are more frequent users of the e-filing system than individual taxpayers who file for themselves. It would be interesting to understand which facets of risk are more significant to them. Different types of taxpayers such as companies may deal with more complex transactions than individual taxpayers, thus, they may emphasize different risk facets when filing the tax return form electronically. Moreover, according to the risk theory of consumer behavior (Bauer, 1967), indicated that benefits are often accompanied with risks, and thus, it is worth investigating the casual relationship between these two elements. This study provides an initial blueprint to develop further understanding of this causal relationship.

References

- Ajzen, I (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Ajzen, I., and Fishbein, M. (1980), *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall
- AlAwadhi, S.; Morris, A (2008). The Use of the UTAUT Model in the Adoption of E-government Services in Kuwait. In *Proceeding of 41st Hawaii International Conference on System Sciences*; IEEE Computer Society: Washington, DC, 1–11.
- Alsaghier, H.; Ford, M.; Nguyen, A. & Hexel, R (2009). Conceptualising citizen's trust in e-government: Application of Q methodology. *Electronic Journal of e-Governance*, 7, 295–310.
- Bauer, R. A (1960). Consumer behavior as risk-taking. In R. S. Hancock (Ed.), *Dynamic marketing for a changing world*. Chicago: American Marketing Association, 389–398
- Belanger F. & Carter L. (2008). Trust, and risk in e-government adoption, *The Journal of Strategic Information Systems*, 17(2), 165–176
- Cheng TCE, Lam DYC, Yeung ACL (2006). Adoption of internet banking: an empirical study in Hong Kong. *Decision Support System*, 42(3), 1558–72.
- Cronbach, L. (1951). Coefficient alpha and the internal consistency of tests. *Psychometrika*, 297–334.
- Cronbach, L. (1970). *Essentials of psychological testing* (3 ed.). New York: Harper & Row.
- Cunningham, S.(1967). The major dimensions of perceived risk. In: D. Cox (Ed.), *Risk Taking and Information Handling in Consumer Behavior*. Harvard University Press, Cambridge, MA.
- David G., Elena K. & Detmar WS (2003). Trust and TAM in online shopping: An integrated model, *MIS Quarterly*, 27(1), 51–90
- Davis FD, Bagozzi RP (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35(8), 983–1003.
- Davis FD. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly* 13(3), 319–340.
- Dowling GR and Staelin R (1994). A model of perceived risk and intended risk-handling activity. *Journal of Consumer Research* 21, 119–134.
- Featherman MS, Pavlou PA (2003). Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human Computing Studies*, 59(4), 451–74
- Featherman MS. (2001). *Extending the Technology Acceptance Model by Inclusion of Perceived Risk*. American Conference on Information Systems, Boston.
- Fishbein M and Ajzen I. (1975) *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Addison-Wesley, Reading, M.A.
- Furnell SM, Karweni T (1999). Security implications of electronic commerce: a survey of consumers and businesses. *Internet Research*, 9(5), 372–82.
- Hair JF, Anderson RE et al. (1998) *Multivariate Data Analysis*. Prentice-Hall, Upper Saddle River
- Hung, S.Y.; Chang, C.M.; Yu, T.Y (2006). Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system. *Government Information Quarterly*, 23, 97–122.
- Jarvenpaa SL, Tractinsky N (2000). Consumer trust in an internet store, *Information Technology & Management*, 1(1), 45–71.
- Karavasilis, I.; Zafiroopoulos, K.; Vrana, V(2010). Factors Affecting the adoption of e-Governance by teachers in Greece. In *Proceeding of 10th European Conference on E-Government*, University of Limerick, Ireland
- Kuisma T, Laukkanen T, Hiltunen M (2007). Mapping the reasons for resistance to internet banking: a means-end approach, *International Journal of Information Management*, 27(2), 75–85
- Lee MKO; Turban E (2001). A trust model for consumer internet shopping, *International Journal of Electronic Commerce*, 6(1), 75–91
- Littler D, Melanthiou D (2006). Consumer perceptions of risk and uncertainty and the implications for behaviour towards innovative retail services: the case of internet banking. *Journal of Retailing Consumer Service*, 13(6), 431–43.
- Mäntymäki, M(2008). Does E-government Trust in e-Commerce when Investigating Trust? A Review of rust Literature in E-Commerce and e-government Domains. In *Towards Sustainable Society on Ubiquitous Networks*; Oya, M.,

- Uda, R., Yasunobu, C., Eds; Springer: Boston, MA, USA, 253–264.
- Milind S (1999). Adoption of Internet banking by Australian consumers: an empirical investigation. *International Journal of Banking and Marketing*, 17(7), 324–35.
- Nunnally J. (1967). *Psychometric Theory*. Mc-Graw Hill, New York.
- Papadopoulou P., Nikolaidou Maria and Martakos Drakoulis (2010). What is Trust in EGovernment? A Proposed Typology, in *Proceedings of the 43th Hawaii International Conference on System Sciences*
- Pavlou PA. (2001). Integrating Trust in Electronic Commerce with the Technology Acceptance Model: Model Development and Validation. *American Conference on Information Systems*, Boston.
- Reddick C. (2005). Citizen interaction with e-government: from the streets to servers?, *Government Information Quarterly*, 22, 38-57
- Teo, T.; Srivastava, S.; Jiang, L (2008). Trust and electronic government success: An empirical study. *Journal of Managing Information Systems*, 25, 99–131.
- Turban, E., King, D., Lee, J., Warkentin, M. and Chung, H. M. (2002). *Electronic Commerce 2002: A Managerial Perspective*, Upper Saddle River, NJ: Prentice Hall.
- Venkatesh V and Davis FD (2000). A theoretical extension of the Technology Acceptance Model: Four longitudinal case studies. *Management Science*, 46(2), 186–204.
- Venkatesh, V., Morris, M.G., Davis, F.D., and Davis, G.B (2003). User Acceptance of Information Technology: Toward a Unified View, *MIS Quarterly*, 27, 425- 478
- Warkentin M., Gefen D., Pavloua P.A and Rose G.M (2002). Encouraging citizen adoption of e-government by building trust”, *Electronic Markets*, 12(3), 157- 162
- West D. (2004), E-government and the Transformation of Service Delivery and Citizen Attitudes, *Public Administration Review*, 64, 15-27
- Yiu CS, Grant K, Edgar D (2007). Factors affecting the adoption of internet banking in Hong Kong – implications for the banking sector. *International Journal of Information Management*, 27, 336–51.