



# **Continuance Intention of E-Government's Applications Adoption: The Moderating Effect of Trust**

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## **Abstract**

The objective of this study is to determine the moderating effect of trust towards the relationship between the e-Government web-based applications adoption and citizens' continuance intention in Southern Malaysia. Besides that, its aim is to identify the relationship between the e-Government web-based applications adoption and citizens' continuance intention and to find which element in the predictor variable that has more influence toward the outcome variable. The research design for this study is correlational research that requires survey as the method for gathering data. This study is conducted in the selected private organizations in Southern Malaysia that consist of the states of Johor, Melaka and Negeri Sembilan. The results found that trust does not moderate the relationship between e-Government web-based applications adoption and citizens' continuance intention in Southern Malaysia. Other than that, it is found that website design, complexity and perceived usefulness are significantly associated with citizens' continuance intention. Perceived usefulness is the main predictor in influencing citizens' continuance intention in using the e-Government web-based applications. Thus, it is highly recommended to the authorities and web developers to create e-Government web-based applications that contain interactive design, less complex online transactions and user-friendly website.

**Keywords:** e-Government Adoption; Continuance Intention; Trust

## Introduction

Today we live in an age of cutting-edge technology. The initiation of Information and Communication Technology (ICT) world has rapidly led to a diverse tools and communication options to all people. Such digital era has perceived tremendous changes in the peoples' lifestyles and environment. In line with the statement, Nov and Ye (2008) say that today's business organizations and individual have become increasingly dependent on computer and Information Technology (IT) to carry out their daily operations. As the Internet technology and usage has become progressively more prevalent in different fields due to its huge capability, all activities can be done virtually (Nov and Ye, 2008).

The rapid speed of technological development has upshot the integration of computers and telecommunication technology as a useful instrument to enable governments to enhance and possibly transform its relation with their citizens, business organizations, and agencies as well as with other governments around the world. Being aware of this trend, Malaysian government has the determination to reveal itself as a technologically advanced country highlighting the development of IT industry (Umi Asma' and Zawiyah, 2009). In order to parallel with the developed nation such as Japan and United States, Malaysia needs to move forward to the automation and digitalization practices. The huge potential of ICT and its rapid development has stimulated the Malaysian government to make some investment in the IT industry. The instillation of IT literacy culture among its citizens is actually the first step taken to aspire and convert the Malaysian's Vision 2020 into reality.

According to the Malaysian Government official website (2013), a route has already been defined in order to accelerate the objectives of Vision 2020 through seven innovative Flagship Applications. All seven

applications in the flagship are engineered to start the Multimedia Super Corridor (MSC) project that offers the initiative to reach the information era. One of the Flagship Applications is the electronic government or simply called the e-Government. The vision or focus of Malaysian government's online applications or electronic government (e-Government) is to enable and enhance citizens and business organizations to receive efficient and effective service delivery from the government. This e-Government initiative is actually enabling the authorities to become more alert and responsive to the needs of its citizens (Malaysian Government official website, 2013). With the e-Government services that are in the web-based applications styles, the original 'orthodox' management styles and manual log book system can be changed to automated systems. In line with this statement, Lee and Lee (2009) mentioned that the intended e-Government web-based applications are to offer faster and high quality government services and to be effective citizen-centered system. Shaidin (2007) lists several prominent and popular e-Government web-based applications that are available to the Malaysian citizens such as Public Services Portal (myGovernment), ezHASiL, i-Akaun KWSP, and e-Tanah.

Although the mission to implement and develop e-Government web-based applications by the government has increased enormously due to its potential and positive impacts to the government service delivery, its critical success factor greatly depends on how well the citizens make use of the intended government web-based applications (Colesca, 2009). The establishment of e-Government portals alone does not promise the citizens' intention to continue using the government e-services applications in future (Teo, Srivastava and Jiang, 2009). Many studies previously claimed that Malaysian citizens' level of acceptance towards the e-Government services is high; however, Malaysians remain static in utilizing and exploiting the e-

Government services (Ooh, Suhaiza, Ramayah and Fernando, 2009). Here it means that they do not really want to continue using such e-services in the future. Perceptions and trust issues toward the e-Government portals also create challenges to the government in influencing citizens' intention to continue this use. The haywire and complicated navigation of the content in the websites as well as not being so user-friendly are other issues why this problem happened (Norshita, Halimah and Tengku Mohammad, 2010).

Disclosing personal information online by the users can be considered risky and thus, vulnerable to any illegal activities by the third party. Taken together Maziar and Zuraini (2012) and also Kanat and Ozkan (2009) said that the lack of users' trust is the leading preventing factor for the continuance intention to accept and use the e-Government web-based applications. This is because performing transaction over the Internet involves many uncertainties and obstacles such as privacy, disclosing personal information, virus and other security issues (Sang, Lee and Lee, 2009; Belanger and Carter, 2008). This means that the citizens will only continue using the electronic government services when they trust the online transaction handled by the government.

Contrariwise, AlAwadhi and Morris (2009) said that the lack of awareness and understanding the benefits of such web-based applications are associated with the adoption and continuance intention to use. Taken together Hung, Chang and Yu (2006) and AlAwadhi and Morris (2009) stated that the barriers in adopting the users' ongoing intention to use the e-Government web-based applications are the lack of familiarity with IT in several groups of people such as the economically disadvantaged, some older people, and some people with disabilities to perform the online transactions. This will eventually lead to the waste of government investment in developing and implementing the e-Government web-based applications to

its citizens. Grounded by this issue, the focus of this study is to determine the role of trust towards the relationship of e-Government web-based applications adoption and citizens' continuance intention.

### **Trust**

In this study, trust is added as a moderator between the relationship of e-Government web-based applications adoption and citizens' continuance intention. It helps for better understanding of how the citizens' continuance intention can be influenced by this moderating variable. This view was supported by Beldad, Van der Geest, De Jong and Sheehouder (2012), who mentioned that trust in government organizations in term of their usage and processing of citizens' personal data will lead to citizens' intention to disclose personal information for on-line government transactions. After the citizens gain trust, they will intent to engage to the transaction over long period of time. However, online service trust has been explored and defined differently in numerous studies (Belanger and Carter, 2008), but certainly trust helps reduce difficulties and gain efficiencies in public sector administration (Smith, 2010). According to Chopra and Wallace (as cited in Mullen and Horner, 2012), trust is defined as the confidence of an individual to rely on a specific other in a willingness kind of feeling that things will lead to positive outcomes.

Teo et. al (2009) defines trust as the belief of the users that certain tasks will be completed successfully in the on-line environment. Trust in using or to continue using the e-Government web-based applications includes trust in the security measures, performance structures and the safety nets of the electronic medium. A point to remember is that online government services entail users for completing certain electronic registration forms and this obviously forces the users to reveal their personal information such as phone number, credit card number, identity card number and address before a particular transaction can be proceed and be completed

(Beldad et. al, 2012). Prior studies have shown that citizens' trust is an important factor in influencing the acceptance and the adoption of online government services (Belanger and Carter, 2008; Colesca, 2009). In their reviews, Maziar and Zuraini (2012) and Kanat and Ozkan (2009) claimed that the lack of users' trust is the main preventing factor for the adoption of e-Government services, due to the fact that performing transactions over the Internet involves many uncertainties and obstacles (Sang, Lee and Lee, 2009; Belanger and Carter, 2008). This explains that users will only adopt the electronic government services which they trust (Maziar and Zuraini (2012).

Disclosing personal information online by the users can be considered risky and thus vulnerable to any illegal activities by the third party (Beldad et al., 2011) since illegal behavior such as information theft is the acquisition of the users' information which can come in a myriad of methods and modes (Zulhuda, 2012). Thus, confidence and trust among the users, in most cases, are very important to the widespread adoption of e-Government services (Belanger and Carter, 2008). In order to overcome users' information theft problem, Malaysian parliament had approved some legislations such as Personal Data Protection Act 2010, Electronic Government Activities Act 2007, Electronic Commerce Act 2006 and many more (Zulhuda, 2012). Therefore, it is essential to convince Malaysian citizens to fully utilize the information technology (IT) systems and tools and Internet access and to increase the participation and trust certainty on the legitimacy of digital documents, computer-mediated transactions as well as the legality of the personal information exposed. Based on the theories and the discussion of the e-Government web-based applications adoption and citizens' continuance intention that will be moderated by trust, the hypothesis derived is that trust moderates the relationship between e-Government web-based applications adoption and citizens' continuance intention.

### ***E-Government Web-based Applications Adoption***

One of the e-Government definition is an information system (IS) technology-based means to assist in handling the daily and routine public administrative processes and it is believed to enhances the delivery of government services with more easy access to the government services and information, and more efficient government management (Lin, Fofanah and Liang, 2011). Gronlund (2010) proposed that e-Government is the on-line government with full electronic case handling to assist the citizens to apply something, download forms, search for information and pay official bills. Taken together AlAwadhi and Morris (2009) and Lin et. al (2011) said that the application of ICTs such as Internet, Wide Area Network (WAN) and mobile devices and computing will aid the citizens in performing government on-line transactions.

Lindgren and Jansson (2013) then elaborate the term of *e-service* which contains two parts: *e*-represents that something is done 'electronically', and the *service* represents something that is intangible which is the process in which the value is created for someone. On the other hand, adoption is defined as the reasoning process connected with the decision to make use of or reject an innovation (Peres, Correia and Moital, 2011).

As e-Government web-based applications have turned out to be the main channel for on-line dealings between the government and citizens, creating and designing a user-friendly website has become a concern for electronic government implementation (Alomari, Woods and Sandhu, 2012). Undeniably, to develop good quality of user interface design for the e-Government web-based portal is very complicated. The importance of well-presented content on the government websites is to ensure citizens' satisfaction with the on-line services provided (Alomari et. al, 2012).

### ***Continuance Intention***

A number of research models have been introduced to explain computer-usage intention and behavioral towards IS which are grounded by the theories of Martin Fishbein and Icek Ajzen's Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Intention simply signifies a course of action that one proposes to follow a strong predictor of future behaviors (Zhao, Stylianou and Zheng, 2013). Behavioral intention is an individual's subjective possibility to perform a specified behavior, and this is the major contributing factor of actual usage behavior (Lee, 2009). The perspective of technology adoption is aligned with the user initial behavioral intention to use particular technology.

AlAwadhi and Morris (2009) claimed that IS acceptance and adoption is affected by the intention of the user to accept and use the IS in daily life which is closely related to the TRA and TPB theories. Each user is enabled to determine his or her own participation to adopt an IS. User intention to adopt the e-Government web-based applications is really true success factors to such system that depend on first-time use and the continuing use (Lin, 2012). Kim, Hong, Min and Lee (2011) argue that IS continuance intention has received relatively small attention from IS researcher rather than what the acceptance has received. The theories discussed above are related to the pre-acceptance towards IS.

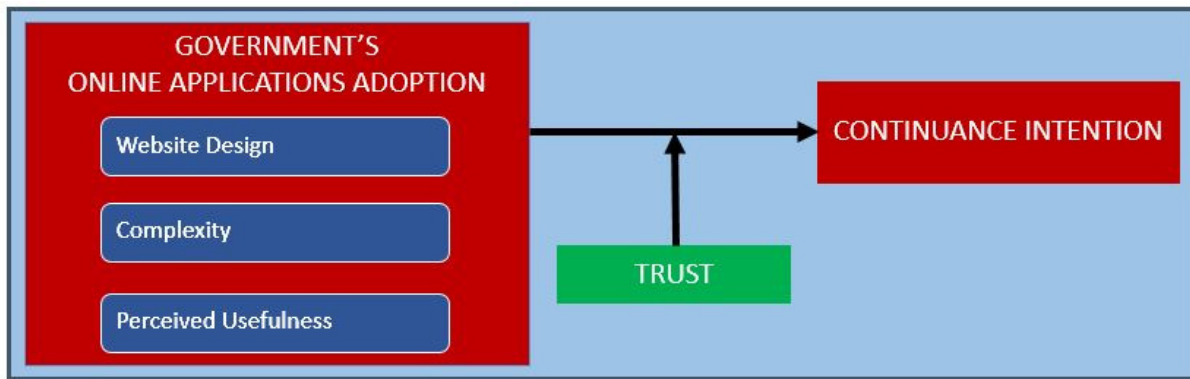
Continuance intention is defined as the continuance perceptive of IS adopters, where

continuance decision follows closely to the initial usage decision (Lin, 2012). Studies in continuance intention suggest that Expectation-Confirmation Model (ECM) can be applicable to determine the post-acceptance of the users (Lee, 2009). The ECM examines cognitive beliefs and moves one's intention to continue using IS (continuance behaviour).

### ***Conceptual Framework***

The conceptual framework is developed based on the intention-based model (Technology Acceptance Model, TAM and Diffusion of Innovation, DOI). Rehman and Esichaikul (2012) proposed an integrated model containing TAM and DOI together. Thus, this study will fulfill the research gap on the previous study in integrating the constructs from the TAM and DOI models such as website design, complexity from DOI and perceived usefulness from TAM.

The conceptual framework in Figure 1 describes the relationship between the independent variable, dependent variable and moderating variables. In this study, the e-Government web-based applications adoption is the independent variable and continuance intention is the dependent variable, while trust acts as a moderating variable. It shows the relationship between e-Government web-based applications adoption towards continuance intention and the relationship is moderated by the effect of trust.



**Figure 1: Trust Moderates the Relationship between Online Application Adoption and Continuance Intention in Adopting e-Government Web-based Applications**

**Methodology**

The correlational research is used to delineate and clarify the linear relationship between the variables (Sekaran and Bougie, 2011). This research design was appropriate as the intention of this study is to determine the relationship existence between e-Government web-based applications adoption and citizens’ continuance intention with trust as the moderating role.

In this study, three private organizations in service industry were selected respectively for each state, rounding up to 270 respondents in total. Although suggested by Krejcie and Morgan’s table that the sample size was sufficient with 159 cases, a total of 270 sets of questionnaires were distributed to these selected organizations as shown in table 2.1 in order to ensure higher return rate and get more responses. However, only 216 sets were eventually collected, making a response rate of 80 percent from the total distribution.

**Table 1: The population for the continuance intention in adopting e-Government web-based applications**

No.	States	Organizations	Field of Service	Estimated Total Number of Employees
1	Johor Darul Takzim	Senai-Desaru Expressway Berhad (Penawar Tol)	Expressway	30
2		Dewan Perniagaan & Perindustrian	Investment	30
3		Megahara Resources Enterprise	Contractor	30
4	Melaka	Victory Vision Trading and Services	Retail	30
5		Victory Recovery Resources Sdn. Bhd.	Recovery	30
6		Metro Interise (MISB) Sdn. Bhd.	Financial	30
7	Negeri Sembilan	Safety Enterprise Agency	Maintenance	30
8		Cemerlang Corporate Services Sdn. Bhd.	Secretarial	30
9		World Human Works and Solution Sdn. Bhd.	Recruitment	30
<b>Total Population</b>				<b>270</b>

The respondents of the study were employees of various positions including managerial level and administrative level provided they have experiences of using Malaysia's Government's online applications. Basically, the respondents' tasks require the extensive use of computers and software applications. In order to achieve this, a list of respondents was derived from the Human Resource and Administration Department from each organization. The respective respondents were given a set of close-ended questionnaire based on quota sampling to fulfill the objective of the study.

## Results

The objective of this study was to determine the moderating effect of trust between the e-Government web-based applications adoption and citizens' continuance intention in Southern Malaysia. Therefore, by using hierarchical regression analysis, the moderating effect of trust towards the relationship is determined. The hypothesis developed for this analysis and the result are presented below.

Hypothesis developed: *H<sub>1</sub>: Trust has the moderating effect on citizens' continuance intention to use the e-Government web-based applications in Southern Malaysia.*

As can be seen from table 2 below, it summarizes the finding of the moderating effect of trust on the relationship between e-Government web-based applications adoption and continuance intention. Model 1 reflects the direct relationship between e-Government web-based applications adoption and continuance intention. Model 2 signifies the extent of additional variance explained when the moderator of trust is included in the regression line. Meanwhile, Model 3 highlights the interaction of the moderator variable with the independent variables and their relationship with the dependent variable. From the findings, Model 1 explains 35.6 percent of the variance. Model 2 explains 36.6 percent of variance while Model 3 explains 38 percent of the

variance explained. However, in referring to Model 3, the significant F change of the regression models shows that the not significant value is ( $p > 0.05$ ), where  $F(3, 190) = 1.506$ ,  $p = .214$ ). In Model 1, the finding indicates that all three dimensions of independent variables; website design, complexity and perceived usefulness are significant predictors of continuance intention. The standardized beta value for website design is  $\beta = 0.206$ ,  $p < 0.01$ ; complexity  $\beta = 0.265$ ,  $p < 0.01$ ; and perceived usefulness  $\beta = 0.304$ ,  $p < 0.01$ .

In interpreting the moderating existence of trust with continuance intention, Model 2 illustrates the value for the moderating variable. The value for trust as moderator is  $\beta = 0.130$ ,  $p > 0.05$ . Thus, trust can be regarded as not having direct significant relationship with continuance intention as the dependent variable. Pertaining to the moderating effect of trust on the relationship between e-Government web-based applications adoption and continuance intention, Model 3 indicates the value of trust which indicates  $\beta = -0.027$ ,  $p > 0.05$ . Thus, trust can be regarded as not having direct significant relationship with continuance intention as the dependent variable.

With reference to the moderating effect of trust on the relationship between e-Government web-based applications adoption and continuance intention, the finding can be seen in Model 3 that highlights the interaction of the moderating variable with the independent variables and their relationship with the dependent variable. In Model 3, it is found that trust does have a significant interaction between the perceived usefulness and continuance intention where the beta value is  $-1.021$ ,  $p < 0.05$ , however, it is noted that the beta value has the negative sign. This shows that the interaction between trust and perceived usefulness is negatively associated with the dependent variables. Meanwhile, the other two dimensions of e-Government web-based applications adoption; website design and complexity are not significant in explaining the additional

variance in the model. Overall, these results indicate that trust does not moderate the relationship between e-Government web-based applications adoption and citizens'

continuance intention ( $p > 0.05$ ). Hence, it can be concluded that  $H_1$  is rejected.

**Table 2: Hierarchical regression results of trust on the relationship between Government's online applications adoption and continuance intention**

<i>Dependent Variable</i>	Continuance Intention		
	Standardized Beta ( $\beta$ )		
	Model 1	Model 2	Model 3
<b><i>Independent Variables</i></b>			
Website Design	.206***	.209***	-.032
Complexity	.265***	.230***	-.257
Perceived Usefulness	.304***	.240***	.747**
<b><i>Moderator Variable</i></b>			
Trust		.130	-.027
<b><i>Interaction Terms</i></b>			
WD x Trust			.424
Complexity x Trust			.835
PU x Trust			
R	.597	.605	.617
R <sup>2</sup>	.356	.366	.380
Adjusted R <sup>2</sup>	.346	.352	.358
F change	35.810	2.798	1.506
Significant F change	.000	.096	.214
Durbin-Watson			2.103
Notes: *** significance at the .01 level; ** significance at the .05 level; * significance at the .1 level			

Based on the results of hierarchical regression analysis, trust does not have a moderating effect towards the relationship between e-Government web-based applications adoption and citizens' continuance intention in Southern Malaysia. By observing the beta value in Model 3, it is found that all the interaction terms do not have significant result prior to the hypothesis developed.

Users of e-Government web-based applications often rely on their self-belief of trust, either to continue the usage after experiencing it in the first place or not. Trust is something abstract that can be defined as

the psychological state that encourages us to accept the vulnerability based on our positive expectation toward another party's future behavior (Zhao, Stylianou and Zheng, 2013). In comparing the result of this study with past studies, it is found that trust does have the quasi-moderating effect towards the relationship between satisfaction and commitment in e-banking (Sanchez-Franco, 2009). Similar results are also found in the adoption of e-procurement and the participation in the e-marketplace where trust has a moderating effect on e-procurement adoption and participation in the e-marketplace (Chang and Wong, 2010).



## Conclusion

The study has identified that the role of trust has no moderating effect towards the relationship between e-Government web-based applications adoption and citizens' continuance intention in Southern Malaysia. Despite that, trust is somehow enhancing the relationship between the e-Government perceived usefulness and continuance intention. In general, trust is an important element to improve long-term relationship between two parties and to retain the continuance usage of e-Government web-based applications adoption. It is the important tenet in ensuring the increasing belief of the users towards the e-Government web-based applications. The aspect of trust is recurring in oneself when they have the experience using such e-application in the past. Therefore, it is indispensable to increase citizens' trust in e-Government web-based applications by developing citizens-friendly website. Moreover, the security measures must be tightened up in order to avoid information theft, hackers, virus, web failure and other cyber-crime activities. Taken together, authentication for every online transaction must be valid to safeguard the users' trust with e-Government web-based applications.

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