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Procedia - Social and Behavioral Sciences 164 (2014) 575 – 582

Procedia
Social and Behavioral Sciences

International Conference on Accounting Studies 2014, ICAS 2014, 18-19 August 2014, Kuala Lumpur, Malaysia

User's satisfaction on e-government services: An integrated model

Raudah Danila*, Akilah Abdullah

School of Accountancy, Universiti Utara Malaysia, 06010 UUM Sintok, Kedah, Malaysia

Abstract

In many developed countries, IT (IT) adoption in government agencies has been studied extensively. Unfortunately, such study is still lacking among developing countries including Malaysia. In fact, previous studies on the adoption of e-government offer limited framework to build on further research. This study investigates citizens' intentions and usage of e-government services and introduces a framework that combines Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), and Information System Success (ISS) as a base to examine factors that affect the intention and usage of e-government services. The proposed e-government adoption model takes into accounts issues of personal innovativeness, perceived usefulness, perceived ease of use, attitude, subjective norm, perceived behaviour control and system quality. By investigating users of online government services, we postulate that those factors should be the predictors of continued usage of e-government services. This study has practical implications for the design of mechanisms for the adoption of e-government.

Peer-review under responsibility of the School of Accountancy, College of Business, Universiti Utara Malaysia.

Keywords: Electronic government; technology acceptance model (TAM); theory of planned behaviour (TPB); information system success model (ISS)

1. Introduction

IT (IT) is an increasingly powerful tool for improving the delivery of government services. IT and the Internet in particular have opened new possibilities for the government and the governed, just as it has for the businesses and its customers (Hazman & Maniam, 2004; Moon, 2002). Over the past decade, many governments including the Malaysian government have planned and implemented programs projected to introduce the government into the digital land. The fact is e-government applications are a very powerful and effective method in delivering government services to the people and at the same time interacting with people (Alshawi & Alalwany, 2009;

* Corresponding author. Tel.: +604-9287308.
E-mail address: raudah@uum.edu.my

Peer-review under responsibility of the School of Accountancy, College of Business, Universiti Utara Malaysia.
doi:10.1016/j.sbspro.2014.11.148

Belanger & Carter, 2012;Teerling & Pieterson, 2011).E-government applications aim to achieve several goals, among which is to strengthen the relationship between government and its people, provide more efficient and effective service, increase productivity, and speed up transactions in government agencies (Kumar, Mukerji, Butt, & Persaud., 2007; Zakaria, Ngah, Hussin, Noordin & Sawal, 2011). E-government applications address several groups of stakeholders including government to citizens (G2C), government to business (G2B), government to its employees (G2E) and government to its agencies (G2G) (Perumal, Norwawi, & Muniandy, 2006; Rao, 2011). Therefore, e-government applications become an important tool for citizens as well as businessmen to conduct government transactions.

Despite the extensive usage of e-government applications in Malaysia, there is still scepticism among people particularly of its effectiveness (Holden, Norris, & Fletcher, 2003). The criticism tends to centre around accessibility, efficiency, effectiveness, accountability, and transparency of the government services. Therefore, in order to explore the reasons behind these criticisms, the application of e-government needs to be assessed. Currently, the two most dominant approaches to assess the effective adoption of e-government applications involve early stage and maturity stage (Kasubiene & Vanagas, 2007; Malaysian Administrative Modernization and Management Planning Unit [MAMPU], 2011). The maturity level can be measured through the frequent usage of e-government (Kasubiene & Vanagas, 2007). Thus, evaluating the overall performance of e-government application from this perspective will help government improve its services (MAMPU, 2011). In general, this research aims to seek for antecedent factors that influence the intention and usage of e-government applications by combining the Technology Acceptance Model, Theory of Planned Behaviour and Information System Success Model. This paper is organized into nine sections. The next section discusses the background of e-government in Malaysia, followed by overview of previous research in the related area. The origins and concepts of the three models used are briefly explained in the later sections before the researcher proposed the new research model. Finally the paper is enfold with some discussion on the research methodology as well as conclusion.

2. E-Government

E-government has been practiced by some countries around the world since 1990s, including Malaysia, who has initiated the e-government in 1996 (Norshita, Halimah, & Mohammad, 2010; Suki & Ramayah, 2010; Yaghoubi, Kord, & Shakeri, 2010). The early stages of the e-government application has shown some constraints such as low acceptance rate (Yaghoubi, et al., 2010) and low usage of e-government by the people and stakeholders (Kumar, et al., 2007). Similarly, some constraints were from the point of IT application in terms of infrastructure, technical as well as systems (Alshawi & Alalwany, 2009). However, these constraints have been reduced in stages through the technology monitoring and improvement by the responsible parties who developed the e-government applications (MAMPU, 2011). In this regard, there is still some space to improve the e-government applications as the role of the government has becoming more complex in today situation (Suki & Ramayah, 2010). One way to identify the level of complexity is to determine the roles, objectives and specific activities of all interested stakeholders (Rao, 2011). The e-government stakeholders can be divided into two categories: the external and internal parties (Rao, 2011). The exterior consists of citizens (G2C) and businesses (G2B), while the interior consists of employees (G2E) and Government (G2G) (Rao, 2011). Next, each of these objectives should be identified so that there will be no overlapping among the objectives of the stakeholders. Figure 1 clarifies the objectives required by every stakeholder in the government.

Referring to the objectives of each of the stakeholders, it is found that each party has its own unique objectives as to meet their needs and goals. Hence, surely each party has their own way to evaluate the level of acceptance, the level of usage, the level of providing the information and the level of maturity of the e-government application. In short, by knowing the level of acceptance, the level of usage, the level of providing the information and level of maturity, the actual performance of e-government as a whole can be identified and in addition, the actual performance of each stakeholder can also be known more clearly. Therefore, the issues of the e-government applications complexity can be explained and can be dealt with best possible way.

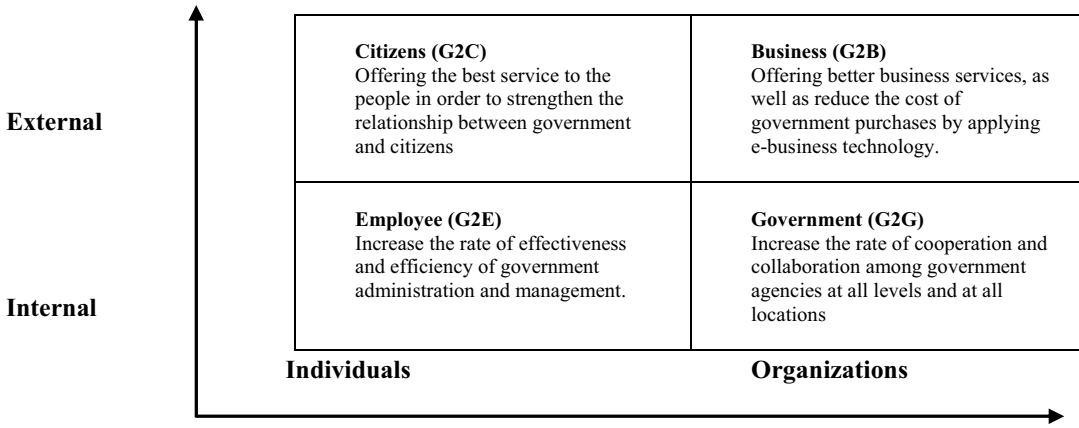

Fig. 1. The Objective of the Stakeholders of E-Government Applications.
Adapted from Rao (2011) page 216

3. Previous research

Research on factors influencing e-government adoption in Malaysia is still at an infancy stage. Many existing literature on e-government tend to focus separately on the technology (Olszak & Ziemba, 2011) and non-technology environment (Alshawi & Alalwany, 2009) of e-services. The following table documents several researches conducted by Malaysian scholars on the influence of technology and non-technology environment towards the successful adoption of e-government services. Based on the table, there is hardly any researcher that tries to combine the technology and non-technology environment in their study on e-government adoption. Because of that, this study endeavours to explore the combined effect of technology and non-technology environment on the usage of e-government services in Malaysia. It is good to combine both aspects as there will be more comprehensive explanation on the factors why citizens using the E-Government.

Table 1. Research on E-Government Usage in Malaysia.

Studies	Frameworks used	Objectives of research	Focus of research
Suki and Ramayah (2010)	TAM & TPB	Level of acceptance on e-application	Non-technological
Zakaria et al. (2011)	TAM	Customer satisfaction on e-government services	Non-technological
Norshita et. Al (2010)	ISS	Evaluation on e-government applications	Non-technological
Ambali (2009)	ISS	E-filing assessment	Technological
Kaliannan and Awang (2009)	TAM	Level of readiness to use e-procurement	Non-technological
Kaliannan, Awang, and Raman (2010)	TAM & ISS	Public-private partnership on e-government initiatives	Non-technological
Latif and Masrek (2010)	Web Content Accessibility Guidelines 1.0 (WCAG 1.0)	Accessibility of government websites	Technological

In discussing the theory, the unified theory of acceptance and use of technology (UTAUT) model has provided a theoretical foundation for studying the adoption of e-services generally. Specifically, Venkatesh et al. (2003) empirically tested and validated the UTAUT model by blending eight distinct technology acceptance models based on their similarities. The models include the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), the Theory of Planned Behaviour (TPB) (Ajzen, 1991), the Technology Acceptance Model (TAM) (Davis, 1989; Davis, Bagozzi & Warshaw, 1989), the Motivational Model (MM) (Davis, Bagozzi & Warshaw, 1992), the combined Theory of Planned Behaviour/Technology Acceptance (TAM-TPB; Taylor & Todd, 1995), the Model of PC Utilization (MPCU; Thompson, Higgins & Howell, 1991), the Diffusion of Innovation Theory (IDT; Rogers, 1995) and the Social Cognitive Theory (SCT) (Bandura, 2001; Compeau & Higgins, 1995).

Current empirical studies have extensively focused on the acceptance of e-government services in government agencies. Many of these researchers utilize a framework of TPB and TAM in their investigation. Only a few studies have integrated ISS model in their attempt to examine the success adoption of e-government application. This study intends to explore the extent to which influence of ISS model along with the existing model of TPB and TAM on the factors influencing the usage of e-government application. Due to that, three models are selected namely TAM, TPB and Information Systems Success Model (ISS). TAM developed by Davis (1989) is chosen to gauge the level of acceptance of IT (Suki & Ramayah, 2010). TPB developed by Ajzen (1991) can measure the level of usage behaviour (Suki & Ramayah, 2010; Yaghoubi, et al., 2010) while ISS developed by DeLone and McLean (1992) can be used to measure the success of an IT (DeLone & McLean, 2003). In this study, the three models will be used to explain the factors affecting the intention and usage of e-government focusing on the acceptance level (non-technological), level of usage (non-technological) and the success of IT (technological).

4. Technology acceptance model

TAM (Davis, 1989) focuses in (on) the relationship between the causes and consequences of system design, demonstrates the usefulness, demonstrates comfort to use, attitude towards usage and the actual use behaviour (Davis, Bagozzi, & Warshaw, 1989) (Fig. 2). TAM is widely used to identify and investigate the factors of user acceptance (Yaghoubi, et al., 2010). According to Davis et al. (1989), the goal of this model is to provide insights on the determinants of acceptance of computer technology by users. Furthermore, this model is able to explain user behaviour across various populations and standard space for using computer technology through theoretical justification (Davis, et al., 1989). Use of TAM has been widely supported in empirical studies (Ajzen, 1991; Davis et al., 1989; Suki & Ramayah, 2010; Yaghoubi, et al., 2010). In summary, this model provides information on a mechanism in which the selection of the design can affect the user acceptance and it also serves to be applied in the context of forecasting and evaluation of a user acceptance of IT.

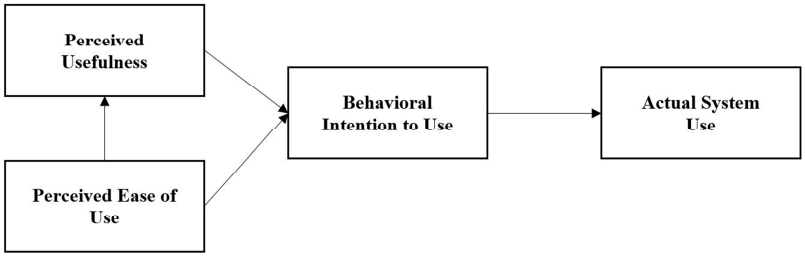

Fig. 2. Technology Acceptance Model (Davis, 1989).
Source: Davis et al. (1989); Venkatesh et al. (2003)

5. Theory of planned behaviour

TPB (Ajzen, 1991) is developed through the extension of TRA. TRA was modified by adding the behaviour construct to the existing theory (Ajzen, 1991). The addition is to explain the failure of the user to control their behaviour in what they do. TPB suggests that behaviour can be explained by real behavioural intention, where intention towards behaviour is also influenced by attitude, subjective norm and perceived behavioural control (Fig. 3). There are some studies that adopt this theory to investigate the actual usage behaviour using attitudinal variables (Fishbein & Ajzen, 1975; Suki & Ramayah, 2010; Yaghoubi, et al., 2010). Therefore, in this study, TPB is used to evaluate the behaviour of the e-government application user.

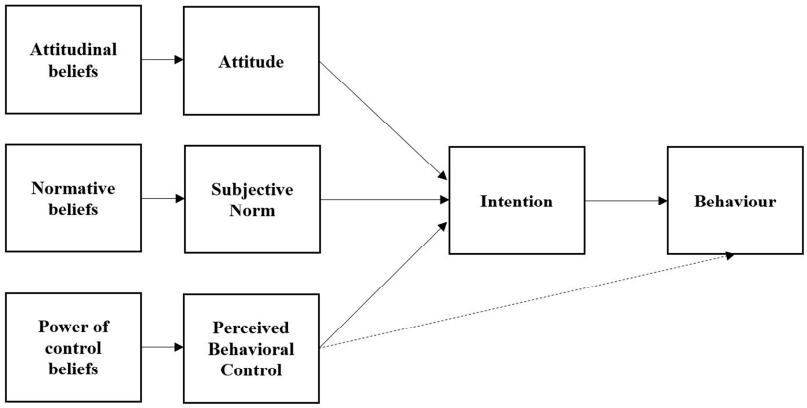

Fig. 3. Theory of Planned Behavior (Ajzen, 1991).

6. Information system success model

DeLone and McLean (2003) have updated the Information System Success Model which has been formed in 1992 (DeLone & McLean, 1992) by replacing the two factors; individual impact and organizational impact with three factors: (1) intention to use, (2) users satisfaction, and (3) net benefit (Fig. 4). The replacement has been made to meet the frequent changes in the IT (Wang & Liao, 2008). Indeed, the use of this Information System Success Model is specifically to evaluate the IT application, which is consistent with the e-government system (Petter & McLean, 2009; Wang & Liao, 2008). Moreover, as thee-government is new, it is highly relevant to use the updated Information System Success Model for evaluating the success of e-government applications.

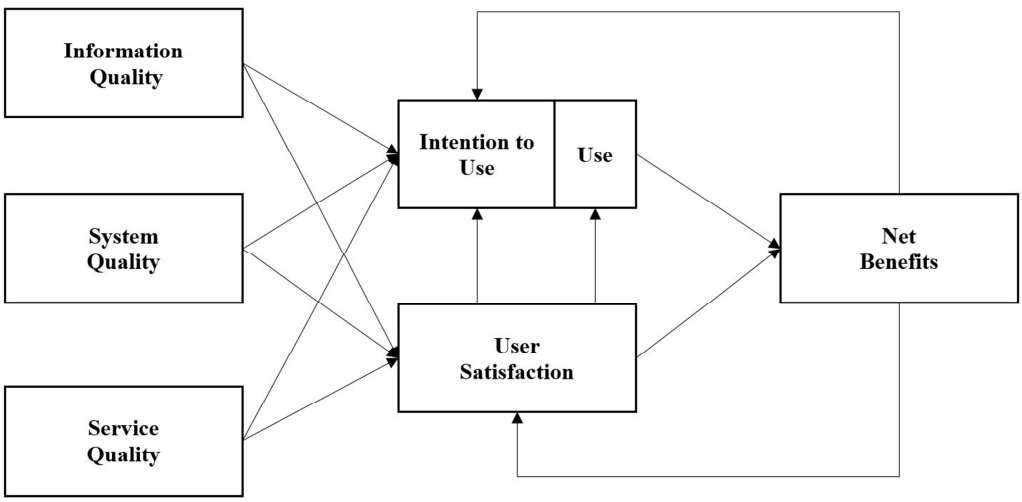

Fig. 4. Information System Success Model (DeLone & McLean, 2003).

7. Proposed framework

The study will explore the performance of e-government applications using TPB, TAM and ISS model. There are also other models, such as Motivational Model (MM), Innovation Diffusion Theory (IDT) and the Social Cognitive Theory (SCT), being utilized by previous researchers to explore the effective implementation of e-government adoption. However, only the three above models will be studied and explored as the combination of the three models could explain the usage from both technological and non-technological aspects. According to Fishbein and Ajzen (1975), merger or integration of some models from specific area could give more meaningful explanation on the researched phenomenon or issues. Therefore, this research adopts the merger approach so that the performance of e-government can be explained more clearly.The theoretical framework of the study is depicted by the Fig. 5.

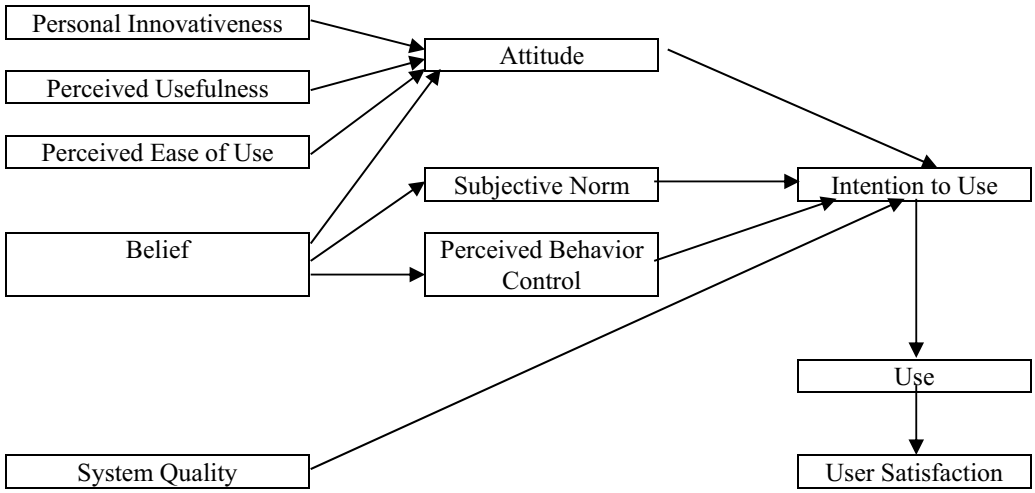

Fig. 5. Proposed Research Model.

This study will use Technology Acceptance Model to measure the level of acceptance of e-government by all stakeholders. While Theory of Planned Behaviour will be used to measure the behaviour of e-government application user, the Information System Success Model will measure the preparation and the success of e-government applications. Finally, to find out the actual performance and the level of maturity of e-government separately according to stakeholders as well as overall performance, this study will combine these three models to produce better and more relevant results**.**

8. Methodology

In this study, the unit of analysis is the user of myGovernment Portal. My Government could be described as one-stop source of Malaysian government information and services for the citizens. The method used in this research is questionnaire survey and the respondent are scattered throughout Malaysia. Questionnaires will be distributed directly to the subject by hand after completion of the sampling procedure. This study will involve a sample size of 500 respondents, which exceeds the requirement for a population of more than 75,000 respondents (Cavana, Delahaye, & Sekaran, 2001), which is 382. The proposed sample size meets the rule outlined by Roscoe (Cavana et al., 2001) which states that the characteristics of the sample should be more than 30 but less than 500 for most of the studies. A simple random sampling method is deemed to be the most suitable to ensure that all elements of the population could be considered the same and has the opportunity to be selected as study subjects.

Data will be analysed by using Structural Equation Modelling. Before analysing the data, screening process and data testing will be run to meet the assumptions of multivariate (Tabachnick & Fidell, 2007), conducting exploratory factor analysis to identify the underlying structure of variables (Hair, Black, Babin, Anderson, & Tatham, 2006), and using structured equation modelling (SEM) to analyse the construct-related e-government applications will be executed.

9. Conclusion

E-government provides greater accessibility and better responsiveness by taking into accounts the needs and expectation of citizens. It is envisioned as a great tool to foster greater citizen involvement in democratic matters. However, one of the major stumbling blocks in the context of e-government application is the low level of usage among citizens. The mismatch between government's initiatives to embrace e-government application in administrative services and the low level of usage among citizens impedes the ability of the government to connect its citizens electronically. This study combines TAM, TPB and ISS as a base to examine factors that affect the intention and usage of e-government service. The findings of this study will help policy makers design a better model of e-government adoption in Malaysia. The new and improved model can become a guideline for policy makers to carefully relook its e-government applications and make necessary adjustments so that every citizen could gain benefits from the implementation of e-government applications and ultimately achieve the government's vision to have a full electronic access to government services by the year 2020.One possible limitation related to this study, and in most empirical research, is that of the limited sample size used for the research study. Another limitation that could affect the predictive value of the proposed model relate to the scope of the study. For instance, there were other equally important variables, such as trust, that were not accounted in this study. Since the study investigated citizens' intention to use e-government services in which different variables were compared without considering all the original variables in the three models, conclusions may not well be reflective of the original models. Finally, the kind of technology used in a particular context for a research study could be a limitation. Using different technologies, either in voluntary or mandatory settings, under a variety of contexts may lead to a different conclusion.

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