E-GOVERNMENT SYSTEMS SUCCESS AND USER ACCEPTANCE IN DEVELOPING COUNTRIES: THE ROLE OF PERCIEVED SUPPORT QUALITY

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─Abstract ─

This paper proposes a conceptual model to explain user acceptance of eGovernment systems considering the diverse layers of user groups. Due to digital division developing countries are providing e-Government services to heterogeneous user groups including non-educated and less skilful citizens for using computer based systems. Therefore this paper considers support quality of eGovernment systems is one of critical success factors and integrates the factor in a widely adopted user acceptance and success model of information systems. The unified theory of acceptance and use of technology is integrated with information systems success model to explain how the quality of e-Government systems is linked to the acceptance of the systems by citizens. Support quality is added as additional dimension of information systems success and relevant hypotheses are developed under e-Government contexts. Finally a description about data collection and future works are provided.

Key Words: *e-Government Services, UTAUT, IS Success Model, Developing Countries, Support Quality*

JEL Classification: M15

1. INTRODUCTION

During the last two decades, a number of theories and models have been proposed to explain user acceptance of Information Systems (ISs). On one hand, most of the IS acceptance models in the

literature consider end users homogeneous in terms of technology skills. On the other hand, e-Government systems have wider layers of user groups compared with other information systems, like office information systems (OIS), communication systems, and specialized business systems. While the users of the latter are more skilled and ready to use information systems; the users of the former (e-Government) may include users who are not familiar with technology enabled systems; for example, elderly and less educated people. They are more likely to encounter problems while interacting with e-Government systems.

A number of theories and models have been applied in IS domain and shown to be successful in explaining user acceptance to a certain technology. Among those are; the DeLone & McLean (2003) IS Success Model, (TAM) Davis (1989), the (DOI) Moore & Benbasat (1991), and the (UTAUT) model (Venkatesh et al., 2003). The models suggest followings as major factors: information quality, system quality, perceived trustworthiness, perceived risk, compatibility, complexity, perceived ease of use (PEOU), perceived usefulness (PU), and social influence (Wang & Liao, 2008; Carter & Bélanger, 2005; Wixom & Todd, 2005). However, to the best of the researcher's knowledge; perceived support quality construct has never been examined in the e-Government domain yet. This paper argues that perceived support quality of e-Government system is one of the major factors of e-Government system's acceptance by end users, mainly in developing countries.

The technology acceptance model (TAM) (Davis, 1989), the innovation diffusion theory (IDT) (Moore & Benbasat, 1991), and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) are few examples of user acceptance models in IS literature. However, despite their success in IS context in general and e-Commerce in particular, those models have a limitation in considering the diversity of users, assuming all end users of ISs are homogeneous. For example, end users of office information systems go through the homogenisation process such as the recruitment interviews for certain desired skills and systematic training before introducing new information systems. The end users of e-Commerce or entertainment applications are optional to more skilled users who have infrastructure and skills to use the applications. On the other hand, the end users of e-Government systems are more diverse than those of OIS, e-Commerce, and entertainment applications. As (Phang et al., 2006) points out, providing e-Government services to citizens should cover all sections of the public; rich, poor, young and elderly; "decreasing existing disparity in access, is in fact the holy grail of e-Government projects" ((Galpaya, Samarajiva & Soysa, 2007).

The digital divide is considered as a serious problem in developing countries in which IT resources and education are accessible by selected group of citizens (Galpaya, Samarajiva & Soysa, 2007; Rice & Katz, 2003). This aggravates the diversity of user groups in terms of IS experience and skills. As a result, supporting end users directly on the web, for example, web assistant, is becoming a trend in the e-Commerce environment and the task of a human web assistant has been evaluated successfully to assist and collaborate with the customers online (Åberg & Shahmehri, 2000). Similarly, web assistant of a web shop in e-Commerce is fast adopted in e-Government context; the e-Service should be ″made available via the Internet that completes tasks, solves problems, or conducts transactions″ (Magoutas & Mentzas, 2010,4292). Thus it is necessary to explore the role of support quality of public services in the e-Government context. That is, the IT-support could be a critical factor in the success of e-Government projects, particularly in developing countries.

This study attempts to fill this gap in user acceptance literature and aims to reveal the roles of perceived support quality & perceived support satisfaction in user acceptance of e-Government systems.

In line with Wisdom & Todd (2005), this paper aims to integrate technology acceptance literature with IS Success model. However, TAM is replaced for UTAUT and is extending based on theoretical support from the literature and re-specify the model to fit the context of the study. The proposed model attempts to tie quality dimensions from IS Success model with UTAUT model as antecedents for intention to use, thereby usage of e-Government Systems with a main emphasize the role of support quality construct. Therefore, combining both approaches is expected to result in a better understanding of users' acceptance and adoption of e-Government systems.

The remainder of this paper is structured as follows: section (2) covers the literature review; section (3) covers research model and they hypotheses developed; section (4) covers the methodology used. Finally, the last section covers the conclusions and future research directions.

2. LITERATURE REVIEW

The proposed models in the literature, particularly TAM model, have major limitations in considering the diversity of users in e-Government contexts. The most cited limitation of TAM is the tendency to examine only one information system with a homogeneous group of subjects on a single task (Lee, Kozar & Larsen, 2003). Furthermore, the participants in most technology acceptance literature have been students; who were similar in age, education and Internet experience (Venkatesh et al., 2003). On the other hand, despite the nature of e-Government being still totally voluntary, the task of government's agencies remains mandatory. For example, citizens have no option but to file taxes, renew driver licences, apply for social benefits, and health services. The fundamental characteristic of these services is that they are created based on citizens' needs and not based on commercial needs like in the e-Commerce environment. Digital government has huge potential benefits for citizens and therefore, governments should transcend all sectors of society to take advantage from the huge potential benefits digital government is capable of bringing for their citizens.

Alternatively, IS Success Model and TAM have been integrated successfully to explain the acceptance & use of "Data Warehousing Software" (Wixom & Todd, 2005). However, the model targeted users who have certain level of skill and experience of OISs and thus, has a limitation to explain the acceptance of e-Government systems since the users (citizens) are mostly novice in using IT specially and particularly in developing countries. Researchers have been concentrating on technical issues neglecting the behavioural issues in e-Government research (Sambasivan, Wemyss & Che Rose, 2010). Both, IS Success Model and the UTAUT model have been equally apprised, widely used and evaluated in the literature. The constructs in both models are similar to each others. In IS Success model it is labelled as intention to use or use; whereas in the UTATUT model it is labelled as behavioural intention or use (Mohamadali & G., 2010). Though, each model defines different independent constructs; as a result, it is important to consider design and implementation issues and their effects on system usage (Wixom & Todd, 2005).

Nevertheless, the UTAUT model does not address the issues relevant to e-Government systems such as the quality dimensions (Sambasivan, Wemyss & Che Rose, 2010). DeLone and McLean (2003) model does not predict system usage; "for a belief or attitude to be directly predictive of

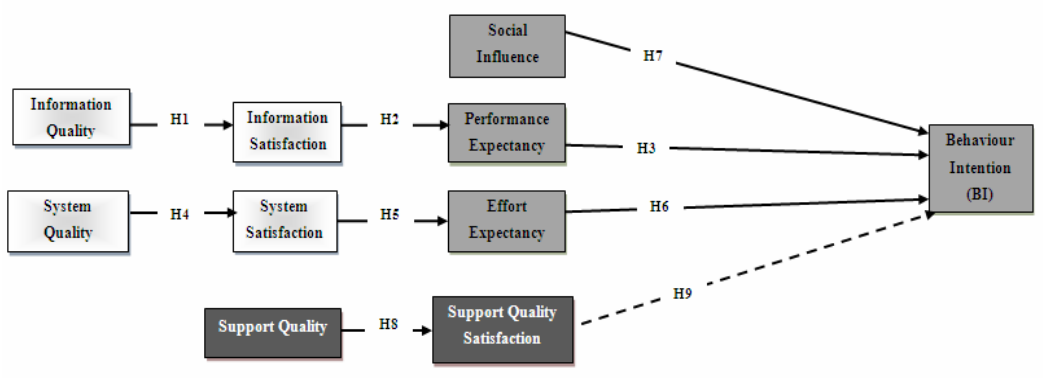
behaviour, it needs to be consistent in time, target, and context with the behaviour" (Wixom & Todd, 2005:89). In order to understand the user behaviour and measure the relevant quality for specific web systems, it is "recommended to have integrative perspective and domain-specific approach to understand the user behaviour and measure the relevant quality for specific web system" ((Au, Ngai & Cheng, 2002). Also, assessment of quality factors has been relatively less studied with respect to public services (Wang & Liao, 2008). In addition, many governments' web sites have not been examined from the perceived support quality perspective yet.

Thus in this study, TAM is replaced for UTAUT to include facilitating conditions construct and (DeLone & McLean, 1992) is replaced for DeLone and McLean (2003) to include the e-Service dimension. As a result, perceived support quality in this study will be a combination of facilitating conditions from UTAUT (Venkatesh et al., 2003) and the service quality from D&M IS Success Model (DeLone & McLean, 2003). When the two constructs are combined together; the criteria yields to a stronger overall measure of Support to citizens/users of the e-Government systems. The proposed model is extending based on theoretical support from the literature and re-specify to fit the context of the study.

3. RESEARCH MODEL

In e-Government context, researchers have used different range of models and procedures in an attempt to explain factors affecting e-Government usage. Nevertheless, literature in the e-Government domain lacks theoretical grounded empirical researches (Gonzalez, Adenso-Diaz & Gemoets, 2010); thus "use of any theory will boost rather than harm its knowledge-building and academic legitimacy" (Heeks & Bailur, 2007). Additionally, a number of authors note that ″there is still room for improvement″ (Sun & Zhang, 2006) . It is therefore recommended to use "an integrated, multi-construct dependent measure of IS success that considers beliefs, attitudes, and behaviours, as opposed to using a uni-dimensional success measure or one that does not consider interdependencies between elements of IS success" (Rai, Lang & Welker, 2002, p.65- 66). The proposed model in this paper attempts to tie quality dimensions from IS Success Model together with UTAUT as antecedents for intention to use, thereby usage of e-Government Systems with the emphasis on the role of perceived support quality construct. Parallel with Wixom & Todd (2005), the model suggests that the technology acceptance literature represented in the UTAUT model and the user satisfaction constructs represented in D&M IS Success Model (2003) are not competing approaches to understanding IT usage and value. In the proposed model of this study, intention to use of the e-Government system is the dependent variable. Beside the main three quality dimensions of D&M IS Success Model (2003) and the main constructs of UTAUT model; the perceived support quality and perceived support satisfaction constructs are introduced as independent variables in explaining use behaviour towards e-Government Systems' usage. In this paper, the perceived support quality can be defined as "the perceived quality of the support that citizens receive from the government online services' personal to help and guide them in using the website" .The research model proposed in the paper is illustrated in figure 1.

Figure-1: The Research Model



The type of a system under study influences the success measures of the system under investigation (Stockdale & Borovicka, 2006). Therefore, it is essential to use proper scales for measuring quality depending upon the context it is under investigating (Chang et al., 2005). As a result, there is no specific measure of information systems success. Wixom & Todd (2005) point out that the key antecedents to information and system quality may vary depending on the specific system and setting under investigation. Information Quality is concerned with the measure of the information system output; it measures semantic success (DeLone & McLean, 1992; DeLone & McLean, 2003; DeLone & McLean, 2004) and system quality measures the functionality and performance of a web site. There are relevant measures for information and system dimension; for example, for measuring information quality, (McKinney, Yoon & Zahedi, 2002) consider issues such as relevance, understandability, reliability, adequacy, usefulness, and relatedness. In addition, both, system quality and information quality singularly and jointly affect both use and user satisfaction (DeLone & McLean, 1992).

However, (Seddon & Kiew, 1996) replaced use in D&M IS Success Model (1992) for usefulness. The authors believed that if the potential user finds the system useful, then the system will be used; whereas the non-use of the system does not automatically mean that the system is not useful. Additionally, Wixom & Todd (2005) verified the significant relationships between information satisfaction and usefulness, and between system satisfaction and ease of use. Thus, from e-Government perspective, in order to understand citizens' perceptions about the quality of the public e-Services citizens consume; it is essential to monitor the degree of citizens' satisfaction of the delivery of e-Government services (Magoutas & Mentzas, 2010). Citizen satisfaction with e-Government is determined by service convenience and effectiveness (Welch, Hinnant & Moon, 2005). The construct performance expectancy in UTAUT model captures constructs in the previous other testes models; such as perceived usefulness (TAM, and combined TAM-TPB). Also, the construct effort expectancy captures constructs in the previous other testes models; such as perceived ease of use (TAM) (Venkatesh et. al., 2003).

Consequently, the discussions above lead to formulate the following hypotheses:

> ***H1.*** *There would be a significant positive relationship between information quality and information satisfaction of e-Government services.*

H2. *There would be a significant positive relationship between system quality and system satisfaction of e-Government services.*

H3. *There would be a significant positive relationship between information satisfaction and performance expectancy.*

H4. *There would be a significant positive relationship between system satisfaction and effort expectancy.*

The original UTAUT model consists of three indirect determinants of behavioural intention, and two direct determinants of use behaviour. The three core constructs in the original UTAUT model declare to impact behavioural intention directly to use e-Government systems are: (1) performance expectancy, (2) effort expectancy, and (3) social influence; whereas behaviour intention, and facilitating conditions are declared to impact directly on use behaviour. UTAUT includes four moderators (age, gender, experience and voluntariness of use), which contribute to a better understanding of the complexity of technology acceptance by individuals. They are posited to mediate the impact of the four key constructs on usage intention and behaviour (Venkatesh et. al., 2003). However, the voluntary use as a moderating construct was eliminated from this study since e-Government systems to date, are still highly voluntary in line with (Wang & Liao, 2008) .

Performance expectancy is defined in this study as the: ″degree to which a citizen believes that using government online services is helpful, useful and practical more than the tradition government services; accomplish task quickly and enhance effectiveness″. According to Venkatesh et al. (2003) performance expectancy can be validated as a direct determinant of user's behavioural intention to utilize a system.

H5. *There would be a significant positive relationship between performance expectancy and behaviour intention to use e-Government services; and this relationship would be moderated by gender and age.*

Effort expectancy is defined in this study as the: ″ degree of ease associated with the use of government online services; *interaction with the system clear and understandable, flexible to interact, and easy to use″.* Its root constructs are perceived ease of use, complexity and ease of use. Effort Expectancy has been validated as a direct determinant of user's behavioural intentions to use a new technology.

H6. *There would be a significant positive relationship between effort expectancy and behavioural intention to use e-Government services; and this relationship would be moderated by gender, age and Internet experience.*

Moreover, it was decided not to remove the social influence (SI) construct in the amended UTAUT model. The complete model should give an indication of the salient factors affecting use behaviour in e-Gov context. Social Influence is defined in this study as the "degree to which a citizen perceives that important others believe he/ she should use government online services″. Its root constructs include subjective norm, social factors and image. According to Venkatesh et al. (2003), social influence has been validated as a direct determinant of user's behavioural intentions to utilize a new technology.

> ***H7.*** *There would be a significant positive relationship between social influence and behavioural intention to use e-Government services; and this relationship would be moderated by gender and age.*

Due to the advent and growth of e-Commerce, (DeLone & McLean, 2003) decided to add service quality to their new model as an important dimension of IS success in responding to a call from other researchers who tested the original IS Success model (1992). Service quality is "the overall support delivered by the service provider, applies regardless of whether this support is delivered by the IS department, a new organizational unit, or outsourced to an Internet service provider (ISP)" (DeLone & McLean, 2003p.25). The main dimensions for this construct are assurance, empathy and responsiveness. Thus, resulting from the integration of the two models, the service quality and facilitating conditions constructs were replaced with the construct perceived support quality in explaining the intention behaviour in the use of e-Government services. In developing countries the citizens are mostly novice in using IT; therefore in e-Government environment, the perceived support quality could be the answer in explaining user's acceptance thus usage of e-Government systems. As a result, perceived support quality in this study will be the combination of facilitating conditions from UTAUT model and the service quality from D&M IS Success Model (2003). When the two constructs are combined together; the criteria yields to a stronger overall measure of support to citizens/users of the e-Government systems. Perceived support quality is: defined in this study as: "The perceived quality of support to which a web site facilitates efficient and effective delivery of e-Government services to citizens ". Thus, the discussions above lead to the following hypotheses:

> ***H8.*** *There would be a significant positive relationship between support quality and support quality satisfaction.*
>
> ***H9.*** *There would be a significant positive relationship between support quality satisfaction and use behaviour to use e-Government services; and this relationship would be moderated by type of age and Internet experience.*
>
> ***H10.*** *There would be a significant positive relationship between behaviour intention and use behaviour to use e-Government services.*

4. Research Methods

The study follows Churchill's (1979) procedures to develop suitable scales to measure the constructs; the initial item-generation produced was 53. The measures used in this study were adapted primarily from previous research and have been modified to fit the context of the current study. As the study adopts a quantitative empirical approach a survey questionnaire was used as a method of data collection to test our hypotheses. The proposed model can explain the e-Government acceptance in developing countries, which have inferior infrastructure of ICT and more serious digital division. The data collection was conducted in the State of Kuwait between the periods of July-October 2011. Kuwait is one of the representative countries that meet above requirements. The use of five-point Likert-type scales with anchors from "strongly disagree" to "strongly agree" was applicable to measure each response the construct mentioned in the hypotheses. Users who had actual online interaction with the government through the web site were originally targeted. However, it was very difficult if not impossible to achieve such a sample frame for this research; mainly, for privacy reasons for getting a list of eGovernment users.

Nevertheless, to achieve a suitable sample frame, it was decided to consider the non-probability sampling techniques; particularly, the convenience sample. According to (Saunders, Lewis & Thornhill, 2003), the larger the sample size, the lower the likely error generalizing the population is. 1250 responses were received with 745 usable ones. The ages of the subjects ranged from 20 to 61years, with males accounting for 71.2% of the sample. Structural equation modelling is chosen as a major analysis technique for this study, SPSS along with the AMOS 18 software packages will be used to accomplish structural equation modelling. It is important to test multiple interrelated dependence relationships in a single structural equation model.

5. Conclusions

The primary focus in this stage is to complete data analysis and present the results of the study. The result of this research is expected to contribute for both, practitioners and academics alike in understanding the salient factors that affect e-Government adoption and usage.

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