

DEVELOPING A MODEL OF CITIZENS' PERCEPTION OF E-GOVERNMENT SYSTEM PERFORMANCE AND THEIR ATTAINED BENEFIT

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Abstract: Governments world wide have been, increasingly, implementing e-government initiatives for their potential significant benefits; among which is delivering better services to citizens through increasing citizens' convenience, satisfaction, and independency; and saving their time, effort, and cost. Achieving each benefit is an objective to these governments; and fulfilling each objective is considered a critical success factor. Hence, governments need to assess whether they were able to obtain their preset goals, and to which degree they were able to do so. This study merely focuses on the citizens' perspective of the evaluation. However, the relevant literature seem to lack adequate studies that propose such evaluation tool that is sufficient and has been reliably validated. Therefore, the purpose of this study is to fill this gap by proposing a conceptual model which measures the e-government performance from citizens' perspective and their psychological and tangible benefits. While developing the model we also consider the attributes which impact citizens' perceptions and obtained values which, in turn, influence their adoption.

1 INTRODUCTION

The concept of e-government is rather fluid and has been defined in diverse ways (Yildiz 2007; Verdegem and Verleye 2009) largely dependent on the objectives that are set as priorities by a particular government, on the various contexts in which it has been discussed, or on the discipline in which the research has been carried out. The different definitions of e-government are also influenced by the regulatory environment, the dominance of a group of actors in a given situation, and the different priorities in government strategies (Yildiz 2007). In the earlier stages of e-government research, definitions of e-government focused primarily on e-government as an "inter-networked government", utilizing ICT and serving different stakeholders (Tapscott 1996; Layne and Lee 2001; Whitson and Davis 2001). More recently, e-government definitions place more emphasis on the utilization of Web-based Information System (WIS) as means of this interaction (Moon and Welch 2004; Akman *et al.* 2005; Evans and Yen 2005; Wang and Liao 2008; Luk 2009).

Since the current notion of E-Government Systems (EGS) focuses mainly on internet

utilization, we define an EGS as a Web-Based Information System (WIS) providing:

- 1- an online interaction channel, including the e-government portal and/or government agencies' websites,
- 2- which provides sufficient information and diverse e-service options that meet the needs of all stakeholders, and
- 3- the government employees in the "back office" who perform the necessary business processes, such as updating the system with the necessary information about each citizen's or business's status, and completing the business processes associated with any submitted e-service request.

By implementing EGS, governments aim to achieve benefits for both internal and external perspectives. The internal perspective refers to the benefits obtained by, government employees, government agencies and the government as a whole. The strategic value that the government would gain from EGS is mainly enhancing performance and increasing efficiency by facilitating a better working environment for employees; reducing costs; and integrating the government agencies to ease information sharing and reduce

redundancy and inconsistency, and so forth (Akman *et al.* 2005; Wang *et al.* 2005; Gil-Garcia 2006).

The external perspective refers to the benefits that citizens and private businesses gain. In general, these benefits include providing better services to the public, facilitating a good quality online channel, offering diverse kinds of information and e-service options that meet citizens' various needs and requirements, and increasing their independence and efficiency. With such "good-quality" systems, users would save time and effort by not having to physically visit government agencies, wait in long queues, perform tedious administrative work, etc. (Akman *et al.* 2005; Wang *et al.* 2005; Wangpipatwong *et al.* 2005; Kumar *et al.* 2007)

Evaluating the success and the performance of an EGS depends on the perspective from which it is being assessed (e.g., employees' efficiency, financial performance (cost/benefit), customers' satisfaction, etc.). (Gupta and Jana 2003; Grimsley and Meehan 2008) presented the alternative approaches to evaluate a particular e-government initiative and can be generally classified into three groups:

- economic (e.g., cost/benefit analysis, Net Present Value (NPV), Return on Investment (ROI), etc);
- tangible (WIS characteristics such as benchmarks, readiness and maturity stages), and
- psychometric (e.g., individuals' satisfaction, behavior and behavioral intention).

In the next section of this paper, we will present the literature review focussing on the citizen-centric studies in the e-government domain, the adopted evaluation models, and their backgrounds, while shedding the light on the shortcoming of the evaluation approaches in these studies. This is followed by the methodology where we present our proposed conceptual model, the guidelines for which it was developed and how it going to be validated.

2 LITERATURE REVIEW

The most widely-used success measures in the IS literature employ "system use" (Swanson 1974; Davis *et al.* 1989) and "user satisfaction" (US) (Ives *et al.* 1983; DeLone and McLean 1992) as proxies for the system success. Considering EGS is a form of an IS and shares similar characteristic with e-commerce in terms of utilizing WIS as a service and an interaction channel and being directed mainly to external users (customers and citizens); almost all

citizens-centric evaluation studies in the e-government domain borrow their models from the IS and e-commerce contexts (Devaraj *et al.* 2002; Wang and Liao 2008; Palvia 2009). These studies basically focus on measuring user satisfaction, behavior and behavioral intention to utilize the system as proxies to the system's success. However, there remains an underlying issue of whether these models or evaluation tools are appropriate to be applied the e-government domain. Indeed, there is obviously a distinction between the nature of e-government context and the other two contexts (i.e., IS and e-commerce). For example:

- 1- the models presented in the IS context were originally developed for the internal user context where the system use is mandatory (Davis 1989; DeLone and McLean 2003), while it is not the case in the e-government context.
- 2- Despite the similarity between the e-commerce and e-government contexts, as mentioned earlier, they still differ significantly. In e-commerce, the strategic objective for private organizations' is profit-oriented. They are mostly interested in providing good services and products so that they have a competitive advantage, and subsequently attract more customers. Otherwise, customers would turn to competitors and choose those who provide better services and products (Wang *et al.* 2005). Hence, customers' satisfaction, in this case is an important indicator for measuring the success of an e-commerce application (DeLone and McLean 2004; Wang *et al.* 2005). On the other hand, in the e-government context, government agencies don't compete with each other as each has its own specialty. They offer a variety of free public services targeting a bigger and more heterogeneous population (i.e., having, different characteristics, like literacy, gender, income, etc.) than that of e-commerce (Wang *et al.* 2005; Conklin 2007). In addition, there are various government agencies and each provides a variety of services to the public. Hence, the purpose for which citizens use the EGS varies widely from that of an e-commerce system. In essence, it is important to consider the success determining factors that are appropriate for the e-government domain.

Since the core objective of adopting EGS is to help citizens increase their convenience and task efficiency, by performing their required tasks while saving time and effort; investigating citizens' adoption of EGS or their satisfaction as an indication to the success of the system is not reliable. DeLone and McLean (2003) suggest that

the use of US to measure the success and increased efficiency of task performance is insufficient. Similarly, we agree with the authors and argue that using the notion of US as a proxy for measuring the success in the e-government context, is insufficient on its own for assessing the degree to which was the government able to increase citizens' efficiency in performing their tasks. Citizens might use the EGS, simply, because it is a better option than the traditional face-to-face channel; for example, to avoid the burden of physically visiting an actual government agency's location, but not necessarily because it is of high quality. Alternatively, citizens may not have another option but to use it, due to some personal constraint such as a health issue or being overseas.

Therefore, we propose that it is imperative to incorporate the notion of users' (citizens) obtained tangible benefits, in addition to the psychological benefit (satisfaction), when evaluating the success and the consequences of adopting an EGS. By explicitly measuring citizens' efficiency in performing their tasks, governments will be able to assess whether they were able to fulfill their preset objectives and to what degree they were able to do so. Nonetheless, we believe that there are certain important aspects that need to be, additionally, taken into account when assessing the success in fulfilling the government's intermediate objectives (i.e., providing high-quality system), and fundamental objectives (i.e., providing values to citizens).

In order for citizens' to obtain both these psychological and tangible benefits, utilizing the EGS is a prerequisite (Wang *et al.* 2005; Kumar *et al.* 2007; Wangpipatwong *et al.* 2008). However, citizens' behavior and behavioral intention to adopt the e-government system is dependent on some factors:

1- System's attributes output quality, which impact individual's perception and impression of the online system characteristics (Aladwani and Palvia 2002; DeLone and McLean 2003; Wixom and Todd 2005; Petter *et al.* 2008):

- Information quality, e.g., comprehensive, up-to-date, clear to understand, relevant, etc.
- E-service, e.g., the diversity of e-services that citizens can use to complete the entire task independently online, or place an online request for a job to be completed by government servants (such as passport or ID renewal).
- Technical quality of the website/s (website characteristics) such as loading time, availability 24/7 (accessibility), the

acknowledged security and privacy standards, and easiness and clarity of the website in terms of the design, navigation, consistency of layout, etc.

The high quality system performance is considered as an intermediate objective that governments aim to accomplish in order to attract individuals to utilize the system and adequately rely on it, which will presumably fulfill the fundamental objective of increasing individuals' efficiency (see Figure 1).

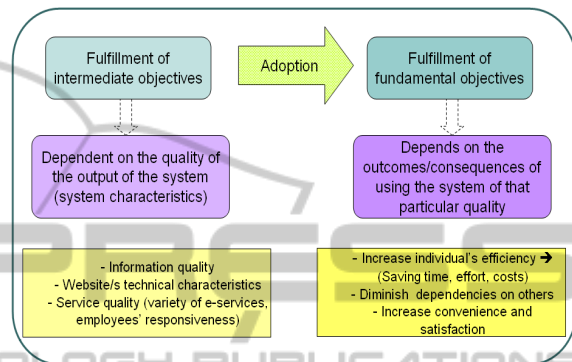


Figure 1: The relationship between the intermediate and the fundamental objectives.

2- Individual's attributes, which are related to their perceptions and cognitive beliefs about what they have received from the system, and what they would expect in the future.

- Individuals' trust
 - Trusting the information of being sufficient and reliable (Nicolaou and McKnight 2006).
 - Trusting the operational competency of the government, i.e., receiving the online requests and completing them adequately and in the assigned time frame (Balasubramanian *et al.* 2003).
 - Trusting the security and privacy standards, i.e., trusting that the system is secure and that their confidential information, such as financial, credit card, and personal information are well protected from being accessed (viewed or manipulated) by an unauthorized person (Balasubramanian *et al.* 2003; Cullen and Reilly 2007).
- Perceived Usefulness (PU): Individuals' believe that by using the online system, they will be able to obtain positive consequences, such as conducting the task in an easier manner, save time or effort, etc. (Davis *et al.* 1989; van Dijk *et al.* 2008; Verdegem and Verleye 2009). PU is very much related to individuals' circumstances, such as the

environmental and physical factors, e.g., having a commitment at work or other engagements, physical or health conditions, being overseas, and other inconveniences or barriers.

Accordingly, we propose a model that measures the fulfillment of governments' intermediate and fundamental objectives should incorporate the following aspects:

1. The system's attribute.
2. The individuals' attributes that impact their cognitive beliefs about the system and subsequently their intention and usage behavior.
3. The obtained psychological and tangible benefits.
4. Individuals' intentions and behavioral intentions that are prerequisites for obtaining the final values. (see Figure 2 for clarification)

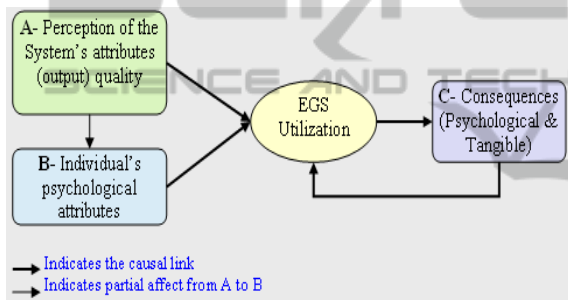


Figure 2.

While considering the aspects which we believe need to be incorporated in our suggested prospective model, we reviewed the relevant literature, in particular e-government, to find a model that complies with these considerations. We found that most studies were limited to certain aspects where they considered some attributes and discarded others. For example, in WIS literature, we found that the models introduced to measure a system success, mostly, focused on US (psychological benefit) rather than explicitly exploring the tangible benefits such as those presented in e-commerce.

In the e-government citizen-centric literature, few citizen-centric models have been introduced to evaluate the EGS. These models varied in terms of the dependent variable that was measured. The studies mostly focused on citizens adoption (i.e., intention and behavioral intention), e.g., (Carter and Belanger 2005; Hung *et al.* 2009; Lean *et al.* 2009; Wangpipatwong *et al.* 2009). Few studies explored and added, only, users psychological benefit (i.e., satisfaction) in their models, e.g., (Kumar *et al.* 2007; Cenfetelli *et al.* 2008; Teo *et al.* 2008; Bwalya

2009; Chae-Eon *et al.* 2009; Mohamed *et al.* 2009; Sung *et al.* 2009; Verdegem and Verleye 2009). Yet, these studies lacked some aspects that made them incomprehensive, and not very reliable. For instance, some of them focused on certain aspects and did not include other important ones that determine US or NB, e.g., system's attributes or individual's trust (Prybutok *et al.* 2008; Wangpipatwong *et al.* 2008). Others, lacked appropriate methodological instruments that are reliable and comprehensive enough to reflect the nature of the latent variable, such as (Kumar *et al.* 2007); or had inconsistent clustering of variables, e.g., (Sung *et al.* 2009).

In addition, very few researchers attempted to measure the net benefit (NB) (citizens obtained values) in the e-government context incorporating both psychological and tangible benefits (Wang and Liao 2008; Chae-Eon *et al.* 2009). These studies considered the realized benefits as indicators of the EGS success. However, these studies did not consider all the aspects we believe important to be included in the assessment instrument when evaluating EGS success from citizens' perspective. On the other hand, the studies that did consider these aspects were very few (i.e., (Wang *et al.* 2005; Park 2008; Alshawi and Alalwany 2009)). Moreover, they had methodological issues, such as, lack of depth in the evaluation criteria, redundancy of presenting similar notions in multiple variables, or, ambiguity of the proposed evaluation criteria. These studies are discussed in more detail in the next few paragraphs.

Wang *et al.* (2005) attempted to form a citizen-centric model that evaluates the e-government service delivery (output) and the level of improvement of the performance (outcome/consequences). They suggest that an improvement in citizens' task performance, when deploying the online service channel, implies an improvement in government performance.

The authors argue that, due to the variety of online services provided by the different government agencies and the variation in the population they serve, thus, it is difficult to identify all the possible factors that influence the performance and include them in one model. Hence, the generalizability, in the case, would be invalid. Accordingly, the authors formed a generic model; yet, cannot be directly used to assess a specific web-based e-government service. Their model was:

$$P = f(C, T, S, C \times T, C \times S, T \times S, C \times T \times S) \quad (1)$$

Where **P** is a measure of the performance of WIS

information seeking; **C** refers to citizens' characteristics; **T** refers to information task characteristics; and **S** refers to government website characteristics.

Though the idea of their model seems to be comprehensive and worthy, yet, the model had some obvious shortcomings. The model lacks clarity of the components that should be taken into account. Wang *et al.* (2005) base their model on possible attributes. Nonetheless, they are not identified and defined clearly for the purpose of the model. Consequently, the choice of selecting the appropriate components to measure citizens' performance is subjective to the evaluator, which can vary from one person to another. In addition, because the chosen attributes for the generic model may differ in each time the study is conducted, the validity and reliability of the model can not be ensured. Moreover, the notion of service quality was not taken into account as a dimension of the system and a determinant of the individual task performance efficiency.

Furthermore, Park (2008) conducted his study to identify the factors that influence value judgment of citizens. His research question was based on what citizens valued most in e-government services. In other words, his study focused on identifying specific criteria that is supposed to serve as benchmarks, from citizens' perspective, and that need to exist in order to obtain a successful e-government initiative.

The author used a structured online survey to assess citizens' perspectives for the important aspects that lead to obtaining the means/intermediate objectives, and subsequently obtaining the

fundamental objectives. However, his study lacked some important aspects that were found in the literature to be significantly important, such as the measurement of service quality. In addition, there were redundant concepts in multiple variables. Additionally, the concept of trust was limited to security and privacy issues though in the literature it also incorporates another dimension related to the operational competency. Further, the concept of environmental impact, which was included as an important aspect, is obviously not a short term benefit and is not relevant to individuals' performance efficiency or satisfaction.

Alshawi and Alalwani (2009) proposed an evaluation framework for EGS by developing evaluation criteria, and empirically validating the evaluation instrument. Similar to the previously presented two studies, their study also suffered from some shortcomings, including a lack of details in exploring the technical aspect, and using an unconventional notion of perceived usefulness as that used in the literature. In addition, there was no measurement of service quality, and there were redundant concepts in multiple variables. In essence, the measuring instrument is generally brief, and their model requires more investigation and validation.

Table 1 below exhibits a summary of the attributes investigated in the citizen-centric studies in e-government literature. In this table we named the attributes, which we propose to be important and should be incorporated in the evaluation model. The studies presented in this table are classified in terms of the attributes explored.

Table 1: Investigated attributes in the citizen-centric studies in the e-Gov literature.

Suggested Dimensions	Dimension used	Studies in which used
A- System factors B- Individual attributes C- Behavioral intention D- Use behavior E- Satisfaction F- Tangible benefits	A & C	(Wangpipatwong <i>et al.</i> 2009)
	A & E	(Mohamed <i>et al.</i> 2009)
	A & C & E	(Sung <i>et al.</i> 2009)
	A & B & C	(Tan <i>et al.</i> 2008; Alsaghier <i>et al.</i> 2009)
	A & B & C & D	(Hamner and Qazi 2009)
	A & C & D & E	(Verdegem and Verleye 2009)
	A & B & C & E	(Teo <i>et al.</i> 2008)
	B & C	(Carter and Belanger 2004; Fu <i>et al.</i> 2006; Hung <i>et al.</i> 2006; Horst <i>et al.</i> 2007; Bélanger and Carter 2008; Wangpipatwong <i>et al.</i> 2008; Lean <i>et al.</i> 2009)
	B & C & D	(AlAwadhi and Morris 2008; van Dijk <i>et al.</i> 2008; Hamner and Al-Qahtani 2009; Mahadeo 2009)
	A & D & F	(Wangpipatwong <i>et al.</i> 2005)
	A & D & E & F	(Wang and Liao 2008)
	A & B & D & E	(Kumar <i>et al.</i> 2007; Bwalya 2009)
	A & E & F	(Prybutok <i>et al.</i> 2008)
	B & E & F	(Chae-Eon <i>et al.</i> 2009)
	A & Total quality	(Barnes and Vidgen 2003; Gil-Garcia 2006)
	A & F	(Kolsaker and Lee-Kelley 2008)

3 METHODOLOGY

3.1 Guidelines to Developing the Citizen-centric e-Government Evaluation Model (CEM)

In order to avoid bias or choosing one model or theory over another, guidelines were imposed to determine the path of the formulation of this model. The core focus of our study is to identify citizens' perception of the EGS's output and performance, and their attained benefits from utilizing that particular corresponding quality of the EGS. Naturally, individuals' perception of the system's output is reflected by their satisfaction. Since US, which reflects the psychological benefit, is determined by both the system's output quality, and the tangible benefits (consequences) from utilizing the EGS. Therefore, we considered US as the most important criterion of interest.

Accordingly, a systematic literature review on US was conducted covering the empirical studies in three top ranking journals, namely, MISQ, JMIS, and ISR, for the period between 1995 and 2010.

- First, the significant antecedents to US were identified and clustered such that similar variables were integrated together.

- Second, a comprehensive and exhaustive literature review was conducted on all the variables that were found to be significant determinants of US. This required reviewing multiple disciplines, such as IS, marketing and e-commerce, business administration and management, psychology, and e-government)

In addition, it was important to take into consideration the individuals' behavior of utilizing the system in order for them to obtain the final values (Wang *et al.* 2005; Kumar *et al.* 2007; Wangpipatwong *et al.* 2008). Hence, a great emphasis was put in exploring and thoroughly reviewing the literature of individual's intention and behavioral intention, in the relevant disciplines, in particular, WIS and e-government contexts.

While constructing the model, there were also some guidelines that we used to obtain a valid and reliable model. That is:

- a. Constructing the model to fit the e-government domain, and the scope of this study;
- b. Taking into account the different dimensions and factors that influence individuals' behavior and behavioral intentions;
- c. Adding the variables that were found in empirical studies to be significantly correlated with the other variables in the model; and

- d. Ensuring the logical interrelations between the constructs in the conceptual model.

3.2 The Proposed Model

Based on the literature, the empirical studies, and the previously presented discussions, we present our conceptual model (CEM) with the net benefit as a higher (second) order construct that composite both the psychological and tangible benefits. The higher order concept is a multidimensional measure/factor that involves more than one dimension and can explain all the co-variation among the lower order factors (e.g., second order construct comprises several first order constructs) (Chin 1998; Pavlou and Fygenon 2006; Wetzels *et al.* 2009). The approach of aggregating the first order components into a higher-order conceptualization, to provide a better model fit and explain a particular perspective of the phenomena (e.g., perceived overall quality or user satisfaction) has been supported (Turel *et al.* 2010) and applied in numerous studies in the literature, e.g., (Pavlou and Fygenon 2006; Mohamed *et al.* 2009; Wetzels *et al.* 2009; Turel *et al.* 2010).

The lower (first) order constructs in our model are the information, technical, and service qualities; and the tangible and psychological benefits. The higher (second) order constructs are the perceived system performance and net benefits. We were inclined to merge, both, the psychological and tangible benefits, for two main reasons:

- 1- Our study is focused on measuring the consequences of utilizing the EGS (i.e., the final values) given a particular system output/performance quality. Both aspects of benefits, i.e., psychological and tangible, reflect this notion. (Sedera *et al.* 2004)
- 2- As suggested by Sedera *et al.* (2004), we believe that, by aggregating both psychological and tangible benefits in a higher order (reflective) construct, we can obtain a more explanatory power (explained variance) of the investigated phenomenon.

Notwithstanding, we would also like to investigate the CEM while using first order constructs of the NB in order for us to be able to:

- 1- Clearly visualize the interrelations between the NB components and the other constructs in the model.
- 2- Have a better insight of the interrelations between the model constructs.
- 3- Accurately base the interrelations between the NB components and the other constructs in the model on the literature.

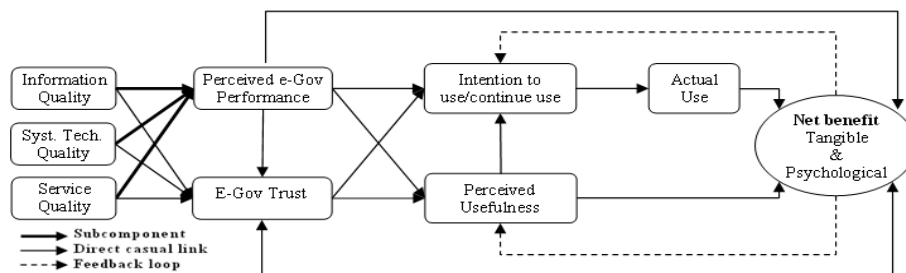


Figure 3: CEM with a higher order construct of net benefit.

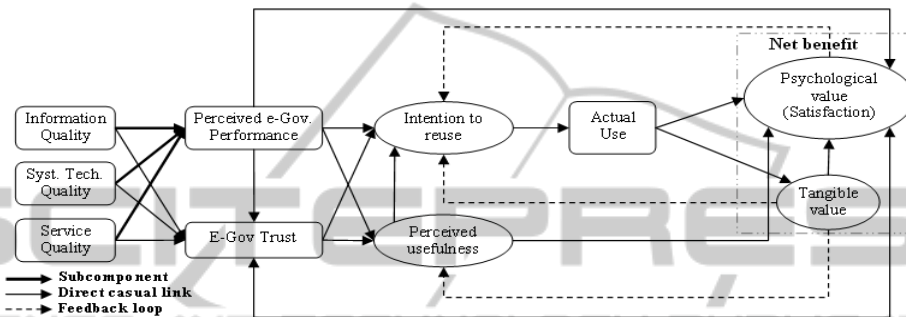


Figure 4: CEM with lower (first) order constructs of net benefit.

- 4- In which case, both versions of the conceptual model need to be validated, such that the results for both versions are compared. We perform this comparison to identify whether both models are similar and alternative to each other; or whether either provides a better fit than the other. However, with the adaptive feedback loops, it is vital that the model be validated in a longitudinal study.

3.3 Validating the Model - Operational Approach

To validate the model we chose to do the following:

First, we consider the case of developing countries, and choose the state of Kuwait as a case study. It is well known that most government services in developing countries are tedious, problematic, and have many shortcomings such as corruption, nepotism, unmotivated government servants reluctant to work professionally and efficiently, and long routine processes which also requires a lot of administrative work, etc. As a result, citizens of those countries are very dissatisfied from the services they receive while interacting with their government. Therefore, if implementing an e-government system would have a positive impact; it will be mostly obvious within this group of societies.

Second, use the survey method because the constructs are well defined and the context that needs to be examined is well structured. Given the nature of the constructs of mostly being perceptual measures, closed ended questions using a seven likert scale is deployed with. Many questions were extracted from the literature, and the questions that reflect the notion of the constructs and were deemed to be important were added accordingly to provide better understanding for each variable. An open ended question is also introduced to provide the opportunity for the respondents to provide any extra comments. In addition, due to the nature of multi-facet services among and within each government agency, the survey was controlled for the type of agency and the type of tasks for which users utilized the EGS, e.g., find information, lodge a request online, complete entire task like online payment or downloading forms, check status. The survey is developed electronically using "SurveyGizmo", targeting respondents online using a random email campaign while requesting from the receivers to assist in distributing it further which will ultimately ensure the collected data is more randomized. An English and Arabic version of the survey is available for non-Arabic speaking users as an attempt to increase the response rate while considering the reaction of non-citizens of the perception. A pilot study was conducted to ensure the suitability and easiness to understand the questions.

4 CONCLUSIONS

The significance of the e-government projects, and the huge implications involved with implementing such initiatives, require critical analysis and evaluation of the level of their success. This can be accomplished by assessing each objective as a success factor. Since one core objective of implementing an EGS is to provide an accessible tool which better serves the public, it is imperative to assess citizens' perception of what they receive and the consequences of using this particular system on them. Using a reflective and reliable evaluation instrument is vital for governments in order to assess their ongoing progress, performance, and service quality while using the online system. A model has been presented in this paper to serve this purpose, and is currently in the process of being quantitatively validated by the authors.

REFERENCES

- Akman, I., A. Yazici, A. Mishra and A. Arifoglu (2005). "E-Government: A global view and an empirical evaluation of some attributes of citizens." *Government Information Quarterly* 22(2): 239-257.
- Aladwani, A. M. and P. C. Palvia (2002). "Developing and validating an instrument for measuring user-perceived web quality." *Information & Management* 39(6): 467-476.
- AlAwadhi, S. and A. Morris (2008). The Use of the UTAUT Model in the Adoption of E-Government Services in Kuwait. Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS).
- Alsaghier, H., M. Ford, A. Nguyen and R. Hexel (2009). "Conceptualising Citizen's Trust in e-Government: Application of Q Methodology." *Electronic Journal of e-Government (EJEG)* 7 (4).
- Alshawi, S. and H. Alalwany (2009). "E-government evaluation: Citizen's perspective in developing countries." *Information Technology for Development* 15(3): 193-208.
- Balasubramanian, S., P. Konana and N. M. Menon (2003). "Customer Satisfaction in Virtual Environments: A Study of Online Investing." *Management Science* 49(7): 871-889.
- Barnes, S. J. and R. Vidgen (2003). "Measuring Web site quality improvements: a case study of the forum on strategic management knowledge exchange." *Industrial Management & Data Systems* 103(5-6): 297-309.
- Bélanger, F. and L. Carter (2008). "Trust and risk in e-government adoption." *The Journal of Strategic Information Systems* 17(2): 165-176.
- Bwalya, K. J. (2009). "Factors affecting adoption of e-government in Zambia " *The Electronic Journal on Information Systems in Developing Countries (EJISDC)* 38(4): 1-13.
- Carter, L. and F. Belanger (2004). Citizen adoption of electronic government initiatives. Proceedings of the 37th Annual Hawaii International Conference on System Sciences (HICSS).
- Carter, L. and F. Belanger (2005). "The utilization of e-government services: citizen trust, innovation and acceptance factors." *Information Systems Journal* 15(1): 5-25.
- Cenfetelli, R. T., I. Benbasat and S. Al-Natour (2008). "Addressing the What and How of Online Services: Positioning Supporting-Services Functionality and Service Quality for Business-to-Consumer Success." *Information Systems Research* 19(2): 161-181.
- Chae-Eon, L. E. E., G. I. M. Gwangyong and Y. O. O. Boonghee (2009). "The effect of relationship quality on citizen satisfaction with electronic government services." *Marketing Management Journal* 19(2): 118-129.
- Chin, W. W. (1998). Issues and Opinion on Structural Equation Modeling. *MIS Quarterly*: 1-1.
- Conklin, W. A. (2007). Barriers to Adoption of e-Government. Proceedings of the 40th Annual Hawaii International Conference on System Sciences (HICSS).
- Cullen, R. and P. Reilly (2007). Information privacy and trust in government: a citizen-based perspective from New Zealand. Proceedings of the 40th Annual Hawaii International Conference on System Sciences. Waikoloa, HI.
- Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly* 13(3): 319-340.
- Davis, F. D., R. P. Bagozzi and P. R. Warshaw (1989). "User Acceptance of Computer Technology: A Comparison of Two Theoretical Models." *Management Science* 35(8): 982-1003.
- DeLone, W. H. and E. R. McLean (1992). "Information Systems Success: The Quest for the Dependent Variable." *Information Systems Research* 3(1): 60-95.
- DeLone, W. H. and E. R. McLean (2003). "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update." *Journal of Management Information Systems* 19(4): 9-30.
- DeLone, W. H. and E. R. McLean (2004). "Measuring e-Commerce Success: Applying the DeLone & McLean Information Systems Success Model." *International Journal of Electronic Commerce* 9(1): 31-47.
- Devaraj, S., F. Ming and R. Kohli (2002). "Antecedents of B2C Channel Satisfaction and Preference: Validating e-Commerce Metrics." *Information Systems Research* 13(3): 316-333.
- Evans, D. and D. C. Yen (2005). "E-government: An analysis for implementation: Framework for understanding cultural and social impact." *Government Information Quarterly* 22(3): 354-373.
- Fu, J.-R., C.-K. Farn and W.-P. Chao (2006). "Acceptance of electronic tax filing: A study of taxpayer intentions." *Information & Management* 43(1): 109-126.

- Gil-Garcia, J. R. (2006). Enacting State Websites: A Mixed Method Study Exploring E-Government Success in Multi-Organizational Settings. Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS).
- Grimsley, M. and A. Meehan (2008). "Attaining Social Value from Electronic Government." *Electronic Journal of e-Government (EJEG)* 6(1): 31-42.
- Gupta, M. P. and D. Jana (2003). "E-government evaluation: a framework and case study." *Government Information Quarterly* 20(4): 365-387.
- Hamner, M. and F. Al-Qahtani (2009). "Enhancing the case for Electronic Government in developing nations: A people-centric study focused in Saudi Arabia." *Government Information Quarterly* 26(1): 137-143.
- Hamner, M. and R.-u.-R. Qazi (2009). "Expanding the Technology Acceptance Model to examine Personal Computing Technology utilization in government agencies in developing countries." *Government Information Quarterly* 26(1): 128-136.
- Horst, M., M. Kuttischreuter and J. M. Gutteling (2007). "Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands." *Computers in Human Behavior* 23(4): 1838-1852.
- Hung, S.-Y., C.-M. Chang and T.-J. Yu (2006). "Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system." *Government Information Quarterly* 23(1): 97-122.
- Hung, S.-Y., K.-Z. Tang, C.-M. Chang and C.-D. Ke (2009). "User acceptance of intergovernmental services: An example of electronic document management system." *Government Information Quarterly* 26(2): 387-397.
- Ives, B., M. Olson, H. and J. Baroudi, J. (1983). "The measurement of user information satisfaction." *Communications of the ACM* 26(10): 785-793.
- Kolsaker, A. and L. Lee-Kelley (2008). "Citizens' attitudes towards e-government and e-governance: a UK study." *International Journal of Public Sector Management* 21(7): 723-738.
- Kumar, V., B. Mukerji, I. Butt and A. Persaud (2007). "Factors for successful e-government adoption: a conceptual framework." *Electronic Journal of e-Government (EJEG)* 5(1): 63 - 76.
- Layne, K. and J. Lee (2001). "Developing fully functional E-government: A four stage model." *Government Information Quarterly* 18(2): 122-136.
- Lean, O. K., S. Zailani, T. Ramayah and Y. Fernando (2009). "Factors influencing intention to use e-government services among citizens in Malaysia." *International Journal of Information Management* 29(6): 458-475.
- Luk, S. C. Y. (2009). "The impact of leadership and stakeholders on the success/failure of e-government service: Using the case study of e-stamping service in Hong Kong." *Government Information Quarterly* 26(4): 594-604.
- Mahadeo, J. D. (2009). "Towards an Understanding of the Factors Influencing the Acceptance and Diffusion of e-Government Services." *Electronic Journal of e-Government (EJEG)* 7(4).
- Mohamed, N., H. Hussin and R. Hussein (2009). "Measuring Users' Satisfaction with Malaysia's Electronic Government Systems." *Electronic Journal of e-Government (EJEG)* 7(3): pp283 - 294.
- Moon, M. J. and E. W. Welch (2004). Same bed, different dreams?: a comparative analysis of citizen and bureaucrat perspectives on e-government. Proceedings of the 37th Annual Hawaii International Conference on System Sciences (HICSS).
- Nicolaou, A. I. and D. H. McKnight (2006). "Perceived Information Quality in Data Exchanges: Effects on Risk, Trust, and Intention to Use." *Information Systems Research* 17(4): 332-351.
- Palvia, P. (2009). "The role of trust in e-commerce relational exchange: A unified model." *Information & Management* 46(4): 213-220.
- Park, R. (2008). Measuring Factors that Influence the Success of E-Government Initiatives. Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS).
- Pavlou, P. A. and M. Fyngenson (2006). "Understanding and Prediction Electronic Commerce Adoption: An Extension of the Theory of Planned Behavior." *MIS Quarterly* 30(1): 115-143.
- Petter, S., W. DeLone and E. McLean (2008). "Measuring information systems success: models, dimensions, measures, and interrelationships." *European Journal of Information Systems* 17(3): 236-263.
- Prybutok, V. R., X. Zhang and S. D. Ryan (2008). "Evaluating leadership, IT quality, and net benefits in an e-government environment." *Information & Management* 45(3): 143-152.
- Sedera, D., G. Gable and T. Chan (2004). A factor and structural equation analysis of the enterprise systems success measurement model. Proceedings of the Twenty-Fifth International Conference on Information Systems Washington, DC, USA, Association for Information Systems.
- Sung, Y.-H., S.-H. Liu, H.-L. Liao and C.-M. Liu (2009). "Service Quality between e-Government Users and Administrators." *I-Ways* 32(4): 241-248.
- Swanson, E. B. (1974). "Management Information Systems: Appreciation and Involvement." *Management Science* 21(2): 178-188.
- Tan, C.-W., I. Benbasat and R. T. Cenfetelli (2008). Building Citizen Trust towards E-Government Services: Do High Quality Websites Matter? Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS).
- Tapscott, D. (1996). *Digital Economy*. New York, McGraw-Hill.
- Teo, T. S. H., S. C. Srivastava and L. I. Jiang (2008). "Trust and Electronic Government Success: An Empirical Study." *Journal of Management Information Systems* 25(3): 99-131.
- Turel, O., A. Serenko and N. Bontis (2010). "User acceptance of hedonic digital artifacts: A theory of consumption values perspective." *Information & Management* 47(1): 53-59.

- van Dijk, J. A. G. M., O. Peters and W. Ebbers (2008). "Explaining the acceptance and use of government Internet services: A multivariate analysis of 2006 survey data in the Netherlands." *Government Information Quarterly* 25(3): 379-399.
- Verdegem, P. and G. Verleye (2009). "User-centered E-Government in practice: A comprehensive model for measuring user satisfaction." *Government Information Quarterly* 26(3): 487-497.
- Wang, L., S. Bretschneider and J. Gant (2005). Evaluating Web-Based E-Government Services with a Citizen-Centric Approach. Proceedings of the 38th Annual Hawaii International Conference on System Sciences (HICSS)
- Wang, Y.-S. and Y.-W. Liao (2008). "Assessing eGovernment systems success: A validation of the DeLone and McLean model of information systems success." *Government Information Quarterly* 25(4): 717-733.
- Wangpipatwong, S., W. Chutimaskul and B. Papasratorn (2005). A Pilot Study of Factors Affecting the Adoption of Thai e-Government Websites. Proceedings of the International Workshop on Applied Information Technology (IAIT'05).
- Wangpipatwong, S., W. Chutimaskul and B. Papasratorn (2008). "Understanding Citizen's Continuance Intention to Use e-Government Website: a Composite View of Technology Acceptance Model and Computer Self-Efficacy." *Electronic Journal of e-Government (EJEG)* 6(1): 55-64.
- Wangpipatwong, S., W. Chutimaskul and B. Papasratorn (2009). "Quality enhancing the continued use of e-government web sites: evidence from e-citizens of Thailand.(Report)." *International Journal of Electronic Government Research* 5(1): 19(17).
- Wetzels, M., G. Odekerken-Schröder and C. v. Oppen (2009). "Using PLS Path Modeling for Assessing Hierarchical Construct Models: Guidelines and Empirical Illustration." *MIS Quarterly* 33(1): 177-195.
- Whitson, T. L. and L. Davis (2001). "Best practices in electronic government: Comprehensive electronic information dissemination for science and technology." *Government Information Quarterly* 18(2): 79-91.
- Wixom, B. H. and P. A. Todd (2005). "A Theoretical Integration of User Satisfaction and Technology Acceptance." *Information Systems Research* 16(1): 85-102.
- Yildiz, M. (2007). "E-government research: Reviewing the literature, limitations, and ways forward." *Government Information Quarterly* 24(3): 646-665.