ENGAGING CITIZENS IN MANAGING ELECTRONIC GOVERNMENT SERVICE QUALITY: A COUNTRY LEVEL ANALYSIS

Research-in-Progress

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Abstract

Despite an extensive amount of research carried out and knowledge accumulated to explain the adoption of electronic services in public sector, the issue of managing e-government service quality (EGSQ) remains an unresolved and relatively understudied topic. To address this knowledge gap, using the Technology-Organization-Environment (TOE) theory and the literature on citizen engagement (or participation); we posit that information and communication technology (ICT) infrastructure, lack of citizen orientation (in form of low ethics and high corruption), and institutional regulations will have both direct relationship with EGSQ and indirect relationship with EGSQ through the mediating effects of e-participation. Based on publicly available archival data from 123 countries, our preliminary results supported the hypothesized model. More specifically, ICT infrastructure, lack of citizen orientation, institutional regulations, and e-participation had a direct relationship with EGSQ. Further, e-participation fully mediated the relationship of ICT infrastructure and institutional regulations with EGSQ. Results also indicate that the relationship of lack of citizen orientation with EGSQ was not mediated by e-participation. Implications of our preliminary findings and future plans of our research are highlighted.

Keywords: EGSQ, e-participation, TOE theory, archival data
Introduction

E-government refers to the application of the Internet and networking technologies to digitally enable government and public sector agencies’ relationships with citizens, businesses, and other arms of government. Research on e-government can be classified into three broad areas namely, (1) evolution and development; (2) adoption and implementation; and (3) impacts (see Srivastava and Teo 2010). Despite a vast amount of research carried out in e-government context, most of them address research questions that are “micro” in orientation (Srivastava and Teo 2008). In other words, most studies are concerned with “particular aspects” of e-government development in reference to “particular region or country.” While the need for looking at a macro-level (i.e., cross-country level) perspective is largely emphasized in past literature (Srivastava and Teo 2008; 2010), researchers often ignore or overlook them for two reasons. First, there is a lack of cumulative theoretical development in e-government research (Heeks and Bailur 2007) to formulate an empirical study addressing macro-level issues. Second, collecting large scale primary data (spanning several countries) to empirically test the formulated research model is constrained by the amount of resources and time available for conducting such research. Predicted by these two concerns, this substantive investigation is aimed addressing the need for conducting cross-country quantitative empirical study.

Extant studies indicate that despite significant efforts being taken by most countries in the provision of public e-services, even the most mature e-government Websites are hampered by a shortage of quality-driven, citizen-centric services (Accenture 2007) thereby limiting citizens’ ability to perform transactions via e-government Websites (UN-Report 2008). E-government service quality (EGSQ) is defined as the extent to which services offered via an e-government Website assist citizens in completing their governmental transactions (Tan et al. 2007). In other words, EGSQ represents the scope and quality of public e-services offered by e-government Websites (UN-Report 2010). The lack of competence in managing EGSQ acts as a significant barrier to citizens’ receptivity to public e-services (Ancarani 2005; Teo et al. 2008; West 2004). Consequently, users may revert to traditional ways such as telephone inquiry and personal visits to acquire information and services (Andersen and Henriksen 2006; Teo et al. 2008) and hence, it is crucial to “manage EGSQ” which remains a challenging task for governments providing online public services. Buckley (2003) admitted that given the multiplicity of motivations and service targets underlying public institutions, researchers face an uphill task in understanding the antecedents leading to and consequences arising from the provision of high quality public e-services. Motivated by this challenge faced by majority of governments, a major purpose of this study is to identify the country-level contextual factors that enable countries to attain EGSQ.

It is a widely acknowledged thought that direct engagement with potential users and stakeholders provide designers and developers with a sound and an extensive knowledge base about their needs and expectations (Olpert and Damodaran 2007). Citizen engagement is defined as the active participation of citizens, in partnership with government, in decision and policy making. Several governments and its agencies are exercising the concept of ‘citizen engagement’ through deployment of various e-participation initiatives such as online discussion forums, email, online surveys, online chat, and group support systems (Phang and Kankanhalli 2008; UN-Report 2010). In this study, we define e-participation as the level of a country’s willingness to engage its citizens in e-government processes (UN-Report 2008). Whereas ‘e-services’ (according to UNESCO) refers to improved delivery of public services to citizens (e.g., requests for public documents, and issuing permits and licenses), ‘e-participation’ assesses the quality and usefulness of information and services provided by a country for the purpose of engaging its citizens in public policy through ICTs (UN-Report 2008). While the Internet cannot provide an instantaneous technological fix to citizen participation in the context of political system (Castells 2002), the limits for citizen participation in e-government process may not be technical because, as claimed by Phang and Kankanhalli (2008), an effective citizen engagement process through deployment of e-participation initiatives serves to encourage two-way communication between government and citizens and to educate citizens about the rationale and complexity of policy-making. Further, as e-participation also serves as a mechanism to manage scope and quality of public e-services (Olpert and Damodaran 2007), it is necessary to identify the determinants that facilitate countries to attain varying levels of e-participation.

With these motivations in mind, using the Technology-Organization-Environment (TOE) theory (Tornatzky and Fleischer 1990) as a guiding theoretical lens, we first identify the contextual factors
facilitating e-participation and EGSQ in a nation. Further, drawing from the citizen participation
literature, we investigate the direct effect of e-participation on EGSQ in a nation, and the mediating
effect of e-participation on the relationship between the TOE contextual factors and EGSQ. In sum, the specific
research questions that we address in this study are:

**RQs:** (1) What TOE contextual factors would facilitate e-participation and EGSQ in a nation? (2) What
is the relationship between e-participation and EGSQ in a nation? (3) How does e-participation mediate
the effect of TOE contextual factors on EGSQ in a nation?

The rest of the paper is organized as follows. First, using the TOE theory as a guiding theoretical lens, we
explain the contexts necessary for facilitating e-participation and managing EGSQ. Next, using citizen
participation literature, we hypothesize the mediation effects of e-participation between the TOE
contextual factors and EGSQ relationship. Thereafter, using cross-sectional data from 123 countries (see
Appendix for the list of countries), we test the hypothesized model. Lastly, we discuss the implications of
our preliminary findings and highlight our future research plans.

**Theory and Hypotheses**

We use the theoretical framework proposed by Tornatzky and Fleischer (1990) as our foundation. According to Tornatzky and Fleischer, innovation adoption or technology deployment in a firm is
influenced by three aspects pertaining to the firm’s context — technological context, organizational context
and the environmental context. Technological context refers to characteristics of the technologies
available for potential adoption by the organization, and the current state of technology that can be
expressed either as material (e.g., equipment owned by the organization) or immaterial (e.g., methods
currently in use). Organizational context depicts the organizational structure, the presence of innovation
enabling processes such as informal communication and strategic behaviour of top management, quality
of human resource, firm size, and amount of slack resources of the organization. Environmental context
explains the environmental conditions such as market structure and characteristics, the external support
available for adopting new technologies and government regulations. In a meta-analysis of research on IT
implementation, Premkumar (2003) found consistent empirical support for the TOE theory although
specific factors examined within the three TOE contexts may vary across different studies.

Though the TOE theory has been originally proposed to study innovation adoption or technology
deployment in firms, researchers have extended its core arguments (1) to study other dependent variables
(e.g., impacts); and (2) to other units of analysis (e.g., cross-country level). For instance, Zhu et al. (2004)
showed how TOE factors may influence e-business impacts on firm performance. Another study by
Srivastava and Teo (2010) established the usefulness of the TOE theory in global context (i.e., cross-
country level) by empirically examining the facilitators of e-government and e-business development, and
their collective impact on national economic performance. While the TOE theory has been widely used in
extant IS research, it is often criticized for its inability to provide the theoretical rationale to establish
causal relationships (Mishra et al. 2007). In contrast, as individual theories lack the breadth of variables
in the TOE theory, and its simple yet elegant taxonomy (Mishra et al. 2007), extant studies has attempted
to combine the best attributes of the TOE theory with other theories (Zhu and Kraemer 2005). For
instance, Mishra et al. (2007) combined the TOE theory with the Resource-Based-View (RBV) of a firm to
examine antecedents and consequences of Internet use in the context of procurement in US
manufacturing firms. Similarly, Srivastava and Teo (2010) combined the TOE theory with the ICT impact
literature to examine the facilitators and impact of e-government and e-business development. Consistent
with extant studies, we combine the TOE theory with the literature on citizen participation and extend its
core arguments to cross-country level to study the aforementioned research questions.

**Technological Context**

Past studies in the context of online shopping (e.g., Agarwal and Venkatesh 2003) have shown that the
usage of sound media is essential to manage Website quality. This has also been reflected in Microsoft’s
usability guidelines (Keeker 1997). Extending this in the context of e-government, it is appropriate to
mention that managing EGSQ effectively is possible only when a sound ICT infrastructure is in place.
Effective management of EGSQ over time, consequently, facilitates government to move more (or all) of
its transactions to the Internet and away from the traditional forms of queue and counter systems (Singh et al. 2007). In contrast, in the absence of sound and reliable ICT infrastructure, managing EGSQ would become difficult and hence e-government development in the country would remain an unrealized dream (Koh et al. 2005; Singh et al. 2007). Hence, the presence of a well-developed national ICT infrastructure appears to be critical for managing the service quality of e-government. Given this, past research has also shown that the presence of sound technological infrastructure within a nation is essential for its e-government development (Srivastava and Teo 2010). A large scale study conducted by United Nations (UN) indicates that the availability of sound and reliable ICT infrastructure in a country will facilitate its willingness to engage its citizens in e-government processes by deploying appropriate e-participation initiatives (UN-Report 2010). Another study by Caddy and Vergez (2003) found that the fruitful use of ICT infrastructure will help nations in advancing a more active engagement of citizens with their government. In sum, we posit:

**H1:** The level of ICT infrastructure in a country is positively associated with the level of its (H1a) EGSQ and (H1b) e-participation.

**Organizational Context**

Past research has consistently demonstrated that service quality arouses a host of positive attitudinal responses such as customer satisfaction (Cenfetelli et al. 2008), trust (Reichheld and Schefter 2000; Tan et al. 2007), and loyalty (Gefen 2002; Tan et al. 2007). It has also been shown that these attitudinal responses determines citizens’ initial adoption (Gefen 2002) and continued usage of public e-services (Teo et al. 2008). In other words, we could say that governments that are ‘citizen-oriented’ will constantly manage the quality of its public e-services (Schedler and Summermatter 2007) to satisfy the users and to build trust and loyalty. As citizens can readily exit their transactional relationships with governments providing public e-services and return to the traditional forms (e.g., queue and counter systems), it is necessary for these government agencies to be more oriented towards citizens and to manage EGSQ. Following from the similar argument, we also posit that when a government is more oriented towards its citizens (by addressing their needs and expectations), it would lead to increased investments in e-participation initiatives. That is, a citizen oriented government will encourage its citizens to engage in structuring its policies by constantly investing in deployment of ICT tools such as online discussion forums and group support systems (Phang and Kankanahalli 2008; UN-Report 2010). In sum, we propose:

**H2:** The lack of citizen orientation in a country is negatively associated with the level of its (H1a) EGSQ and (H2b) e-participation.

**Environmental Context**

In the context of online public services, prior studies have shown the significance of environmental factors such as macro economy, public institutions, and government regulations. For instance, Moon (2002) found that government institutional factors contribute to e-government adoption among municipalities. Further, Norris and Moon (2005) highlighted that the adoption and sophistication of online public services are correlated with institutional factors. Similarly, West (2004) and Von Haldenwang (2004) showed that a sound institutional base in the country is required for the development of e-government. More recently, Srivatsava and Teo (2010) highlighted the importance of environmental context in the form of public institutions and macro economy for e-government development. Consistent with the above studies, we argue that institutional regulations (e.g., rules, laws and sanctions) that legitimize managing service quality of online public services will result in government agencies taking necessary steps as there is a direct pressure on them to manage service quality of their Websites. Hence, institutional regulations in a country are likely to be positively associated with EGSQ. In similar vein, it is also appropriate to argue that institutional regulations that make e-participation legal will result in government agencies realizing the importance of citizen engagement thereby taking necessary steps such as deploying appropriate channels for participation. Taken together, we posit:

**H3:** The level of institutional regulations in a country is positively associated with the level of its (H1a) EGSQ and (H3b) e-participation.
**Relationship between E-Participation and EGSQ**

As indicated above, one of the pertinent issues that is consistently raised in the context of e-government system development is citizen participation (Evans and Yen 2006; Tan and Pan 2003; Tan et al. 2005). While the success and institutionalization of online public services is contingent upon the willingness of its users to adopt and use the services (Evans and Yen 2006); it will be imprudent to develop and manage (the quality of) such services without investing in and conducting citizen participation activities (Box et al. 2001). That is, citizens as active creators or feedback providers (Ekelin 2003) can participate in e-government projects and can help government agencies to manage EGSQ effectively only when there is a higher level of willingness from such agencies to engage citizens in the e-government process. This argument is also emphasized in a recent report on public engagement from OECD (2009). Hence, citizen engagement via e-participation is critical for managing EGSQ. Consequently, we posit:

**H4:** The level of e-participation in a country is positively associated with the level of its EGSQ.

**Mediation Effects**

Now that we have assembled each of the piecewise elements and relations in our research model, one more set of hypotheses is logically deduced from and virtually defined by its recursive structure. E-participation serves as an intervening mechanism or, at the least, partial conveyors of the effects of TOE contexts onto EGSQ. That is, TOE contexts indirectly influence EGSQ by raising the levels of e-participation. More formally, we therefore offer the following:

**H5:** TOE contexts’ (H5a. ICT infrastructure; H5b. lack of citizen orientation; and H5c. institutional regulations) effects on EGSQ are mediated by e-participation.

**Control Variables**

Prior research has found that the human capital of a country (Srivastava and Teo 2010) and the economic conditions of a country (Singh et al. 2007) will affect its e-government development and hence, EGSQ. Therefore, we controlled for their effects in our study.

**Research Design**

For meaningful testing of the formulated hypotheses, we gathered archival data (for each of the main constructs) for two reasons. First, collecting large scale primary data from over hundred countries is constrained by the amount of resources and time available for conducting such research (Srivastava and Teo 2008; 2010). Second, archival data, as suggested by some researchers (e.g., Jarvenpaa 1991) offers several advantages namely, (1) easy reproducibility; (2) ability to generalize the results arising from larger datasets (Kiecolt and Nathan 1985); and (3) robust to the threat of common method bias (Woszczynski and Whitman 2004). After exploring numerous secondary data sources, we selected three sources that conform to our research objectives. The data sources are: (1) the United Nations Global E-Government Survey Report (UN-Report); (2) the World Economic Forum Global Competitiveness Report (WEFGC-Report); and (3) the World Economic Forum Global Information Technology Report (WEFGIT-Report). All the three sources are considered to be reliable and have been extensively used in past academic research. For instance, data from the UN-Report have been used in studies such as Siau and Long (2006), Singh et al. (2007), and Srivastava and Teo (2008; 2010). Similarly, data from the WEFGC-Report have been used in studies such as Delios and Beamish (1999), Gaur and Lu (2007), and Srivastava Srivastava and Teo (2008; 2010). And, data from the WEFGIT-Report have been used in studies such as Katos (2010) and Katsouli (2006).

**Operationalization of Constructs**

The technology construct, indicated by ICT infrastructure was obtained from the UN-Report (2005) and is a composite of five indicators namely, (1) number of personal computers per 100 persons; (2) number of Internet users per 100 persons; (3) number of telephone lines per 100 persons; (4) number of mobile
cellular subscriptions per 100 persons; and (5) number of fixed broadband subscribers per 100 persons. The organizational construct, indicated by lack of citizen orientation was measured using two variables namely, (1) diversion of public funds; and (2) public trust of politicians, the values for which were taken from the WEFGC-Report (2006). These two variables measure ‘Ethics and Corruption’ respectively. Huther and Shah (1998) highlight that when a government is oriented towards serving its citizens, there will be lack of corruption (or corruption would be minimal), which in turn also reflects the ethical standard of politicians. Hence, it is appropriate to make use of these two variables to measure the lack of citizen orientation. The environment construct, indicated by institutional regulations was measured using two variables namely, (1) availability of laws relating to ICT; and (2) government prioritization of ICT. The values for these variables were obtained from the WEFGIT-Report (2006).

The mediating variable of e-participation was assessed by e-participation index, obtained from the UN-Report (2008). The questions pertaining to e-participation centred on e-information sharing (i.e., provision of information by governments to citizens), e-consultation (i.e., interaction with stakeholders), and e-decision making (i.e., engagement in decision making). A country’s e-participation index value reflects how useful these features are and the extent to which they have been deployed by the government compared to all other countries. The construct of EGSQ, indicated by Online Service Index was taken from the UN-Report (2010) and measures the scope and quality of online services in a country. The values for online service index were obtained by assessing each country’s national Website as well as the Websites of the ministries of education, labour, social services, health and finance. In addition, associated portals and subsidiary Websites were also considered when assigning values to survey responses. Further, the national sites were tested for a minimal level of Web content accessibility as described in the Web Content Accessibility Guidelines of the World Wide Web Consortium. The online service index was then computed as the total number of points scored by that country less the lowest score for any country divided by the range of values for all countries in the survey.

The control variable human capital was assessed by human capital index, the values for which were taken from the UN-Report (2005). This index is a composite of the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio, with two thirds weight given to the adult literacy rate and one third to the gross enrolment ratio. And finally, the control variable economic conditions in a country, according to Porter (2005), depends both on the value of a nation’s products and services, measured by the prices they can command in open markets, and also on the efficiency with which they are produced. Consistent with extant studies (e.g., Srivastava and Teo 2010), we use Porter’s productivity paradigm for operationalizing economic conditions in terms of GDP per capita (adjusted for purchasing power parity), the values for which were taken from the WEFGC-Report (2006).

Reliability and Validity

Both the agencies (namely WEF and UN) followed rigorous procedures for ensuring the reliability and validity of the data. The country-level data were collected by the WEF through a number of partner institutes who were given a uniform set of guidelines that were strictly followed. Some of these guidelines included taking responses only from CEOs or equivalent rank company officials, facility for the respondents to answer in their preferred language, etc. In addition, the survey was administered in several forms such as face-to-face interviews with business executives, mailed or telephone interviews, and a version administered online as an alternative (WEFGC-Report 2006; WEFGIT-Report 2006). To minimize chances of perception bias, two techniques were adopted. First, the questions were framed in a way that asked the respondents to compare their own country to world standards, rather than thinking in absolute national terms. Second, wherever possible, the survey data was compared with hard data on similar issues. The collected respondent-level data were subjected to a careful editing process following several rules such as excluding the surveys with a completion rate inferior to 50%. Once the data have been edited, individual answers were aggregated at the country-level. Then, sector weighted country averages were obtained for analyses (WEFGC-Report 2006; WEFGIT-Report 2006).

UN also followed similar procedures for ensuring validity and reliability of their data. Multiple researchers were used to rate the Websites according to the stages of e-government Web development. For instance, while assessing values for online service index, (1) a researcher typically reviewed one or two countries per day; (2) once completed, the assessment was validated by a senior researcher who further conferred with the team leader in cases of doubt; (3) full reassessment by randomly selecting a number of
countries were then performed. In addition to this, detailed guidelines were provided for choosing the Websites and features for classification and analysis. Further, the research team was fully equipped to handle the six official languages of the UN, namely Arabic, Chinese, English, French, Russian and Spanish. Translators provided assistance as necessary. Since the two agencies (i.e., WEF and UN) followed rigorous procedures, as described above, for ensuring the reliability and validity of the indices, data from these reports were used directly for analyses. Moreover as highlighted earlier, data from these reports has been used by several past studies.

Analysis and Results

Before we go into the details of our analysis and results, it should be noted that we used cross-sectional data (of sample size 123) from the above specified sources. That is, we included countries that are commonly available from all the three sources (see Appendix for list of countries). In addition, to obtain consistent estimates, we lagged the independent and mediating variables at least by two years prior to the base-year. Bivariate correlation analysis\(^1\) for all variables in the research model indicates that most correlations among variables are significant at \(p<0.001\). Also, as correlations among independent variables were below the threshold value of 0.8, multicollinearity may not be an issue of concern (Gujarati 2003). Nevertheless, we tested for multicollinearity by examining the variance inflation factor (VIF). Results indicated that all the independent variables had a VIF below 5, thereby indicating that there is no significant problem of multicollinearity (Pedhazur 1997).

Hypotheses Testing

To investigate the coefficients of the hypothesized paths and the validity of the three mediation assumptions, we used a bootstrapping approach to mediation developed by Preacher and Hayes (2004; 2008) over other two approaches namely, the product of coefficients approach and distribution of the product approach. The reasons for selecting this approach are twofold. First, bootstrapping is a nonparametric resampling procedure for testing mediation that does impose the assumption of normality of the sampling distribution. Second, bootstrapping is a computationally intensive method that involves repeated sampling from the dataset through which an empirical approximation of the sampling distribution of \(ab\) (‘a’ represents the causal effect of the independent variable on the mediator, and ‘b’ represents the causal effect of the mediator on the dependent variable, controlling for the independent variable) is built and confidence interval for the indirect effect is constructed (Preacher and Hayes 2004). Preacher and Hayes’ approach is similar to Baron and Kenny’s (1986) approach in two aspects. First, it also uses regression analyses to investigate how the three independent variables (ICT infrastructure, lack of citizen orientation, and institutional regulations) influence the mediating variable (e-participation), and how the mediating variable influences the dependent variable (EGSQ). Second, it also tests whether the influence of ICT infrastructure, lack of citizen orientation, and institutional regulations on EGSQ disappears when e-participation is included.

To examine each of the possible mediated effects, we did two things. First, we tested whether the various paths that constitute our model were significant. Second, a formal test of the mediated effect on the basis of the bootstrap method (1,000 samples, \(N=123\)) was performed. During each analysis, we controlled for the remaining two independent variables as well as for human capital and economic conditions in a country. The results (Figure 1) revealed that the path from the lack of citizen orientation (\(\beta=-0.12, \text{ns}\)) to e-participation was not significant and the paths from ICT infrastructure (\(\beta=0.64, p<0.01\)) and institutional regulations (\(\beta=0.28, p<0.01\)) to e-participation were significant. Hence, H2b was not supported, and H1b and H2b were supported. Further, the path from e-participation to EGSQ was also significant (\(\beta=0.64, p<0.001\)). Therefore, H4 was supported. Finally, the relationship between ICT infrastructure (\(\beta=0.52, p<0.01\)), lack of citizen orientation (\(\beta=-0.19, p<0.05\)), and institutional regulations (\(\beta=0.32, p<0.01\)) to EGSQ were significant. This confirmed H1a, H2a, and H3a.

Turning now to the mediation effects, as a significant relationship between the independent variable and the mediator is a necessary condition for mediation, the mediation hypothesis for the relationship

\(^{1}\) Correlation table is not shown in this paper due to page limitation. Please email the authors should you require further details.
between lack of citizen orientation and EGSQ was not supported. In other words, e-participation did not mediate the effect of lack of citizen orientation on EGSQ, as there was no influence of this variable on e-participation. Hence, the hypothesis H5b was not supported. While unexpected, this finding is interesting and will be discussed in greater detail in the next section. The bootstrapping procedure revealed that the mediation effects of ICT infrastructure and institutional regulations on EGSQ were significant. For the mediated path from ICT infrastructure to EGSQ, the 95% bias corrected and accelerated confidence interval was estimated to lie between 0.1669 and 0.6534. Similarly, for the mediated path from institutional regulations to EGSQ, the 95% bias corrected and accelerated confidence interval was estimated to lie between 0.0566 and 0.3601. As zero was not in these confidence intervals, it is safe to conclude that these two mediated effects were significantly different from zero (see Preacher and Hayes (2004) for a detailed explanation of this procedure). Further, both the direct effects of ICT infrastructure and institutional regulations on EGSQ become insignificant when the mediating influence of e-participation was controlled. As a result, both the relationships between ICT infrastructure and EGSQ and between institutional regulations and EGSQ were fully mediated by e-participation. This validated our hypotheses H5a and H5c.

![Figure 1. Results](image)

**Discussion**

Findings from this investigation raise several issues that deserve mention. First, our preliminary results indicate that TOE contexts are vital for managing EGSQ. That is, if there is poor ICT infrastructure, lack of citizen orientation (i.e., high corruption and low trust of public on the ethical standards of politicians), and non-existence of institutional regulations in a country, then the quality of public e-services gets greatly affected. Consequently, citizens’ receptivity and usage of online government services will drastically drop. Second, our results indicate that the levels of ICT infrastructure and institutional regulations in a country are positively associated with its e-participation levels, and the lack of citizen orientation in a country is negatively associated with its e-participation levels. Specifically, our results indicate that compared to organizational context, technological context and environmental context in a country are critical for facilitating the deployment of e-participation initiatives. That is, if there is poor ICT infrastructure and non-existence of institutional regulations in a country, the lower will be the willingness of the government agencies to deploy e-participation initiatives. It should be noted that the relationship of lack of citizen orientation is significantly associated with EGSQ and not with e-participation. A possible reason for this difference in result (in a cross-country setting) could be the fact that in many countries, e-government development is a top driven initiative compared to e-participation. This is because e-government development in a country offers several advantages over e-participation like cost savings and better governance for government. Attracted by such benefits, governments are more oriented towards their citizens and hence, spend more efforts in managing EGSQ than investing in e-participation initiatives.
Third, our results indicate that the lower the level of e-participation in a country, the lower is the level of EGSQ. Hence, it will be imprudent to develop and manage (the quality of) public online services without investing in citizen participation activities (Box et al. 2001). In other words, an effective citizen engagement process through e-participation initiatives serves as a mechanism to manage EGSQ effectively (Ophert and Damodaran 2007). Finally, the results pertaining to the mediation hypotheses concerning the indirect effect of TOE contexts on EGSQ via e-participation indicate that e-participation fully mediates only the relationship of technology context (ICT infrastructure) and environmental context (institutional regulations) with EGSQ and not the relationship of organizational context (lack of citizen orientation) with EGSQ. One reason could be due to the rapid proliferation of Web 2.0 and social networking technologies in recent years. With its growth, citizens enquire about government matters, express their views on the latest policies, or provide feedback on service experiences on various privately-hosted online channels (e.g., Facebook and blogs) instead of the official channel provided on the e-government website. For instance, in Singapore, a significant number of Central Provident Fund (CPF) members who wish to enquire about CPF-related matters, express their views on the latest CPF policies, or provide their feedback on service experiences, have been doing so on various privately-hosted online channels such as Facebook, blogs, and online discussion forums instead of the official channel provided on the CPF website. As a result, government agencies (though are customer oriented) may lessen their efforts in implementing e-participation initiatives.

Theoretical and Practical Implications

Our study makes several theoretical contributions. First, while most extant studies examining the antecedents of EGSQ are either at individual-level or at organizational-level (e.g., Ancarani 2005; Tan et al. 2007); our study examined the determinants from a macro perspective (i.e., country-level) by making innovative use of publicly available reliable sources of archival data. Second, by approaching the issue of “managing EGSQ” from not only the perspectives offered by TOE theory, but in particular, citizen participation, our study has strived to further our understanding as to why differing levels of EGSQ among nations continues to prevail. Specifically, our findings suggest that technology context and environmental context are more important than organizational context for facilitating the deployment of e-participation initiatives. On the other hand, all three contexts are vital in managing EGSQ. In addition, our findings suggest that e-participation fully mediates the relationship of technology context and environmental context with EGSQ. The implication from these findings is that deployment of e-participation initiatives acts as a “mechanism” through which quality and delivery of services could be effectively managed. Third, while TOE theory has emerged as a useful theoretical lens for understanding technology adoption in the context of business firms (Srivastava and Teo 2010); we apply it in cross-country setting for understanding the issue of managing EGSQ, thereby showing TOE theory’s usefulness in the public sector context. Our research also has two important implications for practitioners, especially governments and policy makers. First, by identifying the antecedents of e-participation and EGSQ, our study not only helps them to understand why differing levels of e-participation and EGSQ continues to prevail but also shows directions to increase government agencies’ willingness towards deployment of e-participation initiatives and to effectively manage EGSQ. Second, our study suggests that increase in the levels of e-participation will increase the level of EGSQ. Hence, governments and policy makers should make concerted efforts for not only managing EGSQ in the nation but also should implement various innovative e-participation initiatives and constantly encourage citizens to make use of such initiatives. Consequently, our study provides a basis to IT policy makers in the public sector to garner support for e-participation initiatives in managing EGSQ.

Conclusion

In conclusion, despite extensive recognition on the importance of e-participation and EGSQ in a nation as a predictor of citizens’ receptivity towards online public services, both research and practitioner communities knows relatively little with regards to managing the service quality of e-governments. As an initial step, we have constructed and validated a theoretical model that examines the facilitators of e-participation and EGSQ in a nation. In addition, we reasoned and demonstrated empirically the relationship between e-participation and EGSQ, and the mediating role of e-participation on the
relationship between TOE contextual factors and EGSQ. As a future step, we will focus on extending our cross-sectional study to a longitudinal (panel) study by dividing our sample into developed and developing countries (which in turn might lead to interesting results). Such a panel study would help to examine the issues of temporal precedence (leads/lags between independent and dependent variables), as well as the evolution of EGSQ as a function of the levels and trends in the independent variables.

References


Appendix

<table>
<thead>
<tr>
<th>Countries Analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Barbados, Belgium, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Chad, Chile, China, Colombia, Costa Rica, Côte d’Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Gambia, Georgia, Germany, Ghana, Greece, Guatemala, Guyana, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lesotho, Libya, Lithuania, Luxembourg, Madagascar, Malaysia, Mali, Malta, Mauritania, Mauritius, Mexico, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Thailand, Timor-Leste, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Venezuela, Viet Nam, Zimbabwe.</td>
</tr>
</tbody>
</table>

Total number of countries included for data analysis = 123.