

THE ELICITATION OF KEY PERFORMANCE INDICATORS OF E-GOVERNMENT PROVIDERS: A BOTTOM-UP APPROACH

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Abstract

Delivering an adequate e-Government service (e-service) is becoming more of a necessity in today's digital world. In order to improve e-services and increase the engagement of both users' and providers' side, studies on the performance evaluation of such provided e-services are taking places. However a clear identification of the key performance indicators from the e-Government providers' side is not well explored. This shortcoming hampers the conduct of a holistic evaluation of an e-service provision from the perspective of its stakeholders in order to improve e-services as well as to increase e-services take-ups. In this paper, a systematic process to identify indicators is implemented based on a bottom-up approach. The process used three focus-group meetings with providers, users, and academics in Qatar, Lebanon and UK to collect, identify and validate key indicators from the perspective of e-services' providers. The approach resulted in the identification of five factors levels (service, technology, employees, policy and management and social responsibilities) with fifteen sub-categories of SMART variables. Hence, leading to the development of a new model, STEPS, that can fully explain and predict e-government success from the providers' point of view. It will work as a strategic management tool to align various stakeholders on common goal and values based on evidence based evaluation of e-services using smart measurable indicators for the improvement of an e-service at the engagement level in the field of e-government. In addition, other fields can benefit from the outcome of this work, such as logistics service providers, who make their services available across new and existing relationships between the Internet commerce firms, their customers, and their vendors.

Keywords: e-Government, Providers, STEPS model, Performance Management, SMART indicators, Qatar, Lebanon, UK.

1 INTRODUCTION

Over the past years, governments have been changing the way they interact with citizens. With today's increased sophistication of internet applications, coupled with the low cost of information storage and delivery, governments are opening up more electronic-based channels to deliver information and government services to end-users. For a successful implementation and delivery of e-Government

services (e-services), various stakeholders are put together to achieve this task. The key involved stakeholders include: Top-management; Local Politicians; Middle Managers; Employees; Users/Citizens; Businesses; Public Administrators; Government agencies; E-government project managers; Design and IT developers; Suppliers and IT developers; Research and Evaluators (Rowley, 2011). Several studies in the literature exist, calling for more investigation of the stakeholder theory in the context of e-government. For instance, Flak and Rose (2005) reported that the impact of stakeholders on e-government success is poorly understood. Tesch et al (2003) recommended that studies of satisfaction for each stakeholder should be done in terms of their own understanding, and, most likely, their own metrics. Jaber and Osman (2006) recommended that coordination and collaboration among stakeholders would increase the global value chain over the total sum of local individual values without collaboration due to conflict of interests. Further, several studies show the increase of adoption of e-services in different countries, with some ranking measurements (Zukang, 2012). The ranking is usually based on a macro relative evaluation of a country performance. For instance, The E-Government Readiness Index (EGDI) which is an updated part of the UN surveys, (UN E-Government Survey 2012). EGDI is a composite measure of the capacity and willingness of countries to use e-government for ICT-led development. The index rates the performance of national governments relative to one another by averaging equally the values of the three indices: the Online Service Index, the Telecommunication Index and the Human Capital Index. The surveys reflect one important finding related to low adopters. The analysis of the reasons behind such low usages is a must to identify the means to increase the adoption levels of e-services. For this to happen, an evaluation from both the e-service users' and providers' perspectives should be put in place. Furthermore, developers and users should establish new governance and communication mechanisms and project management tools to address the varied political, technical, operational, and economic motivations of all stakeholders (Fedorowicz et al, 2009). This will enable the identification of factors that can boost the level of engagement in delivering and using e- services. Therefore, we are motivated to study the providers' perspective within our I-MEET on-going project, an Integrated Model for Evaluating E-government services Transformation from stakeholders' perspectives.

The user perspective evaluation of e-services has been performed in an earlier experimental study (Osman et al., 2011). Whereas the providers' perspective evaluation is still limited and most of the scholars have typically adopted a single-level perspective in their research. Consequently, their approaches fall short in fully accounting for all related factors for a successful e-service delivery. This paper focuses on the e-service providers, and on setting the ground for identifying the key performance indicators (KPIs) to enable a thorough evaluation at a later stage. Therefore, it adopts a multi-level perspective in the analysis as a means for enhancing the understanding of the success of an e-service from a provider's perspective. Rooted in the General Systems Theory (von Bertalanffy, 1972), this perspective recognizes that micro level phenomena are embedded in macro contexts, and therefore provides a holistic view that can yield to more accurate practical and theoretical implications. The result of the analysis is a holistic framework, which encompasses recent findings in the literature about e-government service success, and illustrates the multi-level factors that contributes to their transformation.

Our methodology utilizes a focus group approach based a well-defined protocol using a mix of critical incident and confirmatory approaches. The transcription and analysis of the group discussions and interactions led to the identification of key SMART (Specific, Measurable, Achievable, Realistic, and Timely) indicators to build a performance evaluation framework. The paper also provides an initial view of a questionnaire around the performance indicators for future evaluations.

We aim in this paper (1) to develop a comprehensive model in order to understand and predict the success of an e-service from a provider's perspective; (2) to review existing key performance indicators and highlight existing gaps for our model to fill; and (3) to open up new research directions for predicting an e-service success, providers' involvement and satisfaction based on the new expanded factors.

We present in Section 2 a theoretical background on the e-service success and provider involvement. Then we discussed the employed methodology in Section 3. In Section 4 we propose our new conceptual model along with the associated assessment components. In Section 5 we conclude with

the theoretical and managerial implications, limitations, and suggestions for further research directions.

2 THEORETICAL BACKGROUND AND RELATED WORK

Evaluating e-Government performance is an area of substantial importance. It has several advantages including a driver to increase public services efficiency (Greiling, 2006), or giving an adequate feedback to e-service providers about areas of improvements. It is studied from different perspectives, and sometimes combined with existing performance management approaches. Halaris et al (2007) conducted a survey conducted around three different themes: traditional public service quality, e-Government services and E-services (compared to generic online services such as e-commerce and web portals). One of the major findings in this survey is the limited work conducted in the e-Government service evaluation, while most of them are generic e-service related (Halaris et al, 2007).

A relevant approach to our work brings an e-commerce marketing framework to e-Government service evaluation (Steyaert, 2004). The framework is adapted to the e-services, and uses the following five performance indicators: (1) awareness efficiency, (2) popularity efficiency, (3) contact efficiency, (4) conversion efficiency and (5) retention efficiency. Awareness efficiency reflects how effectively the service website (the author uses the term website and e-Government services interchangeably) is seen by its target audience. The popularity indicator measures the number of visitors to the website. Contact efficiency is used to reflect the usage and convenience of a website, and how the content is employed to deliver the needed service. The conversion factor indicates customer satisfaction incorporating the time users are spending on the site, and degree of satisfaction with the transactions performed. The last indicator is retention efficiency and it is used to reflect the loyalty of customers with the repeat visits and transactions performed through the site. The paper presents interesting results of applying the framework on four use-cases (Steyaert, 2004). We think that this work could benefit from further indicators. While e-services can be treated as business products, they cover further territories in the background including for example government transparency, cost reduction and further economic and social impacts.

Aligned with the previous work, indicators for generic website evaluation were proposed as part of a model to evaluate consumer-reuse (Wood et al., 2003). In this context, WebQual (Loiacono et al., 2002) is a tool for evaluating websites quality based on the following 12 dimensions: information fit-to-task; tailored communications; trust; response time; ease of understanding; intuitive operations; visual appeal; innovativeness; emotional appeal; consistent image; on-line completeness; and relative advantage. Another approach used website quality evaluation techniques to assess and compare the e-government websites of five Asian countries (Dominic et al., 2011). While some of these dimensions can be re-used to evaluate e-services, we believe that they are not granular enough for an adequate evaluation. Some approaches have evaluated e-services in applied contexts, such as the UK local authorities (Irani et al., 2005; Kuk, 2003); India's police administration (Mitra and Gupta, 2008) and Sri Lanka's e-services (Karunasena et al., 2011). Such studies are important as they reflect and assess the service within specified contexts. In our context, we focus on the approaches that derived performance indicators as part of their evaluations.

Kuk (2003) addressed the following main question: what are the primary determinants of the success of Electronic Service Delivery (ESD)? An evaluation is preformed from the perspective of the content and service quality, by formulating questions around the following three criteria: information content standards to check whether the content is designed around users' needs rather than the structure of the organization; service quality that evaluates the degree to which services are operational, and whether they provide the required instructions online; and the ease of use of the services to evaluate the timeliness and state of information, ease of navigation and status of links. A set of nine questions are presented in the paper, along with an evaluation applied in 12 UK regions (Kuk, 2003). As the author mentions, the most basic approach to assess the preliminary stage of ESD were used, and the data generated from the regions were at a macro level. Hence more follow-up studies were needed. In the context of India's police administration, a set of indicators were put in place to assess the performance in e-service (Mitra and Gupta, 2008). The indicators are classified based on three categories: internal efficiency to measure the time for police tasks fulfilment and crime rate for example; employee

satisfaction that reflects the police personnel achievements such as sick reports or transfer requests; and public satisfaction to assess the people's view on the police administration in India including for example the interaction and response rate from the people.

These three dimensions, even though very specific to the police domain, reflect the necessity of measuring performance from the government organization itself, as well as from the user stance. One important finding out of the paper evaluation is that internal efficiency of the organization has not significantly improved with the presence of e-Government applications. The authors point out that the domain and context in which the evaluation was performed have an important impact. For example, crime-related activities have less services connotation and direct citizen impact than non-crime related activities. This raises the point that key-performance indicators should be well balanced (i.e. not very granular, nor generic), if more than one context is to be covered by the evaluation.

Another framework was proposed to measure the public values of the e-services in Sri Lanka (Karunasena et al., 2011). This framework relies on the following set of indicators: Delivery of public services including information, importance, choice, cost savings, fairness, citizen's satisfaction and take-up; achievement of outcomes; development of trust including security and privacy, transparency and participation; effectiveness of public organization including efficiency, accountability and citizen's perception. In (Chhabra and Jaiswal, 2008), a framework is proposed and applied to measure the performance in an Indian state. The performance indicators include: Transparency based on corruption level and promotion system availability; organization culture including quality control, training, structure, stakeholders' involvement, alignment with changing environments; ICTs infrastructure based on adequacy and reliability, power supply and enabling inter-department communication; regulatory environment subsuming updated rules and regulations, autonomy and social targets; and citizen centricity. The proposed model proved to be supportive to the state of Haryana case, where different levels of improvements were identified.

Further analysis of various e-government projects in developing countries reflected benefits at the following levels: transparency, better processing time, less corruption, increased productivity, improved processes, lower costs, cut down time, faster communication, better decision making and better accountability (Bhatnagar, 2002).

Another approach aims to identify a connection between the organization culture based on the bureaucratic, innovative and supportive aspects, and the e-government performance according to the following measures: task effectiveness, communication, decision making, response to citizens' requests, service delivery, work processes improvement and creation, end-user satisfaction and user skill enhancement (Kanungo and Jain, 2011). The results of this work reflect that the link between e-government performance and the organizational culture is significant. This pushes the management and implementation layers to better understanding of the cultural effects to achieve better e-government results.

Furthermore, a set of indicators are identified to evaluate three levels of government interactions: government to citizen (G-C), government to business (G-B) and government to government (G-G) (Graaand-Essers and Ettegui, 2003). The indicators relevant to our scope of work are the G-G related. The indicators include: usage that measures the degree of information transfer within departments and to citizens, and frequency of usage; effectiveness that deals with the importance of e-services at different levels (e.g. degree of improvements, accuracy of delivery, value and cost, duplication of work, personalization, government image, coping with load, delivery time); perception for improved service delivery, which indirectly evaluates information sharing, ICT usage and objectives, staff commitment and training, resources and value review; alternatives that involves assessing the availability of substitutes of services interactions (e.g. written, face-to-face, Internet, telephone); potential indicator that measures the degree of how well the system is connected across government departments; and the level of usage that measures the frequency and regency of e-service usage and its alternatives (Graaand-Essers and Ettegui, 2003).

Kunstelj and Vintar (2004) identified four categories of indicators from the literature to measure e-government performance and development: e-readiness of citizens, governments and businesses to be part of the online environment; back-office related to the use of information systems and technology, to support the government processes and management; front-office in terms of supply of services

through different channels such as mobile phones or dedicated kiosks, and demand related to businesses and citizens; effects and factors that deal with the e-government impact on various perspectives including for example the social, and economic processes with the cost versus benefit effects and others.

| Indictor/Reference | Steyaert 2004 | Kuk 2003 | Mitra 2008 | Karunasen a 2011 | Chhabra 2008 | Bhatnagar 2002 | Kanungo 2011 | Graffland 2003 | Kunsteif 2004 | Deakins 2010 | Rotchanaki tummai 2008 |
|--------------------------------|------------------|-------------|---------------|---------------------|-----------------|-------------------|-----------------|-------------------|------------------|-----------------|------------------------------|
| Awareness | X | | | | | | | | | | |
| Communication | X | | | | | X | X | | | | |
| Conversion | X | | | | | | | | | | |
| Retention | X | | | | | | | | | | |
| Content standards/availability | | X | | X | | | | | | X | |
| Service Quality | | X | | | X | | | X | | X | X |
| Usability | | X | | | | | | | | | |
| Efficiency | | | X | X | | | X | X | | | X |
| Employee Satisfaction | | | X | | | | | | | X | |
| Public Satisfaction | | | X | X | | | X | | | X | |
| Cost | | | | X | | X | | X | X | | X |
| Fairness | | | | X | | | | | | | |
| Take-up | X | | | X | | | | X | | | |
| Security | | | | X | | | | | | | |
| Privacy | | | | X | | | | | | | X |
| Transparency | | | | X | X | X | | | | | |
| Participation | | | | X | | | | | | | |
| Citizen's Perception | | | | X | | | | X | | X | |
| Accountability | | | | X | | X | | | | | |
| Training | | | | | X | | X | X | | | |
| Structure | | | | | X | | | | | | |
| Stakeholder Involvement | | | | | X | | | | | | |
| Changes Alignment | | | | | X | | | | | | |
| ICT reliability | | | | | X | X | | X | | | |
| Internal Communication | | | | | X | | | | | | |
| Regulatory environment | | | | | X | | | | | | |
| Citizens Centricity | | | | | X | | | | | | |
| Processing Time | | | | | | X | X | X | | X | X |
| Corruption | | | | | | X | | | | | |
| Decision Making | | | | | | X | X | | | X | |
| Processes | | | | | | X | X | X | | | |
| Personalization | | | | | | | | X | | | |
| Value/Benefit | | | | | | | | X | X | | |
| Government Image | | | | | | | | X | | | |
| Information Sharing | | | | | | | | X | | | |
| Substitutes Assessment | | | | | | | | X | | | |
| e-Readiness | | | | | | | | | X | | |
| IT usage | | | | | | | | | X | | |
| Delivery Channels | | | | | | | | | X | | |
| Social impact | | | | | | | | | X | | |
| Economic impact | | | | | | | | | X | | |
| Productivity | | | | | | | | | | X | |
| Management | | | | | | | | | | X | |
| Organizational Cost | | | | | | | | | | X | |
| Suppliers Information | | | | | | | | | | X | |
| Planning | | | | | | | | | | X | |
| Organization Culture/Structure | | | | | | | | | | X | |
| Changed roles/Responsibilities | | | | | | | | | | X | |
| Revenues | | | | | | | | | | X | |
| Number of Employees | | | | | | | | | | X | |
| Customer Support | | | | | | | | | | | X |

Table 1. List of performance indicators in the existing literature.

Another survey was performed in the United Kingdom, New Zealand, China and Oman, to evaluate local governments from the policymakers' perspective (Deakins et al., 2010). The productivity impact is measured in terms of: products and services enhancement, improved quality, citizens' satisfaction,

productivity, management effectiveness, processing times, information availability, employees' satisfaction, neutral response level, organization costs, decision making, suppliers information, planning, organization culture and structure, changed roles, responsibilities, suppliers' ease of organizations' information access, revenues and number of employees. The items are then ranked in terms of importance.

The E-GOVSQUAL-RISK model is another proposed model to assess the value of an e-government service (Rotchanakitumnuai, 2008). The value is derived from the following indicators: Service quality determined by the service/website design, and technology/customer support; perceived risk determined by the performance, privacy, social, time and financial risks. These indicators were derived from a qualitative study, and the author mentions the need for a quantitative study to support the outcomes.

It is clear that the ultimate objective of any government is not only to provide new e-government services but also to gain users' satisfactions and providers' engagement. Therefore, a 'know-how' e-service with the aim to improve user satisfaction and e-service take up is an important issue. The surveyed approaches are mapped to the indicators identified in Table 1. This table highlights that the indicators are covered partially by different existing works, while a successful e-service delivery depends on the combined factors. Hence, there is a need to rectify the shortcomings of those models and propose a holistic assessment framework.

3 METHODOLOGY

This study is part of the I-MEET project, aimed at evaluating e-government services from all stakeholders' perspective across multiple countries. Stakeholder groups include businesses; users/citizens; Government agencies; E-government project managers; employees and politicians; design and IT developers; research and evaluators; suppliers and IT developers (Rowley, 2011). Our focus in this paper is on the providers' side (i.e. entities related to the entire previous list except users and citizens), where to our knowledge, a comprehensive list of indicators does not exist yet. To know how providers can participate in improving users' satisfaction and e-service take up, for which in-depth interviews are conducted. This inductive/bottom-up approach allowed us to identify important performance indicators from the providers' perspective. The collected results from both the focused groups with e-government providers and the literature review are followed by a proposed comprehensive framework for e-service evaluation that we present later in the paper.

First, we present the focus group with e-government providers and their associated results, followed by the pilot study with academic experts for validating the content of the previous analysis.

3.1 Participants

The majority of Lebanese e-government providers served as participants in this study (around 60 invited persons). These were senior managers representing all public agencies/ ministries providing e-services in addition to private sector organizations such as Microsoft, Booz and Com and other local provides and that are involved in the provision, development, or maintenance of e-government services in Lebanon and the region. Focused groups with stakeholders of characteristics were conducted in Qatar and UK.

3.2 Procedure

Eight facilitators simultaneously conducted two focus groups, four facilitators in each group, whereby participants were randomly assigned to either group. Each focus group lasted for 2.5 hours and involved around 20 participants. Each group started with an introduction to the project, purpose and procedure to conduct the experiment. The facilitators explained that the data will be analysed anonymously and confidentially in accordance with the ethical review board guidelines at the authors' institutions. The facilitators then went through the focus group protocol, which consisted of a set of semi-structured questions.

The focus group protocol was designed following a combination of exploratory and confirmatory approaches. By adopting a combined approach, it is aimed to ensure that no construct previously overlooked in the literature are overlooked in this study. To avoid the facilitator influence, participants were asked to talk freely without any interruptions. Furthermore, participants were clearly informed that their suggestions and comments will be treated anonymously.

3.2.1 *The exploratory part of the Focus Group*

The first part of the focus group is designed to “explore” the key constructs that best evaluate e-government services from the perspective of providers, in other word, “the most important factors for successful or unsuccessful e-government service”. This exploratory part was divided into open ended-questions and Critical Incident Technique (CIT) questions, which focused on the extraction of themes with no preconception of what they might be. First, we started with the open-ended questions as follows:

- *“As managers involved in the development or provision of e-government services, what do you consider to be the most important aspect(s) of an e-government service?”*
- *“What are the characteristics that would make an e-government service NOT worthy of development and implementation?”*

These questions are further explained by the following words to ensure that all participants have fully understood the task and the questions can be easily answered by each participant:

- *“In your opinion, what elements characterize a reasonable e-government service?”*
- *“What are the characteristics that you believe make an e-government service worthy of development and implementation?”*
- *“What do you consider as a necessity, without which you would consider an e-service incomplete or recipe for failure?”*

We then presented the questions that were designed based on Flanagan’s (1954). This technique generates data about incidents with special significance in order to identify key criteria about a specific concept or latent variable. In this case, we explore participants’ views regarding positive and negative experiences with e-government services as follows:

- *“Take some time to think about a specific e-government service that you have worked on and have enjoyed being part of. What in particular made this experience so enjoyable?”*
- *“Take some time to think about an experience with e-government services that you did NOT enjoy. What were the reasons for your dissatisfaction? Or what made this experience not enjoyable from your perspective? How would you have done it differently?”*

3.2.2 *The Confirmatory Part of the Focus Group*

The second part of the focus group was designed to “confirm” the existence of themes identified a priori in the literature as important KPIs from the user’s perspective. Participants were presented with a list of indicators, one at a time, and were asked to explain their thinking process when they believed any of the words constituted an important characteristic of e-government services. The list included: cost-implementation, number of steps, back-up systems, cost of maintenance, efficiency of the e-service, effectiveness of the e-service, transparency, security, risk, ease of retrieving citizen information, and ease of providing services to citizens.

3.3 **Data Analysis**

In this study, the answers to the exploratory and confirmatory focused group questions were analysed systematically using Template analysis (King et al, 2004). This is a qualitative technique for analysing any form of textual data, including interviews, personal correspondence, and focus groups.

Coding: Three of the authors, all with training in behavioural data analysis, read through the transcribed text and highlighted any segment that participants provided as an important element of e-

government services. 103 such segments were identified. The authors then reviewed the codes and removed redundancies, which lead to 56 segments being included in the analysis.

Categorization: The authors then grouped the segments according to any similarities between them and assigned them a code. For example “reduce corruption” and “corruption exploiters might resist” were grouped together under the category “Transparency”. Twenty nine such categories were identified as presented in Table 1.

The categories were further grouped into Key Performance Indicators. For example, *Transparency* was grouped with *Participation*, *User Satisfaction*, and *Outreach* under the KPI “Social” as they all represent social outcomes of an e-government service. Fifteen such KPIs have been identified and grouped further into five main themes. For example, *Social*, *Environmental*, and *Economic* were grouped under the theme “Socio-Economic” impact since they all refer to outcomes of e-services on a macro-level. As such, each theme represents an area relevant to the evaluation of e-government services. Each area may contain multiple indicators based on the area they refers to i.e., the functionalities of the service, the employees involved in the development and implementation of the service, the managerial actions and policies that govern the environment within which the service exists, the technological facilities surrounding the services’ environment, and the internal or external outcomes that this service may have.

4 THE PROPOSED CONCEPTUAL MODEL

While few theoretical and empirical literatures have widely studied e-service success from providers’ perspective (Gouscos et al., 2007), to the best of our knowledge, none of the previous studies discussed in Section 2 had attempted to propose a holistic assessment study into a single framework. Moreover, none of them focuses specifically on the relationships among e-service practices, contextual factors (i.e. social, environment and economic factors) and performance. The proposed e-service performance evaluation mainly focused on the user perspectives and measured users’ take-ups to improve users’ satisfaction. Based on our previous analysis, we discuss and define in this section the key elements involved in the success of an e-service from the providers’ perspective. Then, we identify the key attributes related to the service and present a model that connects the indicators of the success of e-services. Finally, we discuss hypotheses regarding relative importance of these attributes.

4.1 Measurement Issues

Evaluating the success of an e-service is crucial; however it is much more complex than the effort involved in measuring IT performance (Irani et al., 2009; Weerakkody et al., 2007). For example, the social context of e-service success cannot be fully understood without first understanding the environment in which the service is provided. This type of understanding may best be achieved through the utilization of qualitative methodologies that promote a better understanding of such studies. Qualitative methodologies have the potential to provide better descriptions of elements being studied, since situational and contextual circumstances are present. Furthermore, the variety of contexts and social systems in which e-service providers are involved may become more apparent.

4.2 Model development

This research used a qualitative technique to identify the most important factors. This technique is based on the identification of indicators employed in the literature (discussed in Section 2 and further explored below), coupled with focused-group meetings using an exploratory method (discussed in Section 3). Respondents in these focused groups were all e-government senior managers and policy makers. Furthermore, we reviewed services and approaches from the information system literature, because an e-government service is an innovative way of delivering the public service using information technology (Venkatesh et al., 2011; West, 2004). From a service perspective, e-services exhibit characteristics, such as service delivery and public outreach (West, 2004), and are expected to be at a same quality of traditional public services (Teicher et al., 2002). Whereas from an information system perspective, an e-service is expected to be just as user-friendly as existing web applications, (Becker, 2005). Thus, the literature review of these two fields with the focus group approach, provide

means to develop and better understand the providers' perspective. We classify the collected attributes into five major factors: (1) Service, (2) Technology, (3) Employees, (4) Policy and management, and (5) Social responsibilities.

4.3 The Proposed Model and Background

To develop a new evaluation model that explains and predicts the success of an e-service, the collected factors from the focused groups and literature are analysed and used to construct a new conceptual model called STEPS: Service, Technology, Employees, Policy and management and Social responsibilities analysis. Figure 1 shows the causal-effect relationships between the model constructs. The expected relationships between all constructs and e-government performance are positive. Given these relationships, the success of an e-service is largely shaped by the extent to which the management can maintain an attractive e-service in terms of the employed technology, service quality, employee readiness and social and economic responsibilities. The framework of the proposed conceptual model is shown in Figure 1.

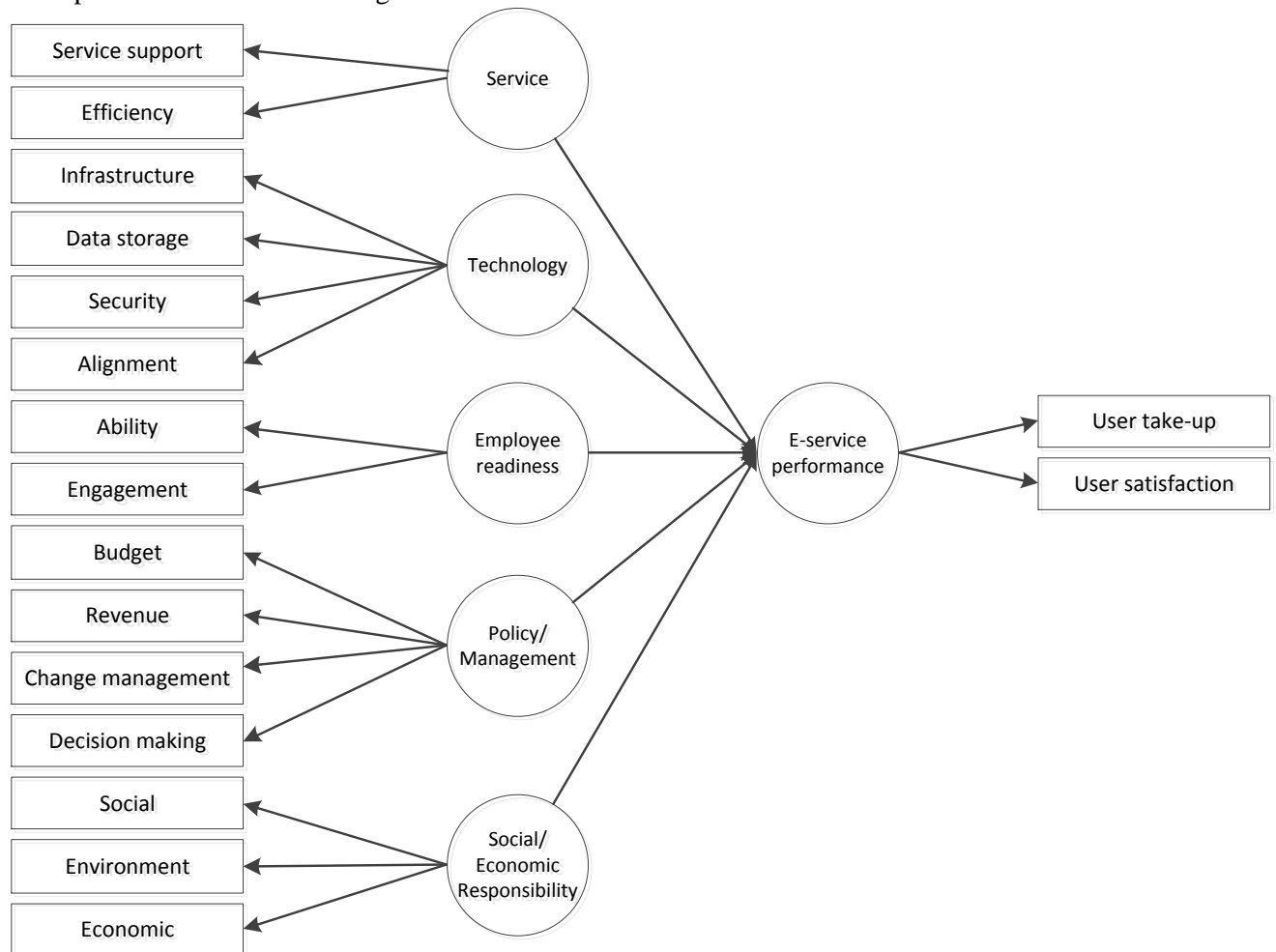


Figure 1. The STEPS model to explain and predict e-service performance from provider perspectives

4.3.1 Service dimension

The first dimension is the service that reflects the quality of e-services provided to citizens and businesses (Kumar et al., 2007; Papadomichelaki and Mentzas, 2012). It can be improved significantly while attaining greater efficiency for all participants. The provision of 24/7 services can improve the level of satisfaction among citizens and enhance their acceptance of the public sector (Stiftung, 2002).

Government websites are primarily being used to obtain information; it was identified that limited progress was made at the level of interacting with citizens and online business transactions (Accenture, 2004).

4.3.2 *Technology dimension*

First, prior research on services has acknowledged the impact of technology innovation on the delivery of self-services (e.g., Froehle and Roth, 2004; Hill et al., 2002; Meuter et al., 2000, 2005; Rai and Sambamurthy, 2006). Technology plays an important factor in reshaping processes that span across different e-Government departments. The impact can be at various levels. It can be one of the core drivers in building trust in using the systems for example by using state of the art security solutions, stable data storage facility and sophisticated user interactions.

4.3.3 *Employee readiness dimension*

The shortage in IT workers is ranked as the number one barrier to e-government (Chen and Gant, 2001), based on the 2000 E-Government Survey conducted by the International City/County Management Association and Public Technology, Inc (Norris et al., 2001). This is mainly due to the difficulty of attracting and retaining the right IT talent, especially considering the competition for these workers (Hanson, 2001). Another major challenge is the lack of financial resources. Over 50% of local governments that responded to the E-Government Survey indicated this as a main barrier. Other barriers include inadequate IT infrastructure and outdated work procedures and rules (Hunter, 2000; Norris et al. 2001). IT outsourcing has been identified as one of the main ways to address these challenges facing local governments. Netgov.com, for example, was launched in June 2000, and was founded on the idea of assisting local government in overcoming these inefficiencies.

4.3.4 *Policy and Management dimension*

People and policies play a primary role in the success of an e-government. Elements that are important to the effective administration of information include an empowered information technology leader in the form of a Chief Information Officer (CIO), a decision-making commission, the implementation of a state-wide architecture, and the rollout of intergovernmental projects that include an efficient portal for citizens (Gupta and Jana, 2003).

4.3.5 *Legislation and policies*

Vassilakis et al. (2005) identify that legislation issues and lack of policies are the most important barriers to e-services. Moreover, it is also argued that state institutional capacity in information technology matters, and it should influence innovation in digital government (Tolbert, Mossberger and McNeal, 2008).

4.3.6 *Social and Economic Responsibility dimension*

The Social Exchange Theory (SET) was proposed by Blau (1964) to explain the social relationships (exchange) using economic concepts such as cost and value (benefit). According to the theory, e-service providers are investing in their job (social interaction), if and only if their efforts, (cost and time) into such an interaction is less than the value (benefit) they may get out of it. The greater the value is, the more an employee is satisfied and thus invests more in their work that will enable providers to further improve the service. Fundamentally, within the e-service context, SET explains the role of individuals and employees in user satisfaction. The success of an e-service is expected if employees are satisfied from their work. If individuals are satisfied with this interaction (work), they will continue to provide a high quality e-service; otherwise the quality level will drop.

The Expectation-Confirmation Theory (ECT) was proposed by Oliver (1980) to study consumer satisfaction, repurchase intention and behavior. Based on this theory, consumers compare their initial expectation prior to purchase with the actual performance after a period of initial consumption. Accordingly, the consumers are satisfied if their initial expectation matches the actual perceived performance. In the context of e-government service providers, individuals have an initial expectation about their new job, management and organization, and if they find evidence that the actual

environment fulfils their expectation, then individuals' satisfaction level will be high and they will probably continue in the same job and provide a high quality service.

4.4 Key Performance Indicators of the STEPS Model

The results revealed the emergence of five main themes that represent the key performance indicators necessary for evaluating e-government services from the perspective of providers. These are: E-government Service; Employee Readiness; Policy and Management; Technology; and Internal and External Impact. These are further divided into 15 indicators as illustrated in Table 1. The last column in table 1 is the result of the pilot study, and will be elaborated further below. We will discuss the indicators and their categories as part of the description of each theme.

E-government Service is the first theme that refers to criteria that are directly relevant to the e-government site. There are two indicators under this theme: Service Support and Efficiency.

Service support refers to the provision of up-to-date information to the users that is directly relevant to their needs. E-government sites with good service support also redirect users to other e-government sites they may need in order to complete their transactions. An additional feature that represents good service support is the provision of the opportunity for users to choose the most convenient method for receiving notifications about the status of their transaction, such as SMS, email etc. Additionally, allowing a user to interact with the government products by providing feedback or sending enquiries is also an important aspect of good service support.

Efficiency on the other hand assumes that an e-government website to provide a good service, it needs to be more efficient than traditional means in two ways. First, the e-government site has to be easy to use so that users can smoothly navigate the site, access historical transactions, and manage personal information. Second, the site also needs to provide usage efficiency by making it faster for users to find relevant information while alleviating the administrative burden and number of steps they need to go through for completing their service requests.

Employee Readiness is the second theme that emerged from our study. It refers to the internal process of the government organization. Specifically, this theme refers to the readiness of employees in moving from traditional modes of providing services to electronic means and in maintaining the provision of such services at high standards. Ability and Engagement of employees are the two indicators under this theme.

Ability refers to employees' capacity in providing electronic services. Possessing enhanced computer skills is necessary for learning specific computer software and operating programs to deal with specific challenges that may face them while delivering service requests. Since ability can be provided and developed, the organization also has some responsibility towards the employees in order to foster the needed capabilities within the organization. Therefore, providing the necessary and continuous training programs to deliver better e-services is also important for creating the ability amongst employees in providing these services efficiently and effectively.

Engagement, on the other hand, is also necessary for employees to provide quality electronic services. Engaged employees are those who are motivated enough and willing to collaborate amongst each other in order to migrate from traditional means to e-services. Having the ability to do so is necessary but not enough for successfully implementing and providing e-services.

Policy and Management is the third theme that emerged from this analysis. Just like the previous theme, this one also refers to internal organizational matters namely, legal and contextual environment, change management, budget, and revenue.

Legal and contextual environment refers to the existence of a legislative framework that allows smooth decisions around moving or providing e-services. It also refers to the support provided by government policy makers as well as management within a particular government organization in order to successfully implement the e-service.

Change management was also found to be an important aspect of management that is necessary for a successful e-service implementation. This refers to the complexity of transforming and re-engineering processes from a traditional fulfillment mode to an electronic mode, as well as the speed of access to

the internal information needed in order to execute such transformations. Change management also depends on the thoroughness of the planning phase and the clarity of the policies developed to support the process transformation in the future.

Budget is another aspect that was found to be important particularly for the development, customization, and maintenance of the e-service. When the cost of development, customization and maintenance of an e-service exceed the allocated budget, problems may arise and may impact the success of the e-service in the future. Continuous investment in developing and maintaining an e-service can only be achieved when clear policies and managerial decision are in place and tailored specifically for the purpose of delivering the e-service.

Revenue should be substantial enough for the stakeholders involved in e-services fulfilment to remain productive. This can be done by creating clear policies, contractual agreements to share cost, risk and benefit and opportunity among different engaging parties. Here technology can play a big role in improving the revenue to providers, while keeping the e-service cost to citizens either the same or possibility lower than traditional means.

Technology is the fourth theme that emerged from the analysis. It refers to the pre-existence of technological capabilities in the country that may contribute to the success of e-government services. Infrastructure, security, and alignment are the three indicators that illustrate this theme.

Infrastructure refers to the availability of prerequisites such as e-signatures or e-payments. The lack of such prerequisites may hinder the utilization of e-government services. Other capabilities, such as internet availability and speed across the different regions in a country, may also be problematic especially when they are not sufficient enough to support fast transactions. These can have strong impact on user adoption of the e-government service.

Security is another related technology element. It depends on attitudes of people using e-services. On one hand, employees working on the fulfilment of e-services may have an attitude towards risk that hinder them from using external resources when needed out of fear of losing control over sensitive information. On the other hand, users in the country may have perceptions of high levels of threat to the privacy of their information, which may slow down users' adoption of e-services. Hence governments should use the appropriate means to relieve the fear on users and employees towards security issues. For instance, users fear can be removed by having security sign on the e-service website.

Alignment refers to the interoperability between various government electronic systems. Incompatibility in data formats may be problematic for the successful development and implementation of e-government services especially when the services are interdependent. This indicator measures the collaboration levels between the different government departments to deliver coherent and interoperable e-services.

Internal and External Impact is the final theme that emerged from the analysed data. Providers perceived that organizational, social, environmental, and economic outcomes are also important indicators of the success of e-government services.

Organizational Outcome is another aspect that refers to desirable end-results at the level of an organization. First, a successful e-service should lead to reduced costs when compared to traditional means. Whilst cost reduction is important, easier ways of controlling costs are also important outcomes of successful e-services. Finally, an efficient e-government provider should also increase the efficiency of providers by increasing the productivity of government staff. This can be achieved by providing easy ways of generating customized reports (e.g. statistical, usage), recovering lost information in case of emergency, reducing processing efforts, and moving into paper-less processing for environmental concern in addition to reducing the time of delivering services.

Social Outcomes represent the impact that e-government services may have on the society as a whole in terms of transparency, participation, satisfaction and outreach. Successful e-services should decrease levels of corruption and increase levels of governmental transparency and accountability. They should also increase interaction with users in a way that improves relationships between the government and community; consequently increasing the engagement of stakeholders in government

policy making. Social impact can also be measured through the extent to which the e-service is expanding the reach to users. Wider reach and accessibility to users can also allow better ways of disseminating public information, thus improving communication between the government and users.

Environmental Outcomes mainly relate to the management of pollution and environmental waste. This indicator measures the degree of improvement provided by the introduction of e-services versus the traditional ones. For example it is foreseen that e-services will contribute towards the reduction of the amount of paperwork involved in fulfilling services. In addition, it will free up the time of citizens in getting access to services, which will have an overall impact on the use of time in a country. Furthermore, providers will be able to electronically transfer information instead of relying on traditional inefficient internal transportation means.

Economic Outcomes mainly relate to having greater opportunities of creating new jobs and consequently boosting economic growth. Deploying e-services will new open new opportunities for private sectors to develop new compatible applications. New service applications can be created to support the new channels of transactions. As a result, new job opportunities would be created in the countries adopting the e-government stream, hence, achieving an indirect aim for any government.

It should be noted that the above STEPS model was developed based on a bottom-up approach involving stakeholders who are engaged in the development, management and usage of e-government services. A similar conceptual PESTEL framework was found in the literature on private sector, (St John and Harrison, 2010). PESTEL refers to Political, Economic, Social, Technological, Environmental and Legal dimensions. It allows the scanning of macro-environmental factors in the broad environment of a firm for strategic management purposes. PESTEL was a proposed strategic conceptual tool for understanding market growth or decline, business position, potential and direction for operations. Similarly, it is expected that our STEPS framework a similar impact on the strategic management and development of digital and other products in the public sector.

5 CONCLUSIONS

In recent years, the importance of e-government service assessment has attracted an increasing attention from academia, researchers, practitioners and policy makers. Despite the increased interest in e-service evaluation, it appears that literature does not offer much e-service studies from the providers' perspectives. Furthermore, the available e-service success literature offers no comprehensive model for identifying key success themes and their underlying dimensions from a provider's perspective. Therefore, in this paper, a multi-dimension integrated model for measuring e-government service success is identified and the relationships among those dimensions are proposed. The proposed STEPS model in this paper is based on the analysis of focus groups and the review of the literature. It consists of five dimensions: Service, Technology, Employees, Policy and Management and Social responsibilities analysis. Identifying these dimensions will help recognize e-government service' strengths and weaknesses and suggest ideas for further improvement. It is believed that the success of governmental organizations depends on the quality of e-government services provided to citizens as well as the involvement level of their employees. Therefore, understanding these dimensions about e-government services success would enhancing users' satisfactions and gaining users' trust, and increase government service managers and governmental organizations efficiency as well as reducing risks of failure or the low take up (e.g. investing valuable resources in e-service characteristics that may not work effectively). The proposed model rectifies the shortcomings of the previous literature to cover the provider's views. Also, STEPS includes a more thorough explanation of the needed sources along with provision of associated e-service success indicators. It would provide a useful tool to improve the provision of e-government services. It will provide an understanding of the required success characteristics of e-government services and highlight the items to be emphasized. This proposed model will be able to identify and set up success characteristics of e-government services that will also contribute towards increasing user satisfactions. In addition, the paper will create awareness among e-service managers to paying more attention to their working environment, and assist them to improve the performance of an e-service.

5.1 Policy, Managerial and Practical Implications

The study has further important implications. The findings will enable policy makers and e-service managers to understand varied practices and contextual factors that would contribute to effective implementation in terms of users satisfaction and take-up of e-services.

1. A recent systematic review of the literature on e-government service success suggested that the evidence about predictors of such success remains inconclusive and that further research is required (Irani et al, 2012). Based on this finding, we believe that having a model that incorporates the organizational, professional and personal variables can boost the development of comprehensive interventions that focus on improving e-service and consequently increasing e-service users' satisfaction. We therefore proposed STEPS, a conceptual model that fully analyses and explains this phenomenon.
2. Evidence from the literature suggests that e-government service success in general, and user satisfaction in particular, is mainly related to user and provider related factors (Osman et al 2011, Irani et al 2012). Therefore, policy makers can use the STEPS model to identify and monitor those related variables in order to continuously improve quality outcomes in their e-service.

5.2 Research approach and directions for Future Research

The proposed conceptual model STEPS is aimed to serve as the basis for future research. Thus, a further continuation of this work would be the quantitative validation and reliability of the proposed model. A sample data will be collected from experienced providers in e-government domain by using a questionnaire in a 7-point Likert-scale format. The collected data will be analysed by applying some appropriate data analysis tools including Statistical Package for Social Sciences (SPSS) and Structural Equation Modelling (SEM). Descriptive analysis of the survey findings will be analysed using SPSS. SEM and Confirmatory Factor Analysis (CFA) will be conducted to test the reliability and validity of the measurement model. The structural model also will be analysed to examine the hypotheses. Beyond the issue of empirically testing of the proposed relationships (Figure 1), it would be interesting to expand the relationships being proposed here to other countries and cultures. The proposed model assumes dimensions of e-government service success which may be relevant to the Lebanese, Qatar and UK Governments. Nevertheless, e-government service success dimensions may vary across countries and cultures, given that e-service success experiences are considered to be socially and culturally determined. Finally, the STEPS variables upon collecting their SAMRT values in the three countries would be analysed data envelopment analysis to determine the efficiency of transformation of inputs resources into effective outputs and outcomes on data collected from different countries from users' perspective, (Osman et al, 2012, 2013).

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