E-government evaluation: a user-centric perspective for public value proposition

Akemi Takeoka Chatfield
University of Wollongong, akemi@uow.edu.au

Omar AlHujran
University of Wollongong, oa213@uow.edu.au

Recommended Citation

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Abstract

Academic research and institutional reports present evidence of e-government project failures and stalled or cancelled initiatives. Prior research concludes that e-government evaluation is under developed and calls for improving egovernment evaluation practice. Stages of growth models have been used in IS research and more recently in e-government research. While egovernment stage models provide potentially useful tools for e-government evaluation, there are different e-government stage models that are sometimes contradictory in development stages and perspectives. Drawing on the concept of public value proposition, this research surveys existing egovernment stage models from a user-centric perspective and develops a user-centric, demandside model that underscores the importance of creating public value through new e-government capabilities such as secure financial transaction, eparticipation, e-voting, and e-democracy.

Keywords

Disciplines

Physical Sciences and Mathematics

Publication Details

E-Government Evaluation: A User-Centric Perspective for Public Value Proposition

Akemi Takeoka Chatfield
School of Information Systems and Technology
Faculty of Informatics
University of Wollongong
NSW 2522, Australia

Omar Al Hujran
School of Information Systems and Technology
Faculty of Informatics
University of Wollongong
NSW 2522, Australia

Abstract – *Academic research and institutional reports present evidence of e-government project failures and stalled or cancelled initiatives. Prior research concludes that e-government evaluation is under developed and calls for improving e-government evaluation practice. Stages of growth models have been used in IS research and more recently in e-government research. While e-government stage models provide potentially useful tools for e-government evaluation, there are different e-government stage models that are sometimes contradictory in development stages and perspectives. Drawing on the concept of public value proposition, this research surveys existing e-government stage models from a user-centric perspective and develops a user-centric, demand-side model that underscores the importance of creating public value through new e-government capabilities such as secure financial transaction, e-participation, e-voting, and e-democracy.*

Keywords: e-government stage model, public value proposition, user-centric perspective, government-centric perspective, e-government evaluation

1   Introduction

While governments worldwide increased their spending on ICT infrastructures and e-government capability maturity in service delivery, e-government research results ([3]; [8]; [14]) and institutional reports ([1]; [24]) present evidence of e-government project failures and stalled or cancelled initiatives. In its survey results of national e-governments, *World Public Sector Report 2003: E-Government at the Crossroads*, United Nations documented governments at different stages in e-government development. In the large, however, there was a clear, unmistakeable lack of transactional websites across the national e-governments.

Against this background, there is the growing recognition of e-government success as a theoretical and practical importance and the need for evaluating and managing e-government outcomes, such as efficiency, cost, quality and capability maturity in service delivery [11]. Stages of growth models have been used in information systems (IS) research. Basically, the models hypothesize that predictable patterns or stages exist in the growth of organizational or technological capability. Recently, in the e-government literature, different and sometimes contradictory e-government maturity models are found (e.g., [10]; [14]; [17]; [23]; [24]). However, theoretically, there are few comprehensive efforts to understand the differences and contradictions that exist across the e-government stage models. In order for e-government stage models to be useful tools for evaluating the outcomes of e-government initiatives, evaluation research is required.

The major purpose of this paper is to critically evaluate the existing e-government stage models and to assess their usefulness as tools for evaluating the outcomes (success or failure) of e-government initiatives. In this paper, we performed a qualitative comparative analysis of the existing models, which is guided by a customer value proposition framework found in the strategy and e-business literature. The customer value proposition has its central focus on what the customer values and wants from the firm's product or service. Accordingly, its application to this research leads us to differentiate a customer/user-centric, demand-side perspective from a government-centric, supply-side perspective. The latter dominates most of extant e-government stage models. Based on insights gained from this analysis, this research developed an integrated demand-side e-government stage model from a user's perspective; a step toward developing a construct of a public value proposition. The stage model developed in this paper identifies key issues for public administrators and e-government project sponsors to address in creating public value through e-government service capability development.

2 Public Value Proposition

In the private sector, customer value proposition frameworks have emerged in the strategy and e-business literature ([27]). A customer value proposition has its central focus on what the customer values and wants from the firm's product or service. Keeney [12] studied the role of electronic commerce on the value proposition to the prospective online customer for any service or product that is sold over the Internet. Researchers used metrics such as net-promoter score (NPS) [21] to measure customer value proposition and evaluate how e-commerce investments aimed at improving the customer experience actually impact the firm's performance. To generate a NPS, online customers are asked a simple question such as: "How likely is it that you would recommend us to a friend or colleague?" Customer responses to this question are used to measure level of customer satisfaction with the website experience, because the latter is assumed to correlate with the firm's growth rate in online sales.

In the public sector, the construct of public value was introduced in the UN report aforementioned: *World Public Sector Report 2003: E-Government at the Crossroads*. Public value is a way of capturing all the dimensions of government performance to assure its relevance to the stakeholders [13]. In e-government, the stakeholders include citizens, businesses, other governments and government employees [22] and international development agencies. Public value is predicated on these stakeholders' preferences, because only the stakeholders, not the government, can determine what is truly of value to them. However, public value is also predicated on the new capability of e-government to understand the different stakeholders' needs and provide services they value, thereby creating public value that justifies and legitimizes the sustained government spending on e-government. In other word, the legitimacy of e-government as a whole largely depends on how well it creates public value, by producing the outcomes, services and trust that are aligned with e-government strategic objectives.

Application of this public value concept to this research thus highlights two different, but sometimes interrelated, perspectives, which are important in analysing extant e-government maturity models. They are a user-centric or demand-side perspective and a government or supply-side perspective. Reddick [20] argues that the demand-side perspective is relatively unexplored, and directs its focus on user interactions with e-government. In contrast, he concludes: "Much of the existing work on the development of e-government has explored it from a supply-side perspective, such as evidence presented from surveys of what governments offer online (p. 38)."

3 E-Government Stage Models

A review of the literature identifies nine e-government maturity models, which offer different normative views of progressive stages in e-government evolution particularly with regard to e-government service capability. These models are developed and adopted by academic researchers ([9]; [14]; [17]; [19]), IT consulting firms ([2]; [6]), and institutions [24]. Some of the e-government stage models are briefly discussed and presented in Table 1 below, with *Stage* (number of stages and names of the stages), *Central Focus & Capability* (e.g. what website or portal offers or what users can do at the stage) and *Reference* (the author(s) of the model and the year of its publication).

The Table 1 below summarizes the nine e-government stage models. Across the models, the authors either explicitly or implicitly state that the final stage is more advanced then stage 1 in terms of the web or portal's functional capability that is made available to the public. However, the models differ in terms of the total number of stages required to reach more advanced e-government capability. The number of stages ranges from 3 to 6. They also differ in terms of the capabilities available to the public at a given stage such as publishing policy documents at national government website and offering payment transaction capability to citizens and/or businesses. These two dimensions are noteworthy differences that are found across the nine maturity models. Importantly, there is another dimension of further differences that distinguish the models. That is, the degree of mixing the two perspectives discussed earlier within a given e-government stage model.

Table 1: E-government stage models

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Gartner Group: Baum and Di Maio [2]	Presence	Interaction	Transaction	Transformation		
Howard [13]	Publish	Interact	Transact			
Layne & Lee [19]	Cataloguing	Transaction	Vertical integration	Horizontal integration		
Deloitte Research [33] cited in Silcock [33]	Information publishing	Official' two-way Transactions	Multi-purpose portals	Portal	Clustering of common services	Full integration & Enterprise transformation

Chandler & Emanuels [3]	Information	Interaction	Transaction	Integration		
Moon [23]	Simple information dissemination	Two-way communication	Service and financial transaction	Vertical and horizontal integration	Political participation	
United Nations [32]	Emerging presence	Enhanced presence	Interactive presence	Transactional presence	Networked presence	
Siau and Long [31]	Web presence	Interaction	Transaction	Transformation	E-democracy	
Word Bank cited in [1]	Publish	Interact	Transact			

4 User-Centric & Government Centric Perspectives

After having identified the service delivery stage models, we performed an in-depth analysis of the models to determine whether a given e-government service delivery stage model has a consistent perspective, either primarily focusing on a user-centric perspective (demand-side) or a government-centric perspective (supply-side). Sometimes, stages reflect both perspectives. Or the same model may be inconsistent in its focus, having a user-centric perspective at one stage and switching to a government-centric perspective in another. Table 2 below lists our results. In the Table predominantly a government-centric perspective is shown *as a shaded cell*. As the Table 2 shows, six of the nine existing e-government service delivery stage models found in the literature reflect mixed and inconsistent perspectives, for example, switching from a user-centric perspective for the earlier stages to a government-centric perspective for the more advanced capability stages.

Table 2: Mixed Perspectives in Existing E-Government Stage Models

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Gartner Group: Baum and Di Maio (2000)	Presence	Interaction	Transaction	Transformation		
Howard (2001)	Publish	Interact	Transact			
Layne & Lee [19]	Cataloguing	Transaction	Vertical integration	Horizontal integration		
Deloitte Research cited in Silcock [33]	Information publishing	Official' two-way Transactions	Multi-purpose portals	Portal personalization	Clustering of common services	Full integration & Enterprise transformation
Chandler & Emanuels (2002)	Information	Interaction	Transaction	Integration		
Moon [23]	Simple information dissemination	Two-way communication	Service and financial transaction	Vertical and horizontal integration	Political participation	
United Nations [32]	Emerging presence	Enhanced presence	Interactive presence	Transactional presence	Networked presence	
Siau and Long [31]	Web presence	Interaction	Transaction	Transformation	E-democracy	
Word Bank cited in [1]	Publish	Interact	Transact			

Government-centric perspectives are adopted when the need for government's internal transformation and the need for vertical and horizontal integration of government agencies and their information systems are chosen as the central aims of the stages. While these organizational and technological changes are indeed required to design a seamless, integrated national government website or portal to the public, they do not explicitly communicate what service delivery capabilities are made available to the public. Hence, the e-government service delivery models with inconsistent perspectives are not useful tools to evaluate public value creation through e-government development.

5. A User-Centric Stage Model: For Public Value Proposition

From a user-centric perspective, common e-government service delivery capabilities can be identified across the nine models surveyed: Stage 1: the public's ability to gather basic information from an official website or portal (Online Information); Stage 2: the public's advanced ability to engage in two-way information exchange, searching databases, downloading forms and reports and uploading completed forms and reports, for example, an address change form electronically sent to Centrelink, Australia's welfare agency

(Interaction); Stage 3: the public's ability to conduct financial and/or legal transactions as well as the ability to bid for public contracts by businesses (Financial Transaction); and Stage 4: the public's ability to participate, deliberate, and vote electronically, being able to express opinions and viewpoints on issues of importance and to influence policy and strategy formulation processes and outcomes (E-Participation). The e-participation stage takes various forms, for example, email feedback to inform the government through online polling mechanism, discussion forums, and online consultation facilities [24]. The final stage also underscores the importance of sharing information and knowledge within virtual communities. The final stage provides opportunities for e-governments to make their decision making processes more transparent to the public and hence to increase transparency and trustworthiness of government to the public and to build trust in e-government among the stakeholders. The user-centric model argues that government develops a model of public value proposition, often expressed in e-government strategy documents: the government's proposition of what the public wants in e-government in terms of online self-service capabilities. This public value proposition needs to be regularly tested to ensure certain e-government service delivery capabilities that are made available are in fact producing public

value to the intended users: citizens and businesses.

Figure 1 below presents a user-centric e-government stage model that was proposed in this paper. It reflects a demand-side perspective consistently across the four stages. As discussed earlier in this paper, a demand-side perspective directs its focus on user interactions with e-government because the users of e-government services, not the government service provider, can determine what is truly of value to them. The four stages offer progressively higher sophisticated e-government capabilities with which the different stakeholders can interact with e-government self-service offerings. The four stages are Online Information, Interaction, Financial Transaction, and E-Participation. The central mechanisms that enable governments to shift from one stage to another are e-learning within the government agencies and diffusion of ICT literacy and skills across e-government stakeholders. As e-government capability matures and progressively shifts from one stage to another higher level stage, the model hypothesizes that public value also increases for e-government stakeholders. However, the model also hypothesizes that higher stage is associated with more complex requirements required to achieve higher level virtual integration across agencies, higher level interoperability across agencies, and greater degree of organizational changes.
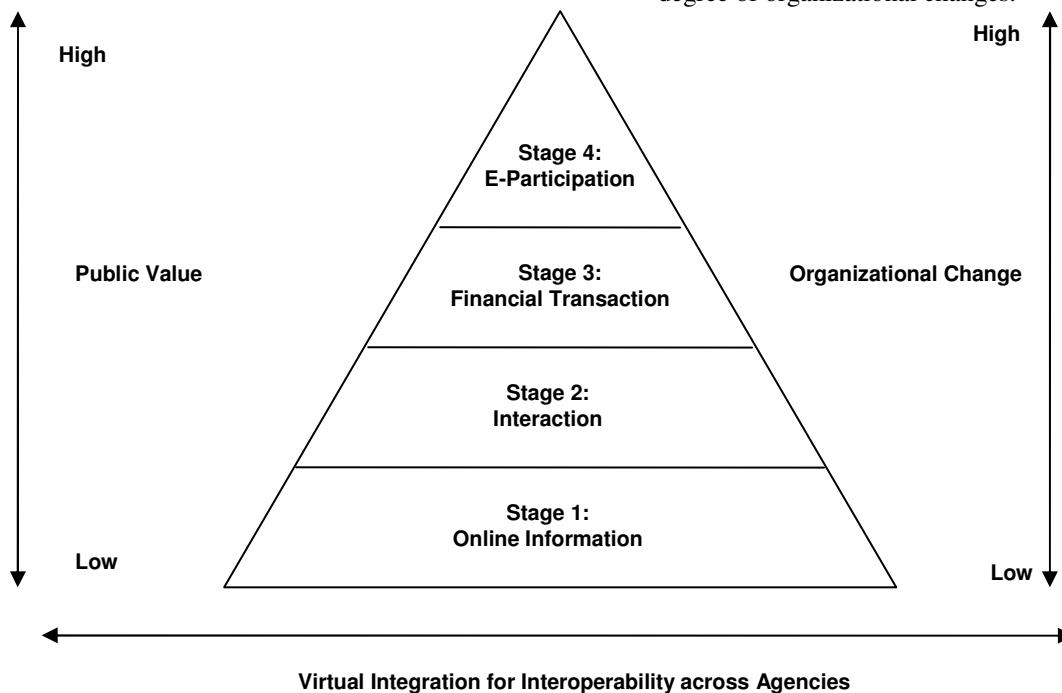

Figure 1: User-centric e-government stage model

6 Key Issues in Creating Public Value

The user-centric e-government stage model (Figure 1) discussed in the previous section is presented in a triangle shape. The bottom two levels of the triangle (stages 1 & 2) are wider than the top two levels (stages 3 & 4) to underscore the fact that e-governments in stage 3 or stage 4 are fewer in number. According to the 2003 United Nations' E-Government Survey of its 191 member states, only 33 governments (17.3 percent) provided financial transaction capability [24], although 173 governments (90.6 percent) successfully launched a government website, having developed the first stage capability. The e-government stage model for public value proposition, discussed in the previous section, postulates that high-level public value creation is predicated on the provision of advanced e-government service capabilities that the public wants. The model identifies three key issues to be addressed in order for e-governments to create high-level public value. They are online transaction capability, virtual integration across agencies, and interoperability across agencies

6.1 Online Transaction Capability

Irani et al. [10] found the empirical evidence suggesting that a significant number of project failures occur at the transaction stage. This is consistent with the UN survey findings, with only 33 national governments (17.3 percent) providing online transaction capability [24]. In the survey, the income level effect is clearly visible among the national governments that implemented transactional capability. In other words, although the number of nations that implemented online transaction capability is still very limited, of those which did implement the transactional capability, 70 percent of the governments are those with high income level. In comparison, virtually no governments with low income level offer transactional capability. This suggests the relative importance of national income level, because of high investment costs in ICT infrastructures and e-government capability development projects. Other research results also suggest the size of government as a determinant of the e-government success, since it relates to IT budgets and IT technical staff competences in web skills.

6.2 Virtual Integration

The second critical issue in creating high public value is the need for achieving virtual integration horizontally across agencies within national government and vertically across different levels of government (e.g., international, national, state and local). In the private sector, virtual integration has been identified as one of the critical determinants of the success of e-business in achieving operational efficiency gains and realizing the full benefits of e-business strategy. Dell Computers and Toyota have virtually integrated with their external suppliers and customers. Michael Dell, CEO of Dell Computers, defined the company's virtual integration in his interview with an editor of *Harvard Business Review*: "Virtual integration means you basically stich together a business with partners that are treated as if they're inside the company. ([15], p. 74)"

While Australia is consistently identified as a leading e-government nation, many national government agencies, with several exceptions, are being challenged in achieving horizontal integration across agencies and vertical integration across different levels of governments ([7]; [24]; [25]). Similarly, in their study of a Norwegian G2G initiative at the local government level, Flak and Nordheim [5] found that contradictory stakeholder objectives as a key barrier to the successful government-to-government (G2G) virtual integration.

6.3 Interoperability

The third critical issue in creating high-level public value is the need to achieve interoperability across public-sector agencies. Like any other national initiatives such as fighting international terrorism and money laundering, e-governments at national government level requires cross-agency collaboration in order to build interoperability across agencies. Interoperability across agencies has great potential to fundamentally transform the way that e-governments operate, share information and deliver services to external and internal stakeholders. Effective inter-agency interoperability brings together autonomous government agencies to remove the silo effects and deliver user-centric services to citizens, businesses and governments ([4]; [18]; [26]). However, effective inter-agency collaboration requires an institutional structure or mechanism for fostering and legitimizing their new working relationships. Without such a central coordination mechanism, prior research on cross-agency collaboration has shown great difficulty and failures.

7 Conclusions

Jones et al. ([11], p. 1) concluded that "e-government evaluation is both an under developed and under managed area", calling for

senior executives to engage more with e-government evaluation to improve efficiency, cost and quality of e-government service delivery. This paper also acknowledges the need for evaluating existing e-government stage models which not only present the differences and contradictions in stages but also contain within the model the mixed perspectives, making them difficult to use as evaluation tools. In this paper, we have discussed a new user-centric e-government stage model, which can be used to evaluate the e-government development process and outcomes. The new model also has identified the key issues to be addressed in order for e-government development to create public value and validate its public value proposition through its e-government service delivery.

This study differs from most of the existing literature on e-government stage models, because it takes a user-centric, demand-side perspective, whereas most of existing e-government stage models adopted a government centric, supply-side perspective, either focusing on inventories of e-government service provision [20] or mixing the two perspectives as shown in this study.

Finally, this research paper makes theoretical contributions to the literature by introducing the concept of public value proposition as the central importance in e-government development and evaluation.

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