10 year retrospect on stage models of e-Government: A qualitative meta-synthesis

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ABSTRACT

Growing interests in e-Government raise the question about the developmental stages of e-Government. Since the year 2000, a number of e-Government stage models have been suggested by international organizations, consulting firms, and individual researchers. However, these models seem to be incongruent with each other as these are based on different perspectives and use somewhat different metaphors. This presents a difficulty not only in understanding different research results, but also in planning future actions for e-Government. Without a common frame of reference for understanding the developmental stages and perspectives reflected in different models and stages, e-Government research may become fragmented and disconnected from each other. In this research, we have conducted a qualitative meta-synthesis of twelve e-Government stage models. Concepts, metaphors, and themes contained in these developmental models are extracted through a series of in-depth semantic analyses of descriptions and explanations. The first order concepts and themes are subjected to an interpretive synthesis identifying reciprocal relationships which in turn leads to the identification of implied metaphors and themes. Five metaphors are identified: presenting, assimilating, reforming, morphing and e-governance, while two underlying themes surface: citizen/service and operation/technology. These concepts, metaphors, and themes are synthesized into a common frame of reference using a reciprocal translation technique. A supportive line of argument is developed for this frame of reference so that different e-Government stage models can be translated into each other. This study contributes to current research through offering theoretical advances related to the stages of e-Government. Furthermore, the metaphors and themes identified in this study would be useful as a conceptual frame for researchers to evaluate and understand the development of e-Government, and as a base road map for practitioners in planning future e-Government projects.

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1. Introduction

Governments around the world are implementing innovative e-Government systems and services. They are using information and communication technologies, including the internet, to enhance their internal and external operations (Andersen, 2004; Evans, 1997; Field, 2003; Heeks, 1999; West, 2005). Though the government administration has evolved tremendously adjusting for environmental and technological changes, new possibilities for transformation have been presented as a result of developing information and communication technologies, which are the core elements of e-Government (Abramson & Means, 2001). Taking advantage of the capabilities provided by information and communication technology, they are striving to newly foster citizen-centric services, integrating government operations both vertically and horizontally (Layne & Lee, 2001; Lee & Kim, 2007). In this regard, e-Government is expected to play a critical role for public administration and governance in the future; e-Government will assist in the innovation of governance processes and improved efficiency and effectiveness, while providing more participative opportunities for citizens.

In this regard, e-Government initiatives are changing the basic operational processes of government services. As these changes are related to the overall government services across different functions and levels of government, they present a rich pool of organizational and administrative issues, such as service convergence and administrative reform as well as technological challenges (Bretschneider, 2003). Issues that arise need to be addressed accordingly as e-Government develops and advances. Like any other large scale systems, as the environment changes and opportunities come around with the advance of technologies, e-Government systems need to grow and be nurtured (Truex, Baskerville & Klein, 1999). In this context, a number of developmental stage models of e-Government have been proposed as guidelines for policy instrumentation and further research by numerous international organizations, consulting firms, and individual academics since around the year 2000. However, till now, the e-Government stage models found in the literature seem to be incongruent to each other as each takes different perspectives and uses somewhat different metaphors (Nour, AbdelRahman, & Fadlalla, 2008; Siau & Long, 2005). This presents various challenges, not only in understanding different research results, but also in
planning future actions for e-Government development. A common frame of reference for understanding the developmental stages of e-Government seem to be due at this juncture. This study aims to compare and contrast the e-Government stage models, using a ‘qualitative meta-synthesis’ (Walsh & Downe, 2005) approach in order to reveal the underpinning perspectives, concepts, and metaphors from these models, so that a common frame of reference can be identified across different stage models. This frame of reference will be helpful in furthering the research and practice of e-Government.

The rest of this paper is organized as follows. The Research method and procedure section introduces the research procedure of qualitative meta-synthesis used in this study. The Results: qualitative meta-synthesis of twelve developmental stage models of e-Government section reviews and analyzes twelve existing e-Government stage models found in the literature between year 2000 and 2009. These stage models are compared and contrasted against each other, revealing underlying perspectives and metaphors. In the Discussion: a common frame of reference for e-Government stage models section, a common frame of reference for the developmental stages of e-Government is proposed based on the analysis in the Results: qualitative meta-synthesis of twelve developmental stage models of e-Government section. The Conclusions and future research directions section presents conclusive remarks with future research directions.

2. Research method and procedure

A ‘qualitative meta-synthesis’ approach has been selected as the research method for this study, as it is known to be an exploratory research method designed to build or extract a common frame of reference from qualitative research results, and stage models are mostly developed qualitatively.

2.1. Qualitative meta-synthesis

The qualitative meta-synthesis approach has been used in social sciences, especially in educational and healthcare areas. Stern and Harris (1985) first coin the term ‘qualitative meta-synthesis’ in reference to the systematic review of qualitative studies in the healthcare area. They contrast this concept with meta-analysis of quantitative studies. They define the goal of qualitative meta-synthesis as the development of an explanatory theory or model that may explain the findings of a group of similar qualitative studies (Dixon-Woods, Booth, & Sutton, 2007; Finlayson & Dixon 2008; Humphreys, Johnson, Richardson, Stenhouse, & Watkins, 2007; Jensen & Allen, 1996). Zimmer (2006) describes this as the aggregation of qualitative research “through a process of translation and synthesis; identification of consensus, hypothesis development, and investigation of contradictions in patterns of experience across studies make theorizing at higher levels possible” (p.1). This translation needs to not only maintain the unique features of individual studies but also reveal the differences among them, thereby enabling researchers and readers to understand how various study results are related to each other.

The goal of this research is to reveal the underlying metaphors and concepts present in the developmental models of e-Government, and to build/theorize the underlying higher level model of stages of e-Government development. Though e-Government is a relatively new area and seems to be constantly evolving, a number of stage models have been developed and published by several international organizations, consulting firms, and academics. The intention of this paper is to synthesize e-Government stage models developed during the last decade and produce a common frame of reference for e-Government development. Models were collected through a literature search, and the different perspectives and metaphors found in these models were compared, contrasted, and synthesized. As this is a relatively new area, these models are presented as results of qualitative studies rather than quantitative and empirical. Therefore, qualitative meta-synthesis seems to be an appropriate method to reveal the underlying frame of reference for e-Government development.

Specifically, this study adopted the qualitative meta-synthesis method presented by Walsh and Downe (2005). Through an extensive literature review using the terms ‘meta-synthesis’ and ‘meta-analysis’ and follow-up ‘berrypicking’ (Bates 1989) procedure, Walsh and Downe developed and proposed a seven-step approach for the qualitative meta-synthesis: (1) framing a meta-synthesis exercise, (2) locating relevant papers, (3) deciding what to include, (4) appraising studies, (5) comparing and contrasting exercise, (6) reciprocating translation, and (7) synthesizing translation.

2.2. Detail qualitative meta-synthesis procedure for this study

The qualitative meta-synthesis procedure used in this study is outlined in Fig. 1, and explained in detail as follows.

2.2.1. Framing a qualitative meta-synthesis

As with any other research method, an appropriate research question frames the qualitative meta-synthesis. The questions that frame this study include the interrogation of underlying themes and metaphors in the e-Government stage models currently available in the literature, producing a common frame of reference that can be used for policy analysis in ideating e-Government initiatives in the future.

2.2.2. Locating relevant studies and deciding what to include

First, a conventional electronic database search is undertaken using the following combination of terms: ‘e-Government’ and ‘stage’ or ‘model’ or ‘level’ or ‘tier’ or ‘development’ against the twenty databases provided by the EBSCO Host which includes Academic Search Premier, Business Source Complete, Communication and Mass Media Complete, International Political Science Abstract, and Political Science Complete. The initial search produces 416 articles from these databases. At the first stage of screening, the abstract of these 416 articles are reviewed and some are screened out as these are not directly related to e-Government developmental stages. Removed articles are reviewed and some are screened out as these are not directly related to e-Government developmental stages. Removed articles are reviewed and some are screened out as these are not directly related to e-Government developmental stages. Removed articles are reviewed and some are screened out as these are not directly related to e-Government developmental stages.

![Fig. 1. Qualitative meta-synthesis procedure for this study. Adopted from Walsh and Downe (2005).](image)
Table 1
Comparison of stages in e-Government developmental models.

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<td># of stages</td>
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<td>2</td>
<td>Web presence</td>
<td>Info publishing and dissemination</td>
<td>Catalogue</td>
<td>Info dissemination and catalogue</td>
<td>Emerging presence and enhanced presence</td>
<td>Publish</td>
<td>Scattered information</td>
<td>Online presence</td>
<td>Billboard stage</td>
<td>Web presence</td>
<td>Cultivation</td>
<td>Expansion</td>
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<tr>
<td>3</td>
<td>Interaction</td>
<td>“Official” two-way transaction</td>
<td>Two-way communication</td>
<td>Two-way communication</td>
<td>Interactive presence</td>
<td>Interact</td>
<td>Ask questions and take part in forms and opinion polls</td>
<td></td>
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<td>Interaction</td>
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<tr>
<td>4</td>
<td>Transaction</td>
<td>Transaction</td>
<td>Service and financial transaction</td>
<td>Allowing exchange of value</td>
<td>Transactional presence</td>
<td>Transact</td>
<td>Some services online</td>
<td>Basic capability</td>
<td>Service availability</td>
<td>Partial-service delivery stage</td>
<td>Transaction</td>
<td>Maturity</td>
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<td>Cluster of common services</td>
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<td>9</td>
<td>Transformation</td>
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<td>Service transformation</td>
<td>Transformation</td>
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<tr>
<td>10</td>
<td></td>
<td>Political participation</td>
<td>Digital democracy</td>
<td>e-participation index [2003, 2005, 2008]</td>
<td>Possible democracy</td>
<td>Interactive democracy</td>
<td>e-democracy</td>
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groups of articles include those that: (1) use languages other than English, (2) deal with the levels of government, such as central and local, without referring to e-Government development levels, (3) describe tiers of technical architectures, and (4) develop ‘readiness’ indicators/measures of e-Government without specific reference to stages of development. 156 articles remain that are specifically related to e-Government stage models. At the second stage of screening, a ‘berrypicking’ procedure is used as described by Bates (1989). As the goal of this article search is to locate ‘the stage models related to e-Government development’, citation analysis is conducted searching for the original ‘stage models’, following the chain of citations. Some studies use previously presented developmental models to support their argument or as a basis for their empirical analysis. At this stage, other relevant literature – book chapters, industry reports, and white papers from international organizations – is identified and located through a recursive search of journal citations. This recursive search is augmented by the web search using Google and Google Scholar. As a result, twelve distinctive stage models are identified as listed in Table 1.

2.2.3. Appraisal studies

We have adopted, in general, Walsh and Downe’s (2005) approach except the appraisal phase. They included the appraisal phase in order to screen out low quality studies. However, it only applies to the area where many studies are accumulated, as is often the case in the fields of nursing, health care, and education. As e-Government is a relatively new topic, and the focus of this research is to identify the concepts and metaphors underpinning these stage models, the rigor of the model development process is not as critical as the relevance of the model. So, judgments were not made about the quality of reports or models, and any model that suggests the developmental stages of e-Government is included in this analysis. In other words, the appraisal phase is conducted very lightly.

2.2.4. Compare and contrast, determining how models are related or different

With the collection of models identified, each model was compared and contrasted to each other, at the stage level. Practically, this process starts from the in-depth reading of each article and report. After comprehending the author’s usage of key metaphors, phrases, ideas, concepts, and relations, key concepts are tabulated against each other generating a grid linking concepts to themes. This is a descriptive and interpretive process. As Jensen and Allen (1994) explain, this is a two-part process. The first part is accurately capturing of concepts while the second is a dialectic relating of studies to each other through the juxtaposition of the concepts identified in the process. When juxtaposed, these terms both reveal homogeneity or heterogeneity among these models as can be seen in Table 1.

2.2.5. Reciprocal translation

In the next step, the concepts and themes identified in the previous step are put into a reciprocal translation process revealing metaphors used across and among different stages. Overarching metaphors are identified linking concepts and themes. Also in this exercise, meaningful dimensions are identified across different stages. This process is reciprocal in the sense that the generation and comparison of concepts and metaphors are done repetitively among stage models, concepts, metaphors and dimensions. Sometimes reciprocal translation is relatively straightforward, especially when the concepts are homogeneous in terms of definitions and usage. At other times, they may stand in opposition to each other. Noblit and Hare (1988) describe this as ‘refutational translation.’ In other instances, they may overlap without being sufficiently replaceable. Refutation and overlap may be a sign of a potential new category which has not been identified initially. Results of this reciprocal translation are presented in Table 2.
2.2.6. Synthesis of translation

The last phase is to synthesize the translated and juxtaposed concepts and metaphors to elucidate exploratory theories, new concepts, or underlying dimensions for a common frame of reference. Clusters of concepts, themes, and metaphors are progressively re-concepts, or underlying dimensions for a common frame of reference. However, their synthesized model (model 11) is exactly the same as the model presented by Gartner Group in 2000 (model 1) except the addition of the fifth stage of ‘e-democracy,’ in which political participation is prescribed. Siau and Long describe their model as follows:

The title of the first four stages of our five-stage model is similar to that proposed by Gartner (Baum & Di Maio, 2000). However, the contents of the new model are much more comprehensive. Moreover, besides focusing on providing an integrated and personalized service, which is addressed in the Gartner’s four-stage model, our new model also emphasizes political participation and encourages democracy. These activities can be characterized by the last stage of the new model, e-democracy. In this stage, citizens and businesses are encouraged to change the original way they interact with governments. They can conveniently express their opinions and actively participate in political activities, such as online polls, surveys, conversation forums, and e-meetings. (Siau & Long, 2005, p.455)

Though Siau and Long claim that their model is richer than the previous models in terms of the contextual descriptions and content, and their explanations provide more detail – such as the ‘cultural leap’ from transaction to transformation and ‘political leap’ from transformation to e-democracy (Siau & Long, 2005, p.456) – it seems that, semantically, e-democracy is incongruent or detached from other stages of web presence, interaction, transaction, transformation, and e-democracy. Titles of the first four stages denote technical and managerial aspects while e-democracy seems to reside on a different dimension of participation. Technically, e-democracy does not have to happen after the service transformation. A simple bulletin board or opinion poll, which might be implemented at the interaction stage, would suffice as a basis for...
e-democracy. Siau and Long have used ‘interact’ in explaining the details of this e-democracy as can be seen in the above quotation. For this reason, their five-stage model is included as one model in our analysis. Our analysis can be further distinguished from Siau and Long’s is that it is more comprehensive; our study covers twelve models compared to Siau and Long’s coverage of five models.

3.2. Comparing and contrasting features of stages

A focus group of three experts compared the stages in these models against each other, using a semantic comparison of the descriptions of each stage in these twelve models. Ten specific stages are identified as numbered in the leftmost column of Table 1. Actual comparison and contrast processes, along with the metaphors and themes identified throughout the processes, are described below. Concepts, metaphors, and themes are italicized.

3.2.1. Stage 1

Model 5 is exceptional in that it presents ‘e-mail and internal network’ as the first stage. No other model explicitly includes e-mail system and internal network as the first stage. It seems that model 5 is more oriented towards hardware level networking than any other models. Also, model 12 contains the use of intranet as a critical component in their stage definitions of cultivation and extension. In this regard, stage 1 can be defined as ‘basic networking’ that may be a technical prerequisite for later stages.

3.2.2. Stage 2

Detail stage 2 concerns ‘presentation of information,’ and it seems that all of the models include a publishing/cataloguing/presence stage (as can be seen across the row of detail stage 2). Despite different names being used, this suggests that agencies identify the provision of a website to post information for the public as the first initiative of e-Government development.

3.2.3. Stage 2

The third detail stage concerns interaction (technically, the second for all but the model 5). Following the stage of simple presentation of information, stage 3 refers to two-way communication: asking questions, and taking part in forums and opinion polls. 9 out of 12 models placed ‘interaction’ as the stage after the information stage. Interestingly, model 12 does not specify two-way communication as a separate stage, but the description of the cultivation stage implies communication, though it is referred to as ‘gate-keeping.’ Andersen and Henriksen (2006) elaborate on this stage:

This stage shelters horizontal and vertical integration within government, limited use of front-end systems for customer services, and adoption and use of Intranet within government. From the user point of view, the internet interface to the public institution in this phase can be experienced as yet another means of enforcing gate-keeping and filtering the users. By gate-keeping, the employees are protecting against stress and they are able to control the information flow. The downside is that the public institution in this phase will be experienced as inaccessible, have long case processing time, and no accessibility for accessing the processing of requests. (p.242)

Historically, Gartner’s four stage model (model 1) is the first one that includes the interaction as a second stage of e-Government development. However, Deloitte’s six-stage model (model 2), which came out almost at the same time as the Gartner model, does not include interaction as second stage. They called this stage ‘official two-way transaction,’ emphasizing not only the bi-directionality of the communicative action between government and citizen, but also the transactions between them. That is why the cell boundary of the two-way transaction in Deloitte model (model 2) is drawn to connect to the next stage 4 (transaction) in Table 1. The concept of two-way transaction seems to have changed over time into two-way communication (model 4 and 5) and interactivity (models 6, 7, 8 and 9).

3.2.4. Stages 4, 5, and 6

Detail stages 4, 5, and 6, together, are primarily related to ‘transaction’ after the interaction stage, except the ‘two-way transaction’ mentioned in the Deloitte model which combines transaction with communication. When it comes to transaction, the comparison becomes more complicated as some model delineates sub-stages of transaction, based on somewhat different foci. Detail delineation of these sub-stages can be found in model 9, which differentiates between basic capability, service availability, and mature delivery and identifies each as a separate stage. Models 1, 3, 4, 5, 6, 7, 11, and 12 treat the transaction stage as a whole, though different terminology are used (‘service and financial transaction’ in model 4, ‘allowing exchange of value’ in model 5, and ‘maturity’ in model 12).

Instead of using the transaction metaphor, Deloitte model (model 2) is the first one that uses ‘portal’ in naming this stage which nonetheless implies an integrated transaction service. Their description of portal service includes ‘universal service’ as an important component. The term ‘portal’ is also used in models 8 and 10. While models 8, 9, and 10 delineate the incremental increase of the number of services provided through the web, model 2 separates multipurpose portal implementation from portal personalization. Description of the multi-purpose portal connotes the integration of operations while the portal personalization implies some level of service differentiation. As no other models have this differentiation, these two cells are turned sideways. Also, the explication of personalization of portal seems to reveal that they are concerned about ‘services to individual citizen’ perspective.

3.2.5. Stages 7 and 8

Detail stages 7 and 8, together, seem to be related to ‘integration’ as an important development after the transaction stage. Layne and Lee’s four-stage model (model 3) is the first one that separates vertical and horizontal integration. To clarify, vertical integration refers to the system integration of similar functionality across different levels of government — local, state and central, while horizontal integration refers to the system integration among different functions of government. Layne and Lee have taken into consideration the levels of government and the functional specialization of government services. They also suggest that the vertical integration would come first, followed by the horizontal integration and that this order is a result of organizational reasons rather than technical reasons. Their argument is based on the interview results of twenty governmental officers. According to these interviews, most officers think that the vertical integration across different levels of government within a similar function is much easier than the horizontal integration across different functions, as functional specifications are similar and processes are connected within the similar function across different levels of government. Also, in most cases, as government budgets are compartmentalized by functions, system funding flows from higher level government towards lower level within similar functions, rather than across different functions. Therefore, vertical integration is easier than horizontal integration. It seems clear that the Layne and Lee model contains the technological and operational perspective rather than the service and citizen perspective of e-Government.

Interestingly enough, Andersen and Henriksen (2006) describe their ‘revolution’ stage using the term data mobility, which implies technical ‘data integration’ among different systems and different departments:

This stage is characterized by data mobility across organizations, application mobility across vendors, and ownership to data transferred to customers. In this phase, the employees’ actions
can be traced through the internet and there is information available online about progress in, for example, case handling. This is possible through intra and extra organizational mobility of data and services. (p.243)

3.1.6. Stage 9

The next detail stage concerns ‘transformation.’ Gartner Group (Baum & Di Maio, 2000) initially proposed a four-stage model including transformation as the last stage. In our literature search, their model is the first attempt to define stage models for e-Government development. In their terms, the transformation stage reflects the necessity of the operational process transformation in order to provide more efficient government service. To some degree, web presence, interacting, and transforming (stages before transformation in the Gartner model) are representing the front-office operations that deal directly with external entities, such as citizens and businesses.

Compared to these front-office operational stages, the transformation stage refers to the back-office streamlining. In our literature search and analysis, we have found Siau and Long (2005) have clearly adopted this four-stage model with an additional stage at the end: e-democracy. The Accenture model (model 9), though different stage names are used, seems to inherit characteristics from the Gartner model. Online presence is similar to web presence. Basic capability, service availability, and mature delivery are the detail lineation of the transaction stage in other models, while mature delivery contains a bit of integration perspective. In their model, the transformation is more specifically defined as the service transformation. As an empirical study of Gartner’s four-stage model, Balutis (2001) conducted a survey of 1300 government agencies and concluded that 57% of e-Government initiatives disseminate information via web and 34% allow transactional activity while only 4% of the initiatives are ‘transforming government.’

The stage models that include transformation as an actual stage emphasize either business transformation or service transformation. Interestingly, when transformation is emphasized, it seems that integration is de-emphasized in these models. Models 1, 9, and 11 include transformation stages while ‘integration’ is not even mentioned as a stage. Comparatively, models 2, 3, 4, 6, and 8 present ‘integration’ as the critical concept, but ‘transformation’ is not mentioned at all. It is our conjecture that when the model is focused on ‘integration,’ it requires a technology and operation oriented perspective; and when the model is more focused on ‘transformation,’ it is also more geared towards the service and organization perspective.

It should be noted here that the United Nations has published revised stage models beginning in 2001. The first four stages – emerging presence, enhanced presence, interactive presence, and transactional presence – were all the same from the beginning, but the name of the last stage has evolved from seamless presence (2001) and networked presence (2003 and 2005) towards connected presence (2008). However, their description of this last stage does not seem to go beyond integration. Their description of ‘connected’ does not specifically contain the services or operations transformation mentioned in other models.

Also, though the transformation stage is missing in the Layne and Lee model (model 3), they use the word ‘transformation’ in describing the integration:

- Vertical integration. This stage initiates the transformation of government services rather than automating its existing processes. It focuses on integrating government functions at different levels, such as those of local governments and state governments.
- Horizontal integration. This stage focuses on integrating different functions from separate systems so as to provide users a unified and seamless service (Layne & Lee, 2001).

3.2.7. Stage 10

Detail stage 10, which is described as democracy or participation, is found in models 4, 5, 6, 8, 10, and 11. Since 2003, the United Nations began to include an e-participation index in their report, separate from the developmental stages. This index presents different stages from a different perspective and includes: e-information, e-consultation, and e-decision making. It seems that they treat e-participation – citizens’ participation in the political process of government – as a separate dimension. Though both Hiller and Belanger’s model 4 (2001) included political participation and Scott’s model 5 (2001) the digital democracy as the last stage of e-Government development, they both describe this stage as involving online voting and opinion survey. The UN model is the first one that proposes citizen’s participation as a dimension separate from operations or services or technology perspective of e-Government. Siau and Long (2005) describe ‘e-democracy’ as follows:

This is a long-term goal for e-Government development. By offering tools such as online voting, polling and surveys, governments attempt to improve political participation, citizen involvement, and politics transparencies. At the same time, e-Government gradually changes the way in which people make political decisions (p.455).

3.2.8. The Anderson and Henriksen model

It is worth noting Anderson and Henriksen’s model (model 12) as their perspective is somewhat different from the other models. Their stage model takes the approach of a ‘progressive growth model’ from cultivation, through extension and maturity towards revolution. Their semantics contain somewhat political and historical nuances. Also, they mention horizontal and vertical integration in describing the initial stage of e-Government: cultivation. Their description of cultivation continues with the use of the intranet and limited citizen service. It seems that their initial stage is more focused on internal computerization and promotion of the benefits of computerization, henceforth the stage is named as cultivation. Their concept of integration seems to be limited to the internal operations of government as the system, not taking into account different levels of government or different functions in the government. They seem to propose the internal database integration as the prerequisite for extending services externally; henceforth the second stage is named as extension.

In Anderson and Henriksen’s model, extension refers to the stage where personalized web user interfaces are provided for customers which are citizens and businesses, meaning that the integrated e-Government system extends itself towards the customer for service. Then, the third stage of maturity is described as the stage where the intranet and internet is merged in order to streamline customer service processes in connection with the internal operation of the government. Clearly, this model is taking an internet-centric view in staging the e-Government. They characterize the last stage of revolution by the data mobility across organizations and applications, similar to the seamless service in UN model (model 6).

Also, it should be noted here that Andersen and Henriksen used ‘activity centric applications’ as well as ‘customer centric’ applications as separate dimensions in explaining the developmental stages of e-Government. However, they didn’t use these dimensions for differentiating stages, though these dimensions were used in descriptions. It seems that the description of ‘activity centric’ is comparable to the theme of operation while ‘customer centric’ is comparable to the theme of citizen/service perspective.

3.2.9. Summary of comparing and contrasting features of stage models

Two themes are identifiable in our cross-model comparison study. One theme relates to the services of government towards citizens.
Transaction, interaction, participation, and democracy are the key concepts that belong to this category. As the terminology of democracy refers to a specific type of political decision making, it is replaced, from this point, by a more neutral term of ‘involvement’ which appears throughout the various models’ descriptions of e-democracy. The other theme is related to technology and/or operational characteristics of government. The concept of integration and transformation seem to belong to this category, as most of descriptions are related to technological perspectives with respect to government operation.

As presented in Table 1, 10 detail stages are identified and derived from the analysis. However, the first detail stage, ‘e-mail system and internal network,’ which is only presented in model 5, would not be considered as a stage. Other models presuppose the network infrastructure already exists. Also, the final detail stage, which includes participation and democracy as key concepts, was identified as another dimension (citizen/service) separate from the operational/technology dimension. Among the remaining 8 detail stages, 4, 5, and 6 can be clustered as transaction while 7 and 8 can be classified as integration. As a result, five keywords for stages are identified: information, transaction, interaction, integration, and transformation.

In addition, the concepts of streamlining and process management are derived from the descriptions of stages during the analysis. Though these terms are not used as the actual names of stages in these models, they appear regularly throughout the analysis. The term ‘streamlining’ appears in many descriptions of the transformation stage such as ‘re-engineer existing processes by reducing bottlenecks and intermediaries’ (model 11), ‘improve customer service by removing any problems the user are facing’ (model 7), and ‘transform the current operational processes to provide more efficient, integrated, unified, and personalized service’ (model 1).

As transformation connotes an in-depth facelift of actual government operations, streamlining can be considered to be a stage that exists prior to the actual transformation, and be defined as a stage in which people strive to correct erratic processes which may not be adequate for information technology and systems. With regard to process management it seems that transformed services are still subject to changes due to environmental factors. Technically, implemented processes and related e-Government systems would better be reconfigurable so that these changes can be easily adopted in the systems; henceforth, ‘process management’ is placed as the final stage of e-Government in operation/technology perspective.

3.3. Reciprocal translation: identifying underlying concepts and themes

The next step of the qualitative meta-synthesis is the reciprocal translation—translating the studies into one another. In this study, the concepts and stages are compared and contrasted against each other and against two dimensions found in the comparison exercise. Table 2 shows a reciprocal translation of the concepts and themes, compared against the stages provided in each of the twelve developmental models. Tick marks in the cells represent the existence of the concepts in the model. Similarities and differences among these stage models are identified by comparing and contrasting key concepts against each other, positioning each concept on two dimensions identified and revealing hidden concepts in this translation process: streamlining and process management.

First of all, the initial stage in every model, denoted as ‘information’ in this study, seems to relate to both citizen service and technology/operation perspective. Second, interaction and transaction stages seem to be more related to citizen/service dimension while integration and transformation are more related to operation/technology dimension. Third, streamlining, a newly identified concept in the translation process seems to be positioned between integration and transformation stages; as streamlining of process requires integration of underlying technology while transformation connotes process streamlining. Fourth, another newly identified concept of process management seems appropriate to be positioned after transformation, as transformation is not a one-time process but an evolving process that should be managed properly.

The resulting list of concepts and themes with their reciprocal relationship are presented in Fig. 2.

3.4. Synthesis of translation: relating concepts and themes, revealing underlying metaphors

This is the last step of the qualitative meta-synthesis. In this step, the metaphors underlying the concepts and themes are explored. As for this study, this step is designed for the confirmation of preliminary findings of previous reciprocal translation. First, the initial seven concepts (information, interaction, transaction, integration, transformation, participation, and involvement) related to the stage model identified above are given to a panel of three experts, asking them to sequence and classify them following the themes identified. With little reservation, they have confirmed that interaction, transaction, participation, and involvement are from the citizen/perspective while integration and transformation, are from the operation/technology perspective. In this process, two technology experts identified streamlining as an intermediate stage between integration and transformation while process management is a general term used for denoting the stage after transformation, henceforth the number of stages to be dealt with would be nine from this point. Second, they are asked to sequence these concepts in terms of developmental stages along with these two themes. In this process, definitions and explanations in the original document are provided for reference. After 3 h of deliberation, they come up with five metaphors across these two themes and five concepts. Table 3 summarizes the metaphors with the definitions and corresponding stages. Five metaphors emerged through this synthesis process: presenting, assimilating, reforming, morphing, and e-governance.

3.4.1. Presenting stage metaphor

The presenting stage metaphor refers to the simple presentation of information without much functionality. This metaphor embraces the stage of information that includes cataloguing, publishing, scattered information, and billboard stage, etc. (see Table 1). This metaphor can be positioned on citizen/service dimension and operation/technology dimension at the same time.

3.4.2. Assimilating stage metaphor

The assimilating stage metaphor, which consists of interaction and integration, refers to the assimilation of basic computing ability (processes and services) with real world situations. From the perspective of citizen and service, assimilation means the emergence of interaction based services while scattered information bases and application are being integrated. Interaction from the citizen’s perspective requires integration of operation and technology. Without integration, seamless interaction may not be realizable in the information space. In this regard, both integration and interaction represent the ‘assimilation’ of informational processes and services with real world ones.

3.4.3. Reforming stage metaphor

The reforming stage metaphor, which consists of transaction and streamlining, refers to the reformation of business processes of government (streamlining) — changing their business processes befitted with the underlying information technologies and systems, and the reformation of how they conduct their business with citizens (transaction). During the reformation stage, the processes and services in the real world would begin to be reformed, thereby reflecting the characteristics of ‘information’ space that are distinguished from characteristics of real world situations. On the operations and technology side, re-engineering or streamlining of
services and processes will be conducted while the technology may provide new ways of actual transaction on the citizen and services side. As a result, the political and administrative processes and services are reformed. This reformation of real world services and processes are targeted towards an increase in efficiency.

3.4.4. Morphing stage metaphor

*Morphing* refers to the changes of the shape and scope of processes and services that take place both in information space and in the real world, fitting for effectiveness. As the reformation of real world processes and services progresses, *morphing* of services and operations tend to follow as these two worlds are being intertwined resulting in a change of the ‘business’ model of government itself. Once the actual transaction capabilities are realized in the information space and citizens and officials begin to see the possibility of process and service streamlining government operations will be transformed into newer configuration of services and processes, and, the theory follows that citizens will become more participative than prior to the morphing, as new possibilities found during the reforming stage are actualized. For example, when routine services are delegated to computers and networks through assimilation and reformation, the tasks of government officers would be transformed into more knowledge-based duties and service-oriented tasks that would more directly address citizens’ needs. This is the in-depth transformation of government business itself. Government processes and services may be *morphed* into completely different processes and services. Once the routine-type government services, such as application and licensing, are automated and delegated to information technologies, the functions of governments will be more focused on planning and developing new services for the benefit of citizens. In terms of the citizen and service side, this would mean more active participation beyond simple interaction and conduct of ordinary transactions. This stage is targeted towards effectiveness beyond efficiency of governing processes and services.

3.4.5. e-Governance

*e-Governance* is the metaphor for the last stage of e-Government development. Once the *morphing* of services and operations are in progress, the norm of government and governance would begin to change. Ideally, citizens would be able to get more involved in political and administrative decision-makings while these decisions, technologically and operationally, would be implementable almost real-time with reconfigurable process management facilities. In this regard, involvement and process management goes hand in hand. Involvement on the citizen’s side necessitates ad-hoc decision making concerning services and operations, and in order to realize the results of ad-hoc decision making on the citizen side would require the ad-hoc reconfigurability of the service processes in terms of component technologies and operational components. Thus, the metaphor for the ideal last stage is titled e-governance. This is an ideal stage, where the business processes of administrative and political services can be reconfigured almost real-time based on citizens’ actual involvement in decision-makings of the government, actually utilizing the full capability of advanced information and communication technologies.

4. Discussion: a common frame of reference for e-Government stage models

Twelve e-Government stage models are identified from the literature, and a qualitative meta-synthesis analysis is conducted against these stage models. Concepts are identified and extracted from the descriptions of stages in the models of e-Government and themes underlying the stage models are identified via semantic analysis. Through reciprocal translation and synthesis of translation, the underpinning metaphors are identified and developed. The resulting common frame of reference for e-Government stage models, having synthesized the results, can be represented as a diagram as in Fig. 3.

It seems that from the content analysis, two themes are apparent: operation/technology and citizen/service. Though these themes are closely related to each other, this study distinguishes them from each other. These themes are presented as x and y axes in the diagram. The relationship between phases of each theme indicates five separate, but interrelated, metaphors: *presenting, assimilating, reforming, morphing* and *e-governance*. These metaphors are signified by bold characters on diagonal of the diagram. The *presenting* stage metaphor does not contain separate themes as it represents a simple information presentation, but other metaphors contain two clearly
differentiated themes: citizen/service and operation/technology. The assimilating metaphor embraces the concepts of interaction and integration in parallel, while the reforming metaphor the concepts of transaction and streamlining. The morphing metaphor contains the concepts of participation and transformation hand in hand, while e-governance contains the concepts of involvement and process management.

Existing models of e-Government development seem to be fragmented in terms of perspectives (themes and metaphors, in our terms) as revealed in the reciprocal translation, and none of these models is comprehensive enough to be an anchoring frame of reference for translation among the models and stages. Perspectives of technology, organization, management, and politics all reside in a fragmented manner across different models. By conducting qualitative meta-synthesis of twelve of the most popular stage models for e-Government development, a common frame of reference for e-Government stage model is proposed here. The common frame of reference proposed here is simple, but at the same time comprehensive enough to include all the features of previously proposed stage models, and furthermore, it may allow for the translation of stages and other details among these models. This common frame of reference can be used in explicating all other models in the literature and is also expected to capture the visionary path of e-Government development towards e-governance where citizens are actively involved in political and administrative decision making. These decisions can be implemented in real time through the process management facilities in the e-Government system.

A note of caution is due at this point with regard to the use of this common frame of reference. Technologically, this is an accumulative model. The last metaphorical stage of e-governance includes or assumes the implementation of previous metaphors of morphing, reforming, assimilating, and presenting. Without implementing the component of morphing reflecting almost real-time synchronization of real world processes with information world features, the reconfiguration of process management would not be technologically possible. As a result, the later stage of e-Government may contain components embraced by the earlier stages present in e-Government systems.

However, from a technology standpoint, this is not a normatively rigorous and progressive model. Not every government has to go through stage one to stage five in terms of implementing e-Government related technologies or systems. For example, one government might make transition directly from providing simple information (presenting) to a complex and complete morphing stage which may include interactive and transactional services and processes. This may happen frequently as information technologies and systems are easily replicable and reproducible. With the help of other governments or consultants who have experience, a government can ‘import’ an advanced e-Government system hoping to jump ahead in terms of developmental stages. But when intermediate stages are skipped over, care should be taken. Though the skipping is possible in terms of technology, it would not be easy to implement changes in services and processes on the real world side (on citizen/service dimension). An advanced stage system relies upon concepts from earlier stages such as interaction, streamlining, integration, and transaction as well as presentation, and these components are not only technological but also organizational and citizen-related. This common frame of reference may assist administrators in terms of planning for structural and organizational changes on top of technological advancements, even when this kind of jump is planned.

5. Conclusions and future research directions

This study employs a qualitative meta-synthesis approach to compare and contrast twelve different e-Government stage models. Qualitative meta-synthesis is a relatively new approach in synthesizing results of qualitative studies. Based on a systematic comparison of twelve stage models of e-Government currently available in the literature, a common frame of reference for e-Government development is developed and presented as a result. This frame of reference consists of five metaphorical stages: presenting, assimilating, reforming, morphing and e-governance which can be decomposed into two themes (citizen/service and operation/technology) with nine elementary concepts (information, interaction, integration, transaction, streamlining, participation, transformation, involvement and, process management).

The result of this study contributes to the theory of e-Government development. This is the first comprehensive theoretical model which embraces technological, organizational, and citizen service perspectives all together, combining metaphors, themes and concepts found in 10 years’ worth of research and practitioner literature on developmental models of e-Government. This study provides a synthesized conceptual framework that can be used by future researchers to evaluate different stages models. Furthermore, it provides both a road map and various possible starting points for thinking about strategic directions for institutions interested in implementing e-Government projects.

The concept of e-Government involves an abundant pool of organizational, managerial, and technological issues, not only because it is a new area but also because it is a complex phenomenon involving various stakeholders and technologies. The strength of stage theory lies in its guiding role in thinking about the nuances of progression rather than its assertion of a definitive path model. The frame of reference presented as a result of this study will provide a good departure point for future work in e-Government theory, both academically and practically.

In this regard, it should be noted here that we intentionally used the term ‘metaphor’ in our frame of reference, stressing that these metaphors don’t have to be distinctive from each other. These metaphors represent distinctive features that may present themselves in a continuous process of e-Government development, but not as distinctive stages. These metaphorical stages should be used as indicators or a base road map for cognitively positioning our own efforts on the horizon of the future development of e-Government.
In looking ahead to future research, many paths may be taken from this point. First, this model needs further elaboration. Exploratory case analyses and phenomenological studies would be necessary in supporting or enhancing this theoretical frame. Empirical investigations into the distinctiveness of the components of the frame would also be needed to further the theoretical development, both at the macro and micro level. Also, when e-Government implementation progresses following the two themes presented in this frame, practitioners should be interested in understanding the relative weights between citizen and service perspective and operation and technology perspective, in terms of importance or efforts that needs to be put in. In the long run, researchers might be interested in exploring possible factors that may lead e-Governments to move from one stage to another in its efforts of advancing e-Government. Action research may be necessary in order to further investigate how an organization moves from one metaphorical stage to another.

As a caveat regarding the often used stage model, it should be reasserted here that not all stage models are evolutionary (King & Kraemer, 1984). The common frame of reference presented in this research may not be evolutionary but rather accumulative in the sense that some metaphorical stages may technologically embrace or assume other metaphorical stages. However, the organizational revision or transformation underlying these stages is not negligible but critical for the successful growth of e-Government systems. Practically, this stage theory of development implies that e-Government would not be possible with one-shot efforts for successful development and implementation; e-Government implementation requires continuous attention in terms of resources. This frame of reference suggests that the system – especially an e-Government system – needs to be taken care of throughout the various stages and ‘nurtured’ in order to be effectively and efficiently used in public administration.

References


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