E-Governance Maturity Models: A Meta-ethnographic Study

Sayantan Khanra[*]
Indian Institute of Management Rohtak
NH-10 Southern Bypass, Rohtak-124010, Haryana, India

Rojers P Joseph
Indian Institute of Management Rohtak

NH-10 Southern Bypass, Rohtak-124010, Haryana, India

Abstract

This study aims to identify the key dimensions that constitute a mature e-Government ecosystem through a systematic review of the existing e-Governance maturity models and a meta-ethnographic approach. The study identifies online presence, facilitating interaction, integrated ecosystem, online payments, and participatory e-Democracy as the five key dimensions of mature e-Government systems. Summarizing the extant research on the e-Governance maturity models, the study contributes towards extending the existing literature and provides valuable information useful to the practitioners.

Keywords: E-Governance, Integrated Ecosystem, Maturity Models, Meta-ethnography, Online Payments, Participatory e-Democracy

1. Introduction

E-Governance, in general, necessitates the strategic use of information and communication technology (ICT) to transform governance processes involving the relationships among an arm of government, the citizens it serves, the businesses related to it and other arms of government.[1] In the twenty-first century, e-Governance has shown the potential to revolutionize the world economy through the cost-effective delivery of public services in efficient manner and empower citizens by engaging them directly in the process.[2,3] In particular, e-Governance is dedicated to delivering public services through electronic channels, engaging different social actors directly in the process of making decisions and/or policies, and regulating the influences of such actors, if required.[1] As many countries around the world are deploying significant amount of resources to roll out e-Government services, it is important to follow an informed approach to assess the status of those services to aid their continuous improvement.[4,5,6]

An established approach for the purpose is to follow a maturity model that systematically documents and provides guidance to the concerned parties to develop and enhance capability levels.[7] The extant literature suggests that numerous attempts have been made to develop maturity models for e-Governance by both academicians[8-26] and practitioners[27-34]. These models are scattered among various sources such as academic journals[9,10,11], books[15,20], conference proceedings[12,21,24] and organizational reports[27-34], having different focus from one another. Therefore, this paper aims to perform a systematic review of the available maturity models for e-Governance in order to summarize the key dimensions that constitute a mature e-Government ecosystem. We have adopted a meta-ethnographic approach to meet the objective of this study, which requires the translation of a concept from one study to its counterpart in another by interpreting findings from multiple studies.[35]

[*] *E-mail: sayantan.khanra@iimrohtak.ac.in*

Prior to reviewing the e-Governance maturity models, it is important to introduce the concept and we do it in the second section of this paper. The third and fourth sections, in that order, describe the method of conducting a meta-ethnographic study and report the results. The fifth section discusses the study findings and the sixth section, the study implications. This is followed by a section on the limitations of this study and scope for future research. The eighth and final section concludes the paper.

2. Background

A maturity model can be defined as a set of systematically documented stages, structured to guide the development of capabilities in order to achieve the specified objectives of an organization.[7] Here, maturity implies an evolutionary process of demonstrating certain abilities, whereas a maturity model is a logically outlined evolutionary path. This evolutionary path is commonly designed with a top-down approach where each of the predetermined number of stages is dedicated to incorporate certain characteristics and meet specific assessment objectives or milestones.[36] However, this approach is often criticized for strongly relying on initial assumptions and lacking sound foundation in design method.[7] Therefore, scholars are also advocating for bottom-up approaches of designing maturity models, where desired characteristics and assessment objectives are determined first and, then, they are clustered in certain focus areas, allowing the clusters to follow their own evolution path.[37] In this study, we have followed a bottom-up approach of designing maturity models to the extent of identifying key focus areas.

Since the introduction of the concept of maturity models in the 1970s, it has been applied to a variety of fields.[38,39] However, in the context of information systems, the most widely recognized one is the Capability Maturity Model (CMM) that is originally intended to evaluate the software subcontractors of a military defense organization. This model was developed at the Software Engineering Institute, Carnegie Mellon University, as an outcome of a research funded by the Department of Defense, United States.[40] This model is constituted by five stages – namely, initial, repeatable, defined, capable and efficient – and the stages are characterized by key process areas that are evaluated by factors like goals, commitment, ability, measurement, and verification.[40] Over time, CMM has demonstrated strong influence on the literature related to the e-Governance Maturity Models. We have systematically reviewed the extant literature and presented our findings in the following two sections.

3. Methodology

The meta-ethnography approach of systematic review proposed by Noblit and Hare[35] is arguably the most used synthesis model for the inductive interpretation of an existing body of knowledge.[41] Meta-ethnography is a thorough qualitative synthesis method to select, analyze and interpret studies from the extant literature related to a focused research objective in order to deliver new insights that complement the extant literature.[42,43] The meta-ethnography approach involves seven sequential phases, where the first one is about getting started and identifying an intellectual interest. The next two phases are dedicated to gathering literature relevant to the intellectual interest and examining the select studies with proper attention to details so that the texts can be aptly synthesized. Determining how the studies are related to each other so that key concepts may be juxtaposed is the theme of the fourth phase which is followed by a phase that involves translation of the studies into one another based on found analogies. In the sixth phase, translations are synthesized such that important concepts are grouped and passed on to the final phase where the synthesized findings are concisely expressed.

3.1. *Identification of Relevant Studies*

As mentioned previously, the intellectual interest of our study is to identify the key dimensions that constitute a mature e-Government ecosystem. To meet that objective, we explored the extant literature to identify relevant studies in the field. In the process, we adopted the rigorous method that Abedin *et al.*[44] followed in identifying resources. First, we conducted a search using the term 'e-Governance maturity model' on Google Scholar and scanned the first hundred search results to list down the commonly used related terms such as 'e-Government services', 'e-Government system' and 'e-Government network' for e-Governance; and 'development model', 'stage model' and 'phase model' for maturity model. Then, we conducted another round of search on three databases – ProQuest, Science Direct and Google Scholar – with a combination of terms, namely 'e-Governance' or a related term, and 'maturity model' or a related term between 1990, the year CMM was introduced, and 2018. A total of 256 papers were identified after eliminating the duplications.

3.2. *Selection of Studies*

After examining the abstracts of the 256 identified papers, we filtered out 214 papers. Further, after going through the full text of the remaining 42 papers, 23 of them were excluded from the study. Therefore, a total of 237 papers were excluded based on the following exclusion criteria:

- not available online,
- not published in a peer-reviewed journal,
- not focusing on proposing or developing an e-Governance maturity model,
- not applicable to the context of our study.

A couple of studies that are excluded from the sample after careful consideration may illustrate how the last two exclusion criteria are applied. First, one study suggested several tips for successfully designing and implementing e-Government initiatives[45]. However, the study was excluded from the sample for not proposing or developing a maturity model. Second, another study developed a comprehensive model to measure user satisfaction in the case of e-Government services[46], which essentially differs from an e-Governance maturity model. At the completion of the exclusion process, we searched the lists of references of the nineteen shortlisted papers and discovered eight reports relevant to our research objective, authored by the practitioners. Thus, we finally had a total of 27 relevant publications to proceed to the next phase of the meta-ethnography approach. The e-Governance maturity models offered by the practitioners and academicians are chronologically arranged in tables 1 and 2, respectively.

3.3. *Juxtaposition of Key Concepts*

Carefully examining the select papers and reports, we found that the number of stages included in the maturity models may range from two to six. For example, Reddick[16], World Bank[32], Chandler and Emanuel[12], Moon[13] and Wescott[11] proposed a maturity model with two, three, four, five and six stages, respectively. The focus areas or the constructs of each stage proposed by each of the studies are presented in table 1 and table 2. Interestingly, initial attempts to develop e-Governance Maturity models were made by consultancy firms such as Deloitte[27] and Gartner[28]. Among the academicians, Hiller and Belanger[8], Howard[9], Layne and Lee[10] and Wescott[11] were the pioneers in developing e-Governance Maturity models.

4. Results and Findings

The previous section presented how the first four phases of the meta-ethnographic approach proposed by Noblit and Hare[35] are applied in this study. In this section, we discuss the findings corresponding to the rest of the phases.

4.1. *Translation of Key Concepts*

In the fifth phase of the meta-ethnographic approach, we interpreted all the constructs proposed in the maturity models under consideration. It may be noted that a construct in one particular stage in a maturity model coveys similar meaning as some other constructs in one or more stages in other maturity models do. For instance, the construct 'Web Presence'[18] refers to the availability of static and limited information about government policies and services, as do the constructs 'Information'[8] and 'Bill-board'[17] and 'Partial Service Delivery'[17]. Thus, we attempted to translate constructs of one maturity model into that of another, and vice versa, based on our interpretation of the explanation provided for each of the constructs.

Table 1: e-Governance Maturity Models Offered by the Practitioners

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Deloitte[27]	Information Publishing	Official Two-Way Transaction	Multi-purpose Portal	Portal Personalization	Clustering of Common Services	Full Integration and Enterprise Transaction
Gartner[28]	Web Presence	Interaction	Transaction	Transformation	–	–
United Nations[29]	Emerging Web Presence	Enhanced Web Presence	Interactive Web Presence	Transactional Web Presence	Seamless/ Networked Web Presence	
UK National Audit Office[30]	Basic Site	Electronic Publishing	e-Publishing	Transactional	Joined-Up e-Governance	–
Accenture[31]	Online Presence	Basic Capability	Service Availability	Mature Delivery	Service Transformation	–
World Bank[32]	Publish	Interact	Transact	–	–	–
Cisco[33]	Information Interaction	Transaction Efficiency	Transformation Citizen Centric	–	–	–
United Nations[34]	Emerging Information	Enhanced Information Services	Transactional Services	Connected Services	–	–

4.2. *Synthetization of Key Concepts*

In the sixth phase of the meta-ethnographic approach, we found that 114 out of 115 constructs could be assigned to five distinct groups. The first group, attributed to 'the online presence' of e-Government services, is constituted by 31 constructs from the 26 maturity models examined. The second group, which conveys the concept of 'facilitating interaction' between government agencies and the users, is made up of 22 constructs, while 26 constructs in the third group

Table 2: e-Governance Maturity Models Developed by the Academicians

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Hiller and Belanger[8]	Information	Two Way Communication	Transaction	Integration	Participation	–
Howard[9]	Publish	Interact	Transact	–	–	–
Layne and Lee[10]	Catalogue	Vertical Integration	Transaction	Horizontal Integration	–	–
Wescott[11]	Setting Up an Email System and Internal Network	Enabling Inter-organizational and Public Access to Information	Allowing Two-Way Communication	Allowing Exchange of Value	Digital Democracy	Joined-Up Government
Chandler and Emanuel[12]	Information	Interaction	Transaction	Integration	–	–
Moon[13]	Simple Information	Two Way Communication	Service and Financial Transactions	Horizontal and Vertical Integration	Political Participation	–
Netchaeva[14]	Online Websites	FAQs And Email Systems	Forums and Opinion Surveys	Online Services	One Stop Shop	–
Windley[15]	Simple Website	Online Government	Integrated Government	Transformed Government	–	–
Reddick[16]	Cataloguing	Transactions	–	–	–	–
West[17]	Bill-board	Partial Service Delivery	Portal	Interactive Democracy	–	–
Siau and Long[18]	Web Presence	Interaction	Transaction	Transformation	E-Democracy	–
Andersen and Henriksen[19]	Cultivation	Extension	Maturity	Revolution	–	–
Almazan and Gil-Garcia[20]	Presence	Information	Interaction	Transaction	Political Participation	–
Shahkooh[21]	Online Presence	Interaction	Transaction	Fully Integrated and Transformed e-Government	Digital Democracy	–
Kim and Grant[22]	Web Presence	Interaction	Transaction	Integration	Continuous Improvement	–
Lee[23]	Presenting	Assimilating	Reforming	Morphing	e-Governance	–
Chen *et al.*[24]	Catalogue	Transaction	Vertical Integration	–	–	–
Alhomod *et al.*[25]	Presence on the Web	Interaction between the Citizen and the Government	Complete Transaction Over the Web	Integration	–	–
Lee and Kwak[26]	Initial Conditions	Data Transparency	Open Participation	Open Collaboration	Ubiquitous Engagement	–

highlight the need to build an 'integrated ecosystem' across various e-Government services. Twenty constructs on the provision of 'online payments' formed the fourth group, while participatory e-democracy emerged as the theme of the fifth group comprising 15 constructs. The formation of these groups is presented in table 3, where the constructs are arranged alphabetically. Notably, 'Basic Capability'[31] referring to the security and certification of e-Government services does not belong to any of the five groups, and hence, is an outlier.

It may be noted that the synthesisation process prioritizes the knowledge offered by the constructs over the difference in opinion among the researchers about their appearances. Therefore, different constructs appearing in different stages of different maturity models

may belong to the same group. For example, 'Integration'[8] and 'Joined-up Government'[11] both belong to the third group despite appearing in the fourth and sixth stages in the respective maturity model. Further, a single construct may appear in different stages of the different maturity model. For instance, the construct 'Transaction' appears in the second and third stage of the maturity models proposed by Chen *et al.*[24] and Hiller and Belanger[8], respectively. On a different note, more than one construct from a maturity model may belong to the same group. For example, three constructs, namely,

'Multipurpose Portal', 'Clustering of Common Services' and 'Full Integration and Enterprise Transaction', appearing in the model by Deloitte[27] are in the third group.

4.3 Synthesized Findings

To concisely report our findings, we noted down the definition(s) and explanation(s) provided for each construct within a group. Many constructs belonging to the same group provide similar, if not identical, information about their meaning. Thus, we refined the information by eliminating repetitive points within each group. Then, we summarized the filtered information

such that it defines or explains the reinterpreted concepts of the five groups. Subsequently, we named the groups as 'Online Presence', 'Facilitating Interaction', 'Integrated Ecosystem', 'Online Payments' and 'Participatory e-Democracy', based on the key processes that the respective groups encapsulate As we discuss in the following section, we have thus found five dimensions that are key to constituting a mature e-Government ecosystem, meeting the objective of our study.

Table 3: Translation and Synthesisation of Key Concepts

Groups	Constructs
Online Presence	Basic Site[30]; Bill-board[17]; Catalogue[10,24]; Cataloguing[16]; Electronic Publishing[30]; Emerging Information[34]; Enabling Inter-Organizational and Public Access to Information[11]; Emerging Web Presence[29]; Enhanced Web Presence[29]; Information[8,12,20]; Information Interaction[33]; Information Publishing[27]; Initial Conditions[26]; Online Presence[21,31]; Online Websites[14]; Partial Service Delivery[17]; Presence[20]; Presence on the Web[25]; Presenting[23]; Publish[9,32]; Service Availability[31]; Simple Information[13]; Simple Website[15]; Web Presence[18,22,28]
Facilitating Interaction	Allowing Two-Way Communication[11]; Assimilating[23]; e-Publishing[30]; Enhanced Information Services[34]; Extension[19]; FAQs and Email Systems[14]; Interact[9,32]; Interaction[12,18,20,21,22,28]; Interaction Between the Citizen and the Government[25]; Interactive Web Presence[29]; Official-Two Way Transaction[27]; Online Government[15]; Portal Personalization[27]; Reforming[23]; Two Way Communication[8,13]; Setting Up an Email System and Internal Network[11]
Integrated Ecosystem	Clustering of Common Services[27]; Cultivation[19]; Full Integration and Enterprise Transaction[27]; Fully Integrated and Transformed e-Government[21]; Horizontal and Vertical Integration[13]; Horizontal Integration[10]; Integrated Government[15]; Integration[8,12]; Joined-Up e-Governance[30]; Joined-Up Government[11]; Morphing[23]; Multipurpose Portal[27]; One Stop Shop[14]; Portal[17]; Revolution[19]; Seamless/ Networked Web Presence[29]; Service Transformation[31]; Transformation[18,28]; Transformation Citizen Centric[33]; Transformed Government[15]; Vertical Integration[10]
Online Payments	Allowing Exchange of Value[11]; Complete Transaction Over the Web[25]; Online Services[14]; Service and Financial Transactions[13]; Transact[9,32]; Transaction[8,10,12,16,18,20,21,22,24,28]; Transaction Efficiency[33]; Transactional[30]; Transactional Services[34]; Transactional Web Presence[29].
Participatory e-Democracy	Connected Services[34]; Continuous Improvement[22]; Data Transparency[26]; Digital Democracy[11,21]; e-Democracy[18]; e-Governance[23]; Forums and Opinion Surveys[14]; Interactive Democracy[17]; Mature Delivery[31]; Maturity[19]; Open Participation[26]; Open Collaboration[26]; Participation[8]; Political Participation[20,13]

5. Discussion

Findings from the meta-ethnography study suggest that online presence, facilitation of interaction, an integrated ecosystem, provision of online payments, and promotion of participatory e-Democracy are the key dimensions constituting a mature e-Government ecosystem. In this section, the findings are discoursed in detail, followed by a concise discussion on how the study findings contribute to the extant literature.

5.1. *Study Findings*

The first among the five dimensions is the online presence of e-Government services, which refers to the availability of static information about government policies and services. It is desired that the information should be updated regularly and organized efficiently. Also, downloadable forms may be made available, wherever applicable, for certain e-Government services.

The second dimension requires facilitating interaction between the users and the government agencies. For that purpose, a two-way communication channel is established via e-mails and online chat rooms, enabling exchange of information. The users may provide feedback and comments on issues related to a service as well as various rules and regulations concerning the service. Additionally, advanced services like personalization options, search options, push notifications, email alerts, and uploading of documents may be available.

The third dimension about developing an integrated ecosystem involves four types of integration processes. First, it is the vertical integration of systems at various levels within a department or jurisdiction. Second, the horizontal integration of inter-departmental data sharing is critical. Third, a full integration of all e-Government services that yields a portal for joined-up services, commonly known as a 'one stop shop' is needed. Fourth, a desirable blend of online and offline services is achieved through a multichannel integration.

The fourth dimension advocates the necessity of including online payment gateways in the e-Government services so that the users can easily perform financial transactions as per their requirements. This is in line with the argument that the users of e-Government services should be able to perform complete transactions online which often includes a requirement for payment. Also, if the users are to receive payments, particularly in the case of social welfare programs and online procurement of resources by the government, the online payment system becomes critical.

The final dimension of a mature e-Government ecosystem highlights the importance of promoting participatory democracy via the Internet. The users may participate in online discussions within forums that are openly accessible by all. They may take part in anonymous opinion surveys to provide input for policy and legislation proposals. Further, if necessary, arrangements can be made for eligible citizens to cast their votes online.

5.2. *Contribution to the Literature*

Maturity models are often developed with a top-down approach where a predetermined number of stages are dedicated to incorporate certain characteristics.[36] On the other hand, a contradictory bottom-up approach for designing maturity models too exists, whereby desired characteristics are determined and subsequently clustered in certain focus areas.[37] In this study, a bottom-up approach of designing maturity models is followed. However, the constructs of the five dimensions are derived from the maturity models that are developed following the top-down approach. Therefore, this paper potentially contributes to the literature related to maturity models, in general, by acting as a bridge between the top-down and bottom-up approaches.

6. Study Implications

By summarizing the extant research on the e-Governance maturity models, this paper contributes towards extending the existing literature and provides valuable information useful to the practitioners.

6.1. *Theoretical implications*

If we focus on the literature on e-Governance in particular, it may be observed that no significant attempt is made to develop an updated e-Governance maturity model since the year 2012. This may be attributed to the reason that the development of an e-Governance maturity model has reached a saturation level. Hence, it may now be appropriate to present the knowledge in a summarized form to help scholars explore the niche literature. Therefore, this study assumes importance in extending the literature related to e-Governance, as hardly any meta-ethnography study done on the e-Governance maturity models could be found. Further, the findings of this study may help future studies to focus on national and cross-national assessment of e-Government services.

6.2. *Practical implications*

The findings of our study may help consultancy firms, rating agencies, government agencies and international organizations such as United Nations in assessing the

status of e-Governance in a country, in a sector or under the jurisdiction of a government department. However, this study is not aimed at developing an e-Governance model in which the identified dimensions should occur sequentially, as our objective was not to propose another maturity model with distinct stages, but to identify the key dimensions that constitute a mature e-Government ecosystem. In other words, improvement in e-Governance with regard to these dimensions may occur simultaneously, may be in parallel processes. Therefore, the existing e-Government services could be rated on the basis of the five dimensions identified in this study. Further, a framework developed based on the findings of this study may help software developers interested in developing solutions for low-rated e-Government services.

7. Limitations and Future Scope

Before we conclude this paper, it is important to acknowledge the limitations of the study and shed light on the future research directions. In the following subsections, we have reported two limitations of the present study and suggested ways to overcome them in future. Besides, we have presented two suggestions to extend the present study. .

7.1. *Limitations of the Study*

In the process of synthesizing key concepts, it was found that 'Basic Capability', a construct referring to the security and certification of e-Government services does not belong to any of the five groups reported in table 3. Consequently, the concerns related to user privacy and data security are not captured in any of the five dimensions discussed earlier. Future research may explore the role privacy and security concerns related to e-Government services.

In the study findings, five dimensions of a mature e-Government ecosystem assume equal importance. However, the scope and purpose of different e-Government services may vary. Therefore, one particular dimension may be more important than the other ones in the context of a certain e-Government service. Hence, interested researchers may arrange these five dimensions following a suitable methodology.

7.2. *Future Research Directions*

In the process of selecting studies for this research, we found that no significant attempt was made to develop an updated e-Governance maturity model since 2012. Therefore, ample opportunities exist for researchers interested in investigating the possible influences of gradual advancements in the online domain and issues accompanying the same on e-Governance maturity models. For instance, the roles of different Internet-based technologies such as social networking services, instant messengers and digital news media in e-Governance as well as how social visibility impacts the maturity models may be explored.

The overall performance of a government and resource allocated for developing e-Governance network under its jurisdiction may significantly impact the success of e-Governance maturity models in delivering intended results. Moreover, politicizing an e-Government service may discourage a potential user who does not subscribe to the ideology of the political party running the government from using the service. Hence, we invite researchers to explore the role of politics on e-Governance maturity models. This scope is unique to the case of e-Governance compared to the capability maturity models developed for other Internet-based technologies.

8. Conclusion

The primary objective of this paper is to identify the key dimensions that constitute a mature e-Government ecosystem. The objective is met through a systematic review of the existing e-Governance maturity models following a rigorous meta-ethnographic approach. In the process of doing so, this paper potentially bridged the gap between the top-down and bottom-up approaches for designing maturity models. From the study findings, it is identified that online presence, facilitating interaction, integrated ecosystem, online payments, and participatory e-Democracy are the five key dimensions of a mature e-Government system. By summarizing the extant research on e-Governance maturity models scattered among various outlets, this paper contributes towards extending the existing literature and also provides useful information to the practitioners. Besides, future research based on the suggestions provided in this study may help extend the study further and eventually add valuable knowledge to the existing body of literature related to maturity models, in general, and e-Governance, in particular.

References

1. S. Coleman, Foundation of Digital Government in *Digital Government: E-Government Research, Case Studies, and Implementation*, eds. H. Chen et al. (Springer Science+ Business Media, New York, 2008), pp. 3-19 .

2. S. S. Dawes, The evolution and continuing challenges of e-governance, *Public Administration Review* **68**(1) (2008) 86-102.

3. A. M. Dewan, S. M. Dewan and S. A. Nazmin, Use of Information and Communication Technology by State Owned Enterprises in Bangladesh: Comparison between privatized and non-privatized SOEs, *International Technology Management Review* **2**(1) (2009) 19-31.

4. X. Gao, J. Xu, G. Sorwar and P. Croll, Implementation of E-health record systems and E-medical record systems in China, *The International Technology Management Review* **3**(2) (2013) 127-139.

5. M. R. Hoque, M. Mazmum and Y Bao, e-Health in Bangladesh: current status, challenges, and future direction, *The International Technology Management Review* **4**(2) (2014) 87-96.

6. J. Xu, X. Gao, G. Sorwar and P. Croll, Implementation of e-health record systems in Australia, *The International Technology Management Review* **3**(2) (2013) 92-104.

7. G. Lahrmann, F. Marx, T. Mettler, R. Winter and F. Wortmann, Inductive design of maturity models: applying the Rasch algorithm for design science research, in *Proc. 2nd Int. Conf. Design Science Research in Information Systems* (Springer, Heidelberg, Berlin, 2011), pp. 176-191.

8. J. S. Hiller and F. Bélanger, Privacy strategies for electronic government in *E-government Series* (The PriceWaterhouseCoopers Endowment for the Business of Government, Arlington, VA, 2001) 1-35.

9. M. Howard, E-Government across the globe: How will'e'change government?, *Government Finance Review* **17**(4) (2001) 6.

10. K. Layne and J. Lee, Developing fully functional E-government: A four stage model, *Government Information Quarterly* **18**(2) (2001) 122-136.

11. C. G. Wescott, E-Government in the Asia-pacific region, *Asian J. of Political Science* **9**(2) (2001) 1-24.

12. S. Chandler and S. Emanuels, (2002). Transformation not automation, in *Proc. 2nd European Conference on E-government*, ed. D. Remenyi (European Commission, European Union, 2002), pp. 91-102.

13. M. J. Moon, The evolution of e-government among municipalities: rhetoric or reality?, *Public Administration Review* **62**(4) (2002) 424-433.

14. I. Netchaeva, E-government and e-democracy: a comparison of opportunities in the north and south, *Int. Communication Gazette* **64**(5) (2002) 467-477.

15. P. J. Windley, *eGovernment maturity* (USA: Windleys' Technolometria, Utah, 2002).

16. C. G. Reddick, A two-stage model of e-government growth: Theories and empirical evidence for US cities, *Government Information Quarterly* **21**(1) (2004) 51-64.

17. D. M. West, E-government and the transformation of service delivery and citizen attitudes, *Public Administration Review* **64**(1) (2004) 15-27.

18. K. Siau and Y. Long, Synthesizing e-government stage models–a meta-synthesis based on meta-ethnography approach, *Industrial Management & Data Systems* **105**(4) (2005) 443-458.

19. K. V. Andersen and H. Z. Henriksen, E-government maturity models: Extension of the Layne and Lee model, *Government Information Quarterly* **23**(2) (2006) 236-248.

20. R. S. Almazan and J. R. Gil-García, E-Government portals in Mexico, in *Electronic Government: Concepts, Methodologies, Tools, and Applications*, ed. A. V. Anttiroiko (IGI Global, 2008), pp. 1726-1734.

21. K. A. Shahkooh, F. Saghafi and A. Abdollahi, A Proposed Model for E-government Maturity, in *2008 Proc. 3rd Int. Conf. Information and Communication Technologies: From Theory to Applications* (Damascus, Syria, 2008).

22. D. Y. Kim and G. Grant, E-government maturity model using the capability maturity model integration, *Journal of Systems and Information Technology* **12**(3) (2010) 230-244.

23. J. Lee, Jungwoo, 10 year retrospect on stage models of e-Government: A qualitative meta-synthesis, *Government Information Quarterly* **27**(3) (2010) 220-230.

24. J. Chen, Y. Yan and C. Mingins, A three-dimensional model for e-government development with cases in China's regional e-government practice and experience, in *Proc. 5th Int. Conf. Management of e-Commerce and e-Gov.* (IEEE, 2011), pp. 113-120.

25. S. M. Alhomod, M. M. Shafi, M. N. Kousarrizi, F. Seiti, M. Teshnehlab, H. Susanto, and Y. A. Batawi, Best practices in E government: A review of some Innovative models proposed in different countries, *Int. J. of Electrical & Computer Sciences* **12**(1) (2012) 1-6.

26. G. Lee and Y. H. Kwak, An open government maturity model for social media-based public engagement, *Government Information Quarterly* **29**(4) (2012) 492-503.

27. Deloitte and Touche, *At the dawn of e-government: The citizen as customer* (Deloitte Research, New York, 2000).

28. C. Baum and A. D. Maio, *Gartner's four phases of e-Government model* (Gartner Group, 2000).

29. United Nations, *Benchmarking E-government: A Global Perspective* (United Nations/American Society for Public Administration, New York, 2001).

30. UK National Audit Office, Government on the Web 11, *HC 764 2001–2002 Session* (House of Commons, Stationery Office, London, 2002).

31. S. J. Rohleder and V. Jupp, *E-government Leadership: Engaging the customer* (Accenture, New York, 2003).

32. Y. Toasaki, *E-government from A User's Perspective* (APEC telecommunication and information working group, Chinese Taipei, 2003).

33. Cisco, *E-government Best Practices learning from success, avoiding the pitfalls* (Cisco IBSG, 2007).

34. I. P. López, *UN e-government survey 2012. e-Government for the people* (Department of Economic and Social Affairs, United Nations, New York, 2012).

35. G. W. Noblit, and R. D. Hare, *Meta-ethnography: Synthesizing qualitative studies* (Sage, 1988).

36. J. Becker, R. Knackstedt and J. Pöppelbuß, Developing maturity models for IT management, *Business & Information Systems Engineering* **1**(3) (2009) 213-222.

37. M. Van Steenbergen, R. Bos, S. Brinkkemper, I. Van De Weerd and W. Bekkers, The design of focus area maturity models, in *Proc. 1st Int. Conf. Design Science Research in Information Systems* (Springer, Heidelberg, Berlin, 2010) pp. 317-332.

38. P. B. Crosby, *Quality is still free: making quality certain in uncertain times* (McGraw-Hill, 1996).

39. C. F. Gibson and R. L. Nolan, Managing the four stages of EDP growth, *Harvard Business Review* **18**(1) (1974) .

40. W. S. Humphrey, *Managing the Software Process* (Addison-Wesley Publishing Company Inc., 1990).

41. N. Greenwood and A. Mackenzie, Informal caring for stroke survivors: meta-ethnographic review of qualitative literature, *Maturitas* **66**(3) (2010) 268-276.

42. N. Britten, R. Campbell, C. Pope, J. Donovan, M. Morgan and R. Pill, Using meta-ethnography to synthesise qualitative research: a worked example, *J. of Health Services Research & Policy* **7**(4) (2002) 209-215.

43. J. M. Tuquero, A meta-ethnographic synthesis of support services in distance learning programs, *J. of Information Technology Education* **10** (2011) 157-179.

44. B. Abedin, B. Abedin, T. Talaei-Khoei and A. Ghapanchi, A review of critical factors for communicating with customers on social networking sites, *International Technology Management Review* **3**(4) (2013) 208-218.

45. V. Ndou, E–Government for developing countries: opportunities and challenges, *The Electronic Journal of Information Systems in Developing Countries* **18**(1) (2004) 1-24.

46. P. Verdegem and G. Verleye, User-centered E-Government in practice: A comprehensive model for measuring user satisfaction, *Government Information Quarterly* **26**(3) (2009) 487-497.