



# Development and Validation of an Assessment Framework for E-Government Services

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**Abstract.** A standardized approach to assess e-Government services from a strategic perspective of the service providers is rarely found in the prior literature. The research objective of this study is to address the gap in the literature by developing an assessment framework. We identify the key criteria in the framework from themes of mature e-Governance following a meta-ethnography approach. Findings from this study suggest that key themes of a mature e-Governance are online presence, facilitating interaction, integrated ecosystem, online payments, and participatory e-Democracy. Subsequently, we developed an assessment framework using these themes. Furthermore, we validated the framework by assessing an Indian e-Government service. The framework may help practitioners in assessing e-Government services using a simple yet efficient approach, which may potentially emerge as a powerful tool for rating such services.

**Keywords:** Assessment framework · BHIM app · E-Governance · Meta-ethnography · Online services · Service rating

## 1 Introduction

Prior literature on e-Governance suggests that researchers followed different approaches in absence of a standard framework for evaluating e-Government services [1–3]. One such approach is to augment a standard e-Governance maturity model for meeting requirements of a specific purpose. For instance, Rooks et al. [2] modified the e-Governance maturity model proposed by Lee [4] to suit their objective of studying adoption and development of e-Governance among Dutch municipalities. The major drawback of this approach is that it offers limited scope for generalization. Another approach to evaluate an e-Government service is to measure the continuous usage intention from consumers' perspective [3]. To capture a strategic perspective is beyond the scope of this approach. The e-Government Development Index (EGDI) developed by the United Nations (UN) presents a third approach that is reasonably free from the drawbacks of both of the previous approaches. EDGI ranks the UN member states on the basis of how e-Governance strategies are implemented in a country [5, 6]. However, EGDI do not aim to evaluate a particular e-Government service available in a country.

Countries across the world are conveying noteworthy measure of assets to more readily convey e-Governance [7, 8]. Thus, evaluation of e-Government services with a strategic framework is critical to aid continuous improvement of e-Governance [9, 10]. However, there exists a research gap in the extant literature that focuses on developing a strategic framework to rate and assess e-Government services. This research gap leads us to the research question: how an e-Government service provider can rate and assess an e-Government service? This study aims to address the research question by developing a comprehensive framework from studying e-Governance maturity models, which guide Government organizations to develop capabilities to accomplish action plans [8]. Both academicians and practitioners have documented numerous attempts to develop e-Governance maturity models [9, 10]. This study summarizes the knowledge available from the e-Governance maturity models with a meta-ethnography study [11].

The findings from the meta-ethnography study helps us identify five key themes of mature e-Governance that leads us to develop an assessment framework. The vertical dimension of this framework incorporates these five themes. The horizontal dimension serves the purpose of reporting the level of accomplishment for each theme on a five-item scale. This framework can potentially emerge as a powerful tool to rate e-Government services, albeit with appropriate modifications and adjustments. Therefore, the present study assumes importance for a pioneering attempt to design a comprehensive framework for evaluating e-Government services from a strategic perspective.

This paper is structured in seven sections. The second section of the paper is dedicated to discourse how we conduct the meta-ethnography study. In the third section, we discuss the development of e-GRAF and assessed an Indian e-Government service to illustrate the working principle of the framework. The fourth section of this paper discusses why this study possibly connects the top-down approach of designing maturity models with the bottom-up one. The fifth section elaborates implications of this study. Next, the limitations of this study are duly acknowledged in and the future scopes for research are recommended in the sixth section discussed, prior to concluding the paper in the seventh section.

## 2 Meta-ethnography Study

A meta-ethnography study follows a qualitative approach for interpreting knowledge about a topic of intellectual interest [11]. Meta-ethnography is often preferred over other approaches for comprehensive interpretation because of its ability to effectively analyze qualitative data even when the study sample is reasonably small [8, 12]. As this approach is found effective in systematically reviewing extant literature in technology management [12], the application of meta-ethnography is suitable in the current context. The meta-ethnography approach involves seven sequential phases [11], dedicated to identifying an intellectual interest, determining what is germane to the intellectual interest, reading the studies, juxtaposing key concepts, finding analogies, synthesizing translations, and reporting findings.

## 2.1 Study Sample

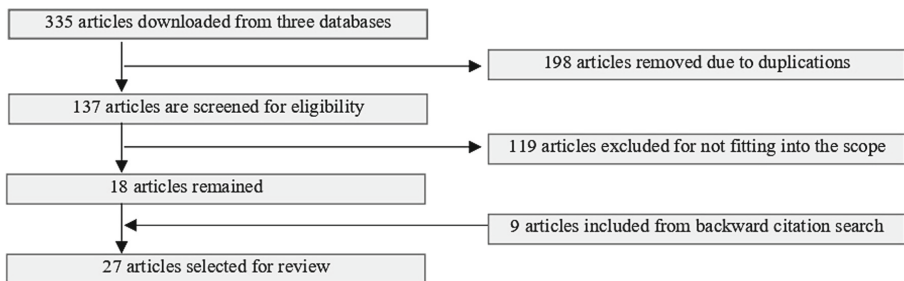
We searched on Google Scholar for the phrase ‘e-Governance maturity model’ is performed to identify similar search terms [13]. A scan of the first 100 search results suggests that ‘e-Government system’ and ‘e-Government network’ are commonly used related terms for e-Governance. A maturity model is also referred to as a ‘development model’ or a ‘stage model’.

Therefore, a total of nine combinations of terms can represent the original phrase. The databases considered appropriate for the exploration of relevant studies in the field of e-Governance are: Science Direct, Scopus, and Web of Science [8, 14]. An exploration of three databases with nine pre-dedicated combinations of search terms was conducted, and a total of 335 documents were downloaded. Many documents were downloaded multiple times as they appeared in different search results.

Full texts of 137 documents were read, among which only 18 papers passed the exclusion criteria: eliminate duplicate studies from different searches, exclude studies not available online, exclude studies not available in English, and exclude studies that do not emphasize on constructing an e-Governance maturity model. Citation chaining searches were performed with the 18 papers selected for further review.

Though the forward citation searches did not add any document to our sample, backward citation searches discovered 14 reports, published by practitioners, that are relevant to our intellectual interest. However, we could include only nine such reports in our study, as five of them are either not available online or not publicly accessible. Therefore, our final sample contained 27 documents, following the paper selection process presented in Fig. 1. Also, a summary of database exploration is reported in Table 1.

Appendix 1 reveals the e-Governance maturity models developed by academicians, meaning, those published in academic journals, academic reports, book chapters and conference proceedings. The e-Governance maturity models available in other reports prepared by corporates, government organizations, and intergovernmental organizations are considered to be offered by practitioners, and are reported in Appendix 2.



**Fig. 1.** Selection of documents.

**Table 1.** Database search summary.

Database	Search terms	Total hits appeared	Abstracts read	Full texts downloaded*
Science Direct	“e-Governance” AND “maturity model”	225	100	49
	“e-Governance” AND “development model”	757	50	9
	“e-Governance” AND “stage model”	592	50	6
	“e-Government system” AND “maturity model”	227	100	22
	“e-Government system” AND “development model”	174	25	2
	“e-Government system” AND “stage model”	398	50	7
	“e-Government network” AND “maturity model”	208	100	19
	“e-Government network” AND “development model”	437	50	3
Scopus	“e-Governance” AND “maturity model”	382	50	1
	“e-Governance” AND “development model”	199	100	26
	“e-Governance” AND “stage model”	477	50	16
	“e-Government system” AND “maturity model”	285	50	11
	“e-Government system” AND “development model”	243	100	29
	“e-Government system” AND “stage model”	302	50	10
	“e-Government network” AND “maturity model”	211	50	6
	“e-Government network” AND “development model”	328	50	8
Web of Science	“e-Governance” AND “stage model”	393	50	1
	“e-Governance” AND “maturity model”	638	50	2
	“e-Governance” AND “development model”	15	15	15
	“e-Governance” AND “stage model”	105	50	13
	“e-Government system” AND “maturity model”	26	26	18
	“e-Government system” AND “development model”	62	50	31
	“e-Government system” AND “stage model”	114	50	12
	“e-Government network” AND “maturity model”	99	50	17
	“e-Government network” AND “development model”	13	13	6
	“e-Government network” AND “stage model”	96	50	16
	“e-Government network” AND “development model”	16	16	10
	“e-Government network” AND “stage model”	16	16	10

## 2.2 Juxtaposition of Key Concepts

The number of stages in the e-Governance maturity models under review ranges between two [15] and six [16]. In this phase of the study, meaning from definition(s) and explanation(s) provided for a total of 115 constructs are interpreted from 27 e-Governance maturity models. Two constructs from different e-Governance maturity models may convey similar meaning. For example, both of the constructs ‘Web Presence’ [17] and ‘Partial Service Delivery’ [18] allude to the accessibility of static information with respect to government services. Hence, we translated each construct into other constructs, and vice versa, to pair constructs with similar meaning.

All constructs but ‘Basic Capability’ [19] are found to be translatable. Consequently, the translation process yielded five clusters, as presented in Table 2.

**Table 2.** Translation and synthesis of key concepts.

Cluster	Constructs
Cluster 1	Basic Site [23]; Bill-board [18]; Catalogue [24, 25]; Cataloguing [15]; Electronic Publishing [23]; Emerging Information [26]; Enabling Inter-Organizational and Public Access to Information [21]; Emerging Web Presence [27]; Enhanced Web Presence [27]; Information [20, 28, 29]; Information Interaction [30]; Information Publishing [16]; Initial Conditions [31]; Online Presence [19, 32]; Online Websites [33]; Partial Service Delivery [18]; Presence [28]; Presence on the Web [34]; Presenting [4]; Publish [35, 36]; Service Availability [19]; Simple Information [37]; Simple Website [39]; Web Presence [12, 17, 38]
Cluster 2	Allowing Two-Way Communication [21]; Assimilating [4]; e-Publishing [23]; Enhanced Information Services [26]; Extension [40]; FAQs and Email Systems [33]; Interact [35, 36]; Interaction [12, 17, 28, 29, 32, 38]; Interaction Between the Citizen and the Government [34]; Interactive Web Presence [27]; Official-Two Way Transaction [16]; Online Government [39]; Portal Personalization [16]; Reforming [4]; Two Way Communication [20, 37]; Setting Up an Email System and Internal Network [21]
Cluster 3	Clustering of Common Services [16]; Cultivation [40]; Full Integration and Enterprise Transaction [16]; Fully Integrated and Transformed e-Government [32]; Horizontal and Vertical Integration [37]; Horizontal Integration [25]; Integrated Government [39]; Integration [20, 29]; Joined-Up e-Governance [23]; Joined-Up Government [21]; Morphing [4]; Multipurpose Portal [16]; One Stop Shop [33]; Portal [18]; Revolution [40]; Seamless/Networked Web Presence [27]; Service Transformation [19]; Transformation [12, 38]; Transformation Citizen Centric [30]; Transformed Government [39]; Vertical Integration [25]
Cluster 4	Allowing Exchange of Value [21]; Complete Transaction Over the Web [34]; Online Services [33]; Service and Financial Transactions [37]; Transact [35, 36]; Transaction [12, 15, 17, 20, 24, 25, 28, 29, 32, 38]; Transaction Efficiency [30]; Transactional [23]; Transactional Services [26]; Transactional Web Presence [27]
Cluster 5	Connected Services [26]; Continuous Improvement [17]; Data Transparency [31]; Digital Democracy [21, 32]; e-Democracy [12]; e-Governance [4]; Forums and Opinion Surveys [33]; Interactive Democracy [18]; Mature Delivery [19]; Maturity [40]; Open Participation [31]; Open Collaboration [31]; Participation [20]; Political Participation [28, 37]

### 2.3 Synthetization of Key Concepts

In a meta-ethnography study, priority is given to the meaning of a construct rather than its appearance in different stages of e-Governance maturity models. For instance, both ‘Integration’ [20] and ‘Joined-up Government’ [21] belong to the same cluster, though they appear in different stages in the respective maturity model, as both of them refer to the requirement of back-end integration in processes of delivering e-Government services. Therefore, summarization of the meaning conveyed by the constructs in a cluster results in the identification of the themes, as discoursed in Table 3.

**Table 3.** Synthesised findings

Theme	Details
Online Presence (Cluster 1)	<ul style="list-style-type: none"> <li>• Static information about Government policies and services are available</li> <li>• The information should be updated regularly and organized efficiently</li> <li>• Downloadable forms may be available for certain e-Government services</li> </ul>
Facilitating Interaction (Cluster 2)	<ul style="list-style-type: none"> <li>• A two-way communication channel is established via e-mails and online chat rooms to exchange information between the users and the Government agencies</li> <li>• Advanced services like personalisation options, search options, push notifications, email alerts and uploading documents may be available</li> <li>• The users may provide feedbacks and comment on issues related to a service as well as various rules and regulations concerning the service</li> </ul>
Integrated Ecosystem (Cluster 3)	<ul style="list-style-type: none"> <li>• Vertical integration process involves integration of systems at various levels within an organization</li> <li>• Horizontal integration process refers to inter departmental data sharing</li> <li>• Full integration yields a portal for all e-Government services or an 'one stop shop' for joined-up services</li> <li>• Multichannel integration i.e. a blend of online and offline services is also desirable</li> </ul>
Online Payments (Cluster 4)	<ul style="list-style-type: none"> <li>• Users should be able to perform complete transactions online including receiving payment, if applicable</li> <li>• Online payment gateways are to be included in the e-Government services so that the users can easily perform financial transactions as per the requirements of those services</li> <li>• There may be a possibility of accepting electronic payments by the users, particularly in case of an e-procurement by the Government</li> </ul>
Participatory e-Democracy (Cluster 5)	<ul style="list-style-type: none"> <li>• The users may participate in online discussion within forums that are openly accessible by all</li> <li>• They may take part in anonymous opinion surveys to provide input for policy and legislation proposals</li> <li>• Eligible citizens may cast their votes online</li> </ul>

### 3 The e-Governance Rating and Assessment Framework (e-GRAF)

#### 3.1 Framework Development

The five themes identified from the meta-ethnography study may capture a snapshot of an existing e-Government service. Thus, the status of e-Governance provided by a

government division may be assessed on the basis of these themes. In continuation of this argument, we have proposed a two-dimensional framework. The vertical dimension of this framework incorporates the five themes for a mature e-Government ecosystem. For the purpose of simplicity, we assume equal weightage for each of the five criteria. The horizontal dimension serves the purpose of reporting the level of accomplishment for each criterion on a five-item scale. An e-Government service may be examined with respect to each of the criterion to award a score between 0.00 and 1.00, subject to the fulfilment of the requirements of each criterion. The score may fall in one of the five categories: very low, moderately low, medium, moderately high, and very high, separated by breakpoints at 0.2, 0.4, 0.6, and 0.8, respectively. An average of the criterion scores yields the e-GRAF score for an e-Government service.

### 3.2 Framework Validation

Government authorities in India offer a smartphone-based application named Bharat Interface for Money (BHIM) to foster the adoption of cashless transactions among the citizens [22]. We assess BHIM to illustrate the working principle of e-GRAF. Two authors of this study and three experts have individually assessed BHIM using e-GRAF on September 22, 2019. The first expert is an academician with rich experience in developing conceptual frameworks and deep knowledge on the literature on e-Governance. The second expert is experienced in administering an Indian e-Government service. The third expert is a manager a payment bank that offers service on BHIM. The evaluation is reported in Table 4.

**Table 4.** Evaluation of BHIM using e-GRAF

Rated by criterion	Author 1	Author 2	Expert 1	Expert 2	Expert 3
Online Presence	0.90	0.90	0.80	0.90	0.90
Facilitating Interaction	0.50	0.40	0.50	0.60	0.60
Integrated Ecosystem	1.00	1.00	1.00	1.00	1.00
Online Payments	1.00	1.00	1.00	1.00	1.00
Participatory e-Democracy	0.20	0.10	0.10	0.00	0.00

The criterion scores for BHIM, as presented in Table 5, is calculated from the scores awarded by five assessors. Consequently, BHIM is awarded with a rating of 3.48 (out of five) by using e-GRAF. This rating signifies that the performance of BHIM is moderately high.

**Table 5.** Evaluation of BHIM using e-GRAF

Criterion	Score				
	Very low	Moderately low	Medium	Moderately high	Very high
Online Presence					0.88
Facilitating Interaction			0.52		
Integrated Ecosystem					1.00
Online Payments					1.00
Participatory e-Democracy	0.08				

### 3.3 Subjective Assessment Process

The experts are interviewed post completion of the assessments process to find justifications for the e-GRAF score obtained by BHIM. The interviews capture the psychological processes of the subjective assessments from the experts. A good understanding of the processes may provide insights to the future users of e-GRAF. The excerpts from the interviews are summarized for each criterion, as follows:

First, sufficient static information about BHIM can be obtained from the options available by clicking the collapsed menu icon, that is, the three vertical dots placed at the top right corner of the app. Several of those options open an official website with more information which are regularly updated. Though users may initially face a little difficulty in spotting the specific icon, the app scores very high in the dimension of online presence.

Second, BHIM allows a user to personalize the app, set reminders, raise complaints and send feedback, among other options. However, the app does not facilitate real-time exchange of information between the users and government agencies. Hence, performance of the app is medium in the dimension of facilitating interaction.

Third, almost all major banks in India, irrespective of their license type and ownership structure, have been brought under BHIM to foster seamless interoperability among them. This exhibits unprecedented level of horizontal and vertical integration in the online payment ecosystem in India. Therefore, BHIM scores very high as far as the integrated ecosystem criterion is concerned.

Fourth, BHIM advances the evolution of digital payment ecosystem in India and, hence, deserves to score very high on the dimension of online payments. Moreover, the primary purpose of this app is to facilitate peer-to-peer retail payments without transaction costs, and hence, users do not face any significant value barrier.

Fifth, BHIM fares very low in advocating participatory e-Democracy, probably because it is beyond the scope of the app. However, the service providers may consider opening official forums on social media, where they have very limited presence at present, to improve performance of BHIM in this criterion.



## 4 Discussion

As nations around the globe are spending noteworthy measure of resources to proliferate the use of e-Government services, concerned administrations may follow a strategic approach to evaluate the status regarding those services, and consequently, facilitate ceaseless improvements of those services. One of such strategic approach is a maturity model that efficiently archives and gives direction to the concerned stakeholders to create and improve capability levels [41]. A maturity model may be characterized as a group of methodically reported stages, organized to manage the advancement of capabilities so as to accomplish the predefined targets of an organization [42]. The most broadly perceived development model is known as the Capability Maturity Model [43], that is comprised by five phases: initial, repeatable, defined, capable and efficient.

Capability Maturity Model exhibited solid impact on the literature extant to introduction, reliability, characterization, competency and proficiency of projects related to management of information systems [41, 42]. In the context of e-Governance Maturity Models, maturity suggests a transformative cycle of exhibiting certain capacities, and a maturity model is a consistently delineated transformative way [31, 40]. This transformative way is regularly planned with a top-down approach where every one of the foreordained number of stages is devoted to fuse certain attributes and meet explicit evaluation destinations or achievements [41]. Notwithstanding, the top-down approach is frequently condemned for emphatically depending on beginning suppositions and lacking sound establishment in design method.

Researchers regularly address the condemnation against the top-down approach of developing maturity models with a bottom-up approach for the equivalent [44]. The bottom-up approach first identifies required attributes and evaluation criteria and, after that point, they are grouped into certain focus areas, permitting the groups to follow their own transformative ways [44]. Generally, the development of e-GRAF followed a bottom-up approach to the degree of distinguishing key focus areas. Nonetheless, the criteria in e-GRAF are efficiently gotten from the prior e-Governance maturity models, which are created following the top-down approach. Along these lines, this study conceivably goes about as an extension between the literature relating to top-down and bottom-up approaches of developing maturity models.

## 5 Implications

E-Government services are committed to conveying public services through electronic channels, connecting with various stakeholders straightforwardly in the process of creating policies, and controlling the impacts of such stakeholders, whenever required [14]. However, there exists a research gap in the extant literature that focuses on developing a strategic framework to evaluate e-Government services from a point of view of the service providers. By addressing the research gap, this study offers significant ramifications, as subsequently discussed.

### **5.1 Theoretical Implications**

The present study is a pioneering attempt to develop a comprehensive framework that may be used to rate and assess the e-Government services from a strategic perspective. Therefore, this study assumes importance in addressing an important gap in the literature on e-Governance. A framework named e-GRAF is developed in this study following the meta-ethnographic findings from existing e-Governance maturity models. From a methodological standpoint, this study encapsulates the suitability of the meta-ethnography approach to contribute valuable knowledge to the literature in field of information systems. Furthermore, the study summarizes knowledge about e-Governance maturity models, a topic that has arguably saturated post 2012. Therefore, this summarized knowledge may significantly add to the extant literature.

### **5.2 Practical Implications**

The findings of this study potentially offer important implications to government agencies, consultancy firms, and rating agencies, who assess the e-Government services. E-GRAF may emerge as a powerful tool to rate e-Government services and assess the state of e-Governance due to its efficiency and ease of deployment. Furthermore, as the governments across the world continue to put more emphasis on rolling out e-Government services, new business opportunities emerge to software developers. Managers in software developing firms may identify low-rated e-Government services using e-GRAF and develop solutions for improving those services. Consequently, companies involved in business-to-government segments may obtain insights by using e-GRAF to better target their customers.

## **6 Limitations and Future Scope**

Three future research agendas emerge from the limitations of this study, as subsequently discussed. First, the possible influence of gradual advancements post 2012 in the online domain may not be captured in detail by e-GRAF. Therefore, ample opportunities are available for the future researchers to augment e-GRAF, and develop up-to-date e-Governance maturity models. Second, we cannot include five out of 14 practitioner reports that would be suitable for this study, as they are either unavailable online or not publicly accessible. Extensive research may be dedicated to explore government action plans and corporate reports to fetch more insights about technology use in public service delivery to academia. Third, e-GRAF assumes equal weightage for each of the five criteria. However, the importance of different e-Government services may vary, as they differ in complexity and scope. Therefore, the framework may be tested with sufficient training datasets to determine a more sophisticated assignment of weightage.

## 7 Conclusion

The present study offers an important contribution for theory as a pioneering attempt to develop a comprehensive framework named e-GRAF for rating and assessing the e-Government services from a strategic perspective. The present study found meta-ethnography to be a suitable approach to summarize the knowledge about e-Governance maturity models, a relevant yet saturated topic in the literature. The study findings potentially offer important implications to government agencies, consultancy firms, and rating agencies, who assess the e-Government services. E-GRAF may emerge as a powerful tool to rate e-Government services and assess the state of e-Governance due to its efficiency and ease of deployment.

## Appendix 1. E-Governance Maturity Models Developed by the Academicians

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Hitler and Belanger (2001) [20]	Information	Two Way Communication	Transaction	Integration	Participation	–
Howard (2001) [35]	Publish	Interact	Transact	–	–	–
Layne and Lee (2001) [25]	Catalogue	Vertical Integration	Transaction	Horizontal Integration	–	–
Wescott (2001) [21]	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 (2002) [29]	Information	Interaction	Transaction	Integration	–	–
Moon (2002) [39]	Simple Information	Two Way Communication	Service And Financial Transactions	Horizontal and Vertical Integration	Political Participation	–
Netchaeva (2002) [33]	Online Websites	FAQs And Email Systems	Forums and Opinion Surveys	Online Services	One Stop Shop	–
Reddick (2004) [15]	Cataloguing	Transactions	–	–	–	–
West (2004) [18]	Bill-board	Partial Service Delivery	Portal	Interactive Democracy	–	–
Siau and Long (2005) [12]	Web Presence	Interaction	Transaction	Transformation	e-Democracy	–
Andersen and Henriksen (2006) [40]	Cultivation	Extension	Maturity	Revolution	–	–

(continued)

(continued)

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Almazan and Gil-Garcia (2008) [28]	Presence	Information	Interaction	Transaction	Political Participation	–
Shahkooh et al. (2008) [32]	Online Presence	Interaction	Transaction	Fully Integrated and Transformed e-Government	Digital Democracy	–
Kim and Grant (2010) [17]	Web Presence	Interaction	Transaction	Integration	Continuous Improvement	–
Lee (2010) [4]	Presenting	Assimilating	Reforming	Morphing	e-Governance	–
Chen <i>et al.</i> (2011) [24]	Catalogue	Transaction	Vertical Integration	–	–	–
Alhomod <i>et al.</i> (2012) [34]	Presence on the Web	Interaction between the Citizen and Government	Complete Transaction Over The Web	Integration	–	–
Lee and Kwak (2012) [31]	Initial Conditions	Data Transparency	Open Participation	Open Collaboration	Ubiquitous Engagement	–

## Appendix 2. E-Governance Maturity Models Offered by the Practitioners

Model	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Deloitte [16]	Information Publish ing	Officiaf Two Way Transaction	Multi-purpose Portal	Portal Personalization	Clustering of Common Services	Frill Integration and Enterprise Transaction
Gartner [38]	Web Presence	Interaction	Transaction	Transformation	–	–
United Nations [27]	Emerging Web Presence	Enhanced Web Presence	Interactive Web Presence	Transactional Web Presence	Seamless/ Networked Web Presence	–
UK National Audit Office [23]	Basic Site	Electronic Publishing	e-Publishing	Transactional	loined-Up e-Govenance	–
Utah CIO [39]	Simple Website	Online Government	Integrated Government	Transformed Government	–	–
Accenture [19]	Online Presence	Basic Capability	Service Availability	Mature Delivery	Service Transformation	–
World Bank [36]	Publish	Interact	Transact	–	–	–
Cisco [30]	Information Interaction	Transaction Efficiency	Transformation Citizen Centric	–	–	–
United Nations [26]	Emerging Information	Enhanced Information Services	Transactional Services	Connected Services	–	–

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