

PUBLIC VALUE BASED E-GOVERNMENT MATURITY MODEL: A LITERATURE REVIEW

Titisari Ramadhane¹, Luthfi Ramadani², Lukman Abdurrahman³

^{1,2,3}Magister of Information System, Telkom University, Indonesia

*Email: ramadhane@student.telkomuniversity.ac.id, luthfi@telkomuniversity.ac.id,

abdural@telkomuniversity.ac.id

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Abstract

Public value is a means for evaluating the effectiveness and efficiency of public services and an E-Government maturity model that controls the process for developing and maintaining E-Government services. Previous studies have analyzed and discussed public values, maturity models. Therefore, it is necessary to examine what public values should be present in E-Government based on the E-Government maturity model. This study aims to develop public values based on the E-Government maturity model and fill the gaps in the literature research by categorizing the dimensions of public values and the existing E-Government maturity models. This research method uses a systematic literature review (PRISMA). A total of 60 articles were selected, classified, and analyzed according to the criteria of public value and the specified dimensions of the E-Government maturity model. From the results of the literature review analysis, there are similarities between the dimensions of public value and the dimensions of the E-Government maturity model so that some of these dimensions can be combined to form a new public value dimension based on considerations from the dimensions of the E-Government maturity model, namely (1). Public Services in Government (2). Dimensions of Administration in Government, (3). Open Government (OG), (4). Ethical Behavior and Professionalism, (5). Trust and Confidence in Government (6). Social Value in Government. This study aims to strengthen public values based on the E-Government maturity model. It is hoped that implementing sustainable E-Government services will become easier by analyzing public values based on the E-Government maturity model.

Keywords: *E-government, Public value, Maturity model, Systematic literature review.*

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*Corresponding Author: Titisari Ramadhane

1. INTRODUCTION

Advances in Information and Communication Technology (ICT) are growing rapidly in society, Electronic Government or E-Government is generally conceptualized as the use of ICT by the government combined with organizational change to improve government structure and operations[1]. The United Nations (UN) E-Government Survey 2022 places Indonesia in 77th place for its performance in developing and implementing an Electronic-Based Government System (SPBE). The results of the survey made Indonesia rise 11 places from rank 88 in 2020 and rank 107 in 2018 [2]. The correct implementation of e-government will provide a much greater success rate of government programs by increasing the effectiveness, processes and procedures for completing government tasks. this certainly has a

positive effect on the quality of better public services and increases the use of information in the decision-making process by involving the community[3].

Public value can be defined as the value created by the government for citizens through the delivery of public services[4], [5]. Government sets political and social goals such as efficiency in public services, equal treatment of all colors of the country, and other political and social goals that go beyond economic gain, constituents, social inclusion, openness, public welfare, stewardship, accountability, and regeneration to get the public value[1]. Along with the progress of ICT, many variants of the maturity model have been put forward by various researchers, almost all of these models agree that the maturation of the government occurs in stages as e-government develops in a linear and progressive manner[6]. The E-Government maturity model offers advice on how to manage the

procedures for creating and keeping up E-Government services as well as how to promote a culture of excellence in a nation's delivery and management of these services[5].

Public values and the E-Government maturity model have several different dimensions, and research needs to be conducted to find out what public values should be in a government based on the E-Government maturity model. Therefore, this study aims to investigate existing research on public values and E-Government maturity models to understand existing knowledge about public values and E-Government maturity models that have been researched and used. There are two Research Questions in this systematic literature review research, namely Research Question 1 (RQ1) and Research Question 2 (RQ2).

RQ1: How is the dimensional analysis of public value?
 RQ2: How is the public value-based maturity model designed?

This study uses a systematic literature review to provide answers to research questions. Explanation of research methods, results and discussion that will be explained regarding public value and the E-Government maturity model used to contextualize the findings which are discussed in more detail, and conclusions.

2. RESEARCH METHOD

This study begins with an analysis or comparison of several previous studies. Thorough analysis of published articles or journals. Next, map or do a meta-analysis. The overall assessment should also consider the amount and standard of relevant literature. From 2007 to 2022, academic journals and conference proceedings published a lot of information about public values and the E-Government maturity model as shown in Figure 1.

2.1 Systematic Literature Review

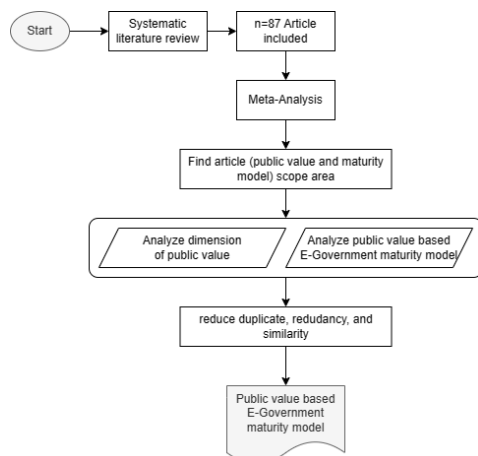


Figure 1. Research Methodology

Research uses the PRISMA approach which offers convenience in systematic review, used in this work[7]. At this stage, a meta-analysis will be conducted to determine how the concepts are related

to one another. The focus of this study is on the components that generate public value and the E-Government maturity model. The steps for conducting a systematic literature review are shown in Figure 1.

2.2 Data Collection

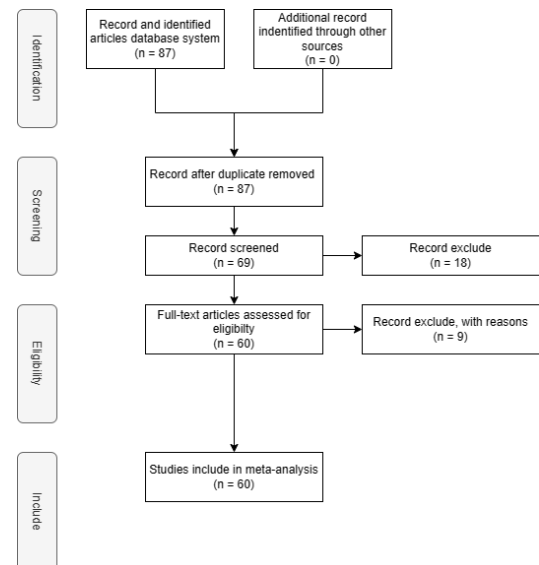


Figure 2. PRISMA Flow Implementation

2.2.1 Identification

Data sources used systematically in this study used two types of document types. Researchers use several relevant sources such as conference articles and journals that are technically qualified from databases. Like Scopus, Google Scholar, IEEE Xplore. This source was retrieved using several related keywords such as "public value", "E-Government", and "maturity model". During the identification phase, 87 documents were retrieved from the publication database. In the last ten years until 2022.

2.2.2 Screening

The screening process is carried out after the identification process. This procedure ensures that there are no duplicate journals or articles to deal with. There were 18 irrelevant journals or articles out of the 87 obtained, so 69 journals or articles remained after this screening process.

2.2.3 First eligibility test

The first step in understanding and implementing journal or article conformity testing is establishing and assessing the applicability of the type of journal or article being submitted. The relevance of the content must be checked, namely regarding public values, E-Government, and maturity models. The testing procedure begins by reviewing and checking the title of the article or journal publication based on the year, abstract, results, objectives and formulation of each article or journal. Journals or articles will be included and added to the list if the topics match the research question. In this process, 18 irrelevant journals or articles were produced and only 60 articles were considered the most appropriate.

2.2.4 Included

There are 9 irrelevant journals and 60 are produced based on systematic literature review. This stage is carried out using a summary of reviews, references, data, and search results. Each article in the strategy components "public value", "E-Government", and "maturity model". summarized in this review. Some of the materials experienced redundancy as a result of the findings. Following the acquisition of this information, frequency and similarity checking procedures were carried out. The conceptual model maturity model is formed by the components that emerge from the series of experiments.

2.2 Meta-analysis

The meta-analysis results there are 60 journals and papers on operations, meta-analyses, and systematic reviews. To ascertain the strategy and its dimensions, a documentation survey was used in the meta-analysis. Here, the sub-environments that must be managed are also defined by the dimensional component analysis. For each condition, a meta-analysis was conducted using summaries of reviews, references, data, and search results. Each article in the e-government component strategy, public values, and maturity model dimensions is summarized in this review.

The findings lead to the redundancy of some materials. After gathering this data, the process of analyzing frequency and similarity of meaning between articles is carried out. A conceptual model maturity model is formed by the components that emerge from a series of experiments. Table 1 lists the sources for the 60 papers included in the meta-analysis. The first is the "JR" Journal in the "ID" column, whereas "CO" denotes that the document or article is a paper from a conference. There are 57 journals and 12 conferences.

Table 1. List Result Articles of Meta-analysis

No	ID	Author	No	ID	Author
1	JR1	[8]	31	JR25	[36]
2	JR2	[9]	32	JR26	[1]
3	CO1	[10]	33	CO7	[37]
4	CO2	[11]	34	JR27	[38]
5	JR3	[12]	35	JR28	[39]
6	CO3	[13]	36	CO8	[40]
7	CO4	[14]	37	JR29	[41]
8	JR4	[15]	38	JR30	[42]
9	JR5	[16]	39	JR31	[43]
10	JR6	[5]	40	JR32	[44]
11	JR7	[17]	41	JR33	[45]
12	JR8	[18]	42	JR34	[46]
13	CO5	[19]	43	CO9	[47]
14	CO6	[20]	44	JR35	[48]
15	JR9	[21]	45	JR36	[49]
16	JR10	[22]	46	JR37	[50]
17	JR11	[23]	47	JR38	[51]
18	JR12	[24]	48	JR39	[52]
19	JR13	[25]	49	JR40	[53]
20	JR14	[26]	50	JR41	[54]
21	JR15	[27]	51	CO10	[55]
22	JR16	[28]	52	JR42	[56]
23	JR17	[29]	53	JR43	[57]

No	ID	Author	No	ID	Author
24	JR18	[30]	54	JR44	[6]
25	JR19	[31]	55	JR45	[58]
26	JR20	[32]	56	JR55	[59]
27	JR21	[33]	57	CO11	[60]
28	JR22	[34]	58	CO12	[61]
29	JR23	[35]	59	JR56	[62]
30	JR24	[4]	60	JR57	[63]

3. RESULT AND DISCUSSION

The results and discussion of the processing of 60 journals obtained by the systematic literature review method based on the Research Question (RQ) that has been determined:

RQ1: How is the analysis of the public value dimensions of E-Government?

Based on the systematic literature review that has been carried out, the basic concept of public value consists of several sections to analyze the dimensions of public value based on several predetermined journals:

3.1 Public Value Dimension

Analysis of the public value that can be provided by E-Government can be comparing the conceptualization of E-Government with the public value dimensions that have been obtained from several selected journals. The researcher organizes the previous research that has been done on the subject to evaluate the state of the field at the time of the study's completion and to identify the public value of E-Government.

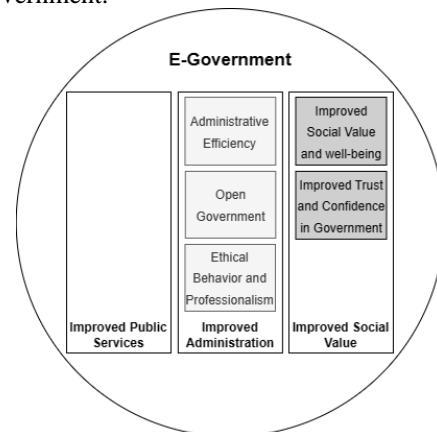


Figure 3. The 6-dimensional generalization of E-Government public values is categorized into 3 main dimensions[1]

There are 6 overlapping public value dimensions that have been identified in Figure 3[1], then a critical analysis is carried out on the relationship between the six dimensions, including: (1) The improved administrative efficiency, (2) Open Government (OG) capabilities, and (3) The improved ethical behavior and professionalism, these three dimensions are related to "Improving the administration of the government". Therefore, these three dimensions are included in the dimension of improved administration, using the same approach: (1) Improved trust and confidence in government, and (2) Improved social

values and well-being related to social values; and therefore, this dimension is included in the overall dimension labeled "Improved Social Value". The remaining dimension, namely "Improved Public Services" forms the third dimension of E-Government public value. Therefore, the generalization of the results of content analysis produces three overall dimensions of the public value of E-Government. Based on this study, it shows several positive values which we categorize according to the dimensions proposed and developed by [1]. The dimension has been chosen because it proposes a high level of detail, clear differences between values and is an updated model compared to [64] [65] [66] [35].

In the following sub-chapters, it presents papers that discuss each dimension along with the public values present in this layer referring to the effects that can be caused by the development of E-Government on the activities and processes of public organizations. Each dimension is analyzed and mapped, then entered each sub of the six dimensions:

Table 2. Public Value Dimension

Public Value Dimension	
Public Value Criteria	Reference
1. Improved public services	
Accessibility	[1], [11], [35]
User interaction	[1], [11], [38], [63]
Efficiency	[1], [4], [9], [11], [25], [33], [37], [38], [40], [45], [50], [67]
Effectiveness	[1], [11], [14], [19], [37], [38], [40], [51], [59]
Innovation orientation	[1], [11], [14], [45]
Productivity	[1], [11], [25]
Satisfy users' needs	[1], [11], [12], [17], [63], [68]
Service enhancement	[1], [4], [10]–[12], [14], [17], [19], [25], [37], [40], [50], [56], [69]
Better management of public resources and funds	[1], [11]
Responsiveness	[1], [4], [11], [12], [35], [50], [61], [67]
Respect for the individual	[1], [11], [63]
2. Improved Administrative Efficiency	
Accountability within public organization	[1], [11], [17], [25], [51], [59]
Cost reduction and savings	[1], [11], [38]
Competitiveness	[1], [11]
Efficiency	[1], [4], [9], [11], [25], [33], [37], [38], [40], [45], [50], [67]
Effectiveness	[1], [11], [14], [19], [37], [38], [40], [51], [59]
Reliability	[1], [11], [61]
Process automation	[1], [11]
Errors reduction	[1], [11]
Process optimization	[1], [11], [61], [67]
sustainability	
Governance	[1], [11], [56], [63]
Better management of	[1], [11]

Public Value Dimension	
Public Value Criteria	Reference
public resource and funds	
Data integrity and quality	[1], [11]
Data immutability	[1], [11]
Predictive capabilities	[1], [11]
Reduced energy consumption	[1], [11]
Increased resilience	[1], [11]
Economy and parsimony	[1], [11], [12], [40]
Open	
3. Open Government (OG) capabilities	
Transparency and openness	[1], [4], [9], [11], [14], [19], [35], [37], [40], [50], [67]
Information quality	[1], [4], [11], [12], [17], [19], [35], [50]
System quality	[1], [11], [12], [14], [17], [19]
Service quality	[1], [4], [10]–[12], [19], [25], [33], [35], [50], [56], [61], [67]–[69]
Stakeholder interaction	[1], [11]
Information management	[1], [11]
4. Improved Ethical Behavior and Professionalism	
Law compliance	[1], [11], [59]
Political Loyalty	[1], [11], [12], [40], [59], [66]
Judicial values	[1], [11]
Control of corruption	[1], [11], [59]
Accountability towards society	[1], [11], [17], [25], [51], [59]
Rectitude and impartiality	[1], [11]
Responsibility to stakeholder	[1], [11]
Enhance protection for different stakeholder	[1], [11]
Honesty and fairness	[1], [11]
5. Improved Trust and Confidence in Government	
Enhance networks development	[1], [11]
Dialogue within other public organizations	[1], [11], [35], [45], [66]
User orientation	[1], [4], [11], [35], [50], [63], [67], [68]
Balance competing interests	[1], [11]
Privacy	[1], [10], [11], [35], [69]
Stakeholder interaction	[1], [11]
Equality and equity in service access	[1], [4], [11], [17], [25]
Transparency and openness	[1], [4], [9], [11], [14], [19], [35], [37], [40], [50], [67]
Security	[1], [10], [11], [35], [69]
Trust and confidence	[1], [4], [11], [12], [14], [19], [35], [38], [45], [51], [56], [61]
Accountability towards society	[1], [11], [17], [25], [51], [59]
6. Improved Social Value and Well-Being	

Public Value Dimension	
Public Value Criteria	Reference
Facilitating the democratic will	[1], [4], [11], [25], [38]
Respect for individual	[1], [11]
Environmental sustainability	[1], [4], [11], [17], [50], [61], [67]
Inclusiveness	[1], [11]
Control of corruption	[1], [11], [59]

RQ2: How is the analysis of public value based on the E-Government maturity model?

3.2 E-Government Maturity Model

The E-Government maturity model provides recommendations for managing procedures for creating and maintaining E-Government services. E-Government portal maturity has been evaluated using various maturity models in the literature. Based on the systematic literature review, six E-Government maturity models were taken which will be combined in general in Table 2 and Table 3.

Table 3. 6 E-Government Maturity Model

Maturity Model		
Maturity Stage	Dimension	Reference
1. Ranking of e-Government in Indonesia (PeGI)		
1. Preparation	1. Policy	[20], [70]–
2. Maturation	2. Institutional	[72]
3. Stabilization	3. Infrastructure	
4. Utilization (Transformation)	4. Application	
5. Planning		
2. Electronic-Based Government System (SPBE)		
1. Determining the Maturity Level of SPBE	1. Business process architecture	[72], [73]
2. Calculating the Value of the SPBE Maturity Level Index	2. Data and information architecture	
3. Perform Gap Analysis	3. Infrastructure architecture	
4. Develop a Strategic Plan to Increase the SPBE Index Value	4. Application architecture	
5. Security architecture		
6. Service architecture		
Monitor the implementation of SPBE		
3. Hiller and Belanger Maturity Model		
1. Information	1. Disclosures	[5], [74]
2. Two-way communications	2. Policies	
3. Transaction	3. Security	
4. Integration Participants	4. Privacy Specific	
	5. Monitoring/ Performance Measures	
4. Layne and Lee		
1. Cataloguing	1. Technological and organizational complexity	[75]
2. Transaction		
3. Vertical integration		
4. Horizontal integration	2. Integration	

Maturity Model		
Maturity Stage	Dimension	Reference
5. Almazan and Gil-Garcia		
1. Presence	1. Information provision	[76]
2. Information		
3. Interaction	2. Services Provision	
4. Transaction		
5. Integration Political Participation	3. Privacy and security aspects	
	4. Accessibility Target audiences	
6. Reddick		
1. Cataloguing	1. G2C	[77]
2. Transactions	2. G2G	
	3. G2B	

3.3 Generalization of the six E-Government maturity

Generalization of the six E-Government maturity models to find out the similarities and differences between the six E-Government maturity models.

Table 4. Generalization of The Six E-Government Maturity Models

Stage of Maturity Model	Maturity Model					
	PeGI	SPBE	Hiller and Belanger	Layne and Lee	Almazan and Garcia	Reddick
Presence	V				V	V
Maturation	V					
Stabilization	V					
Utilization (Transformation)	V					
Calculating the Value		V				
Perform Gap Analysis		V				
Develop a Strategic Plan		V				
Monitoring Information		V	V		V	
Two-way communications			V			
Transaction			V	V	V	V
Integration			V	V	V	
Participation			V		V	
Interaction			V	V	V	

Table 3. illustrates the combined stages of the six maturity models selected, resulting in 14 stage from the whole, then an analysis is carried out to take or select the stages that are most widely used in the six maturity models, almost of the six maturity models have stages presence, information, interaction, transaction, integration. An explanation of the stages (stages) of the E-Government maturity model that have been generalized and analyzed is as follows:

1. Stage 1 Presence: present information and content to citizens including news, law, publications, databases, and interactive maps.
2. Stage 2 Information: at this stage it provides content that informs users of a formal nature,

- static content is limited to special information that is dynamic and updated regularly.
3. Stage 3 Interaction: interaction that happens in both directions between the government and citizens or groups of people using ICT features like downloading data or possibly emailing each other while using security measures like password locks.
 4. Stage 4 Transaction: citizens can currently access online services and conduct financial transactions.
 5. Stage 5 Integration: all services are currently linked at this time. All E-Government services can be accessed through a single e-portal.

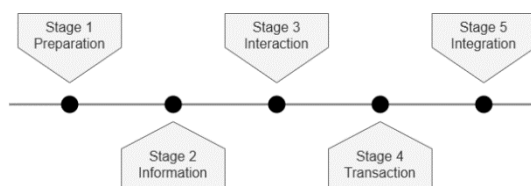


Figure 4. Generalization of The Stages of E-Government Maturity Model

Analysis for grouping the dimensions present in the six maturity models in Table 2. that have been selected, grouped into 5 main dimensions, this grouping analysis is carried out to determine the relationship between each dimension, as follows:

Table 5. Generalization and grouping of dimensions of the E-Government Maturity Model

No.	Dimension	Sub Dimension
1.	Public Service	- Service - Application - Accessibility - Infrastructure - Integration
2.	Government	- Government to government - Government to business - Government to citizens - Institutional
3.	Administration	- Data and Information - Business process - Technological and organizational complexity
4.	Trust and Confidence	- Policy - Disclosures - Security - Privacy - Monitoring/ Performance Measures
5.	Social Value	- Planning - Citizen

3.4 Public Value based E-Government Maturity Model

Analysis to find out the public value based on the maturity model that has been obtained, then a combination of the 2 dimensions is carried out, namely an adjustment between the public value dimension and the maturity model dimension, this is aims to find out what public values should be present in an E-Government based on analysis considerations From the dimensions of the public values themselves and the dimensions of the E-Government maturity model, the results of the merger are 6 dimensions of maturity models based on the E-Government maturity model:

Table 6. Public Value based E-Government Maturity Model

No.	Dimensi Public Value	Dimensi from E-Government Maturity Model	Dimensi Public Value based E-Government Maturity Model
1.	Improved public services	Public Services in Government	Public Services in Government
2.	Improved Administrative Efficiency	Administration in Government	Dimensi Administration in Government
3.	Open Government (OG) capabilities	Government	Open Government (OG)
4.	Improved Ethical Behavior and Professionalism	N/A	Ethical Behavior and Professionalism
5.	Improved Trust and Confidence in Government	Trust and Confidence in Government	Trust and Confidence in Government
6.	Improved Social Value and Well-Being	Social Value in Government	Social Value in Government

There are similarities between the dimensions of public value and the dimensions of the E-Government maturity model so that some of these dimensions can be combined to form a new public value dimension based on the considerations of the dimensions of the E-Government maturity model. This study aims to strengthen public values based on the E-Government maturity model. Designing, creating, and implementing sustainable E-Government services is made easier by analyzing public values based on the E-Government maturity model.

4. CONCLUSION

This study produces a public value dimension based on the E-Government maturity model which was carried out using a systematic literature review method of 60 selected journals. From the results of the systematic literature review analysis, several criteria

were produced for each dimension of public value, such as: accessibility, user interaction, efficiency, reliability, transparency and openness, information quality, privacy, and control of corruption. Based on the analysis of the 6 maturity models, this study resulted in a generalization of the maturity model stages into 6 stages, namely: (1). presence, (2). information, (3). interaction, (4). transaction, (5). integration.

This study maps or adjusts what public values must exist in government based on the E-Government maturity model. From the results of the systematic literature review analysis, there are similarities and linkages between the dimensions of public value and the dimensions of the E-Government maturity model so that some of these dimensions can be combined to form a new public value dimension based on considerations from the dimensions of the E-Government maturity model, namely (1). Public Services in Government (2). Dimensions of Administration in Government, (3). Open Government (OG), (4). Ethical Behavior and Professionalism, (5). Trust and Confidence in Government (6). Social Value in Government. This study aims to strengthen public values based on the E-Government maturity model. It is hoped that designing, creating, and practicing sustainable E-Government services will become easier by analyzing public values based on the E-Government maturity model.

This research is only conceptual research with the aim to synthesize previous research and identify potential directions for future studies. The maturity model is used in this research to explore the public value of E-Government, however, although it is integrated and a comprehensive analysis of the literature to determine public value, the maturity model resulting from this analysis has not been thoroughly evaluated, therefore validation is required for future studies.

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