





Designing People Capability Maturity Model Criteria to Enhance the Assessment Instrument for SPBE to Address the Elements of People, Process, and Technology in IT Governance

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Abstract. There is no specific assessment instrument for people management aspects in the SPBE instrument, hence this research has completed the design of People capability maturity model criteria for an electronic-based government system (SPBE) based on the P-CMM model, by adding 1 domain related to people, to complement the SPBE existing domains such as internal policy, governance, management, and services, to fulfill the people process and technology aspects. The designing criteria process used is the people capability maturity model in an electronic-based government system (SPBE). This instrument has gone through a focus group discussion process and validated using the CVI and CVR methods, and the score results obtained are 1, which shows that the design is very relevant. So, it can be concluded that the design criteria for the people capability maturity model in an electronic-based government system (SPBE) proposed by the researcher can be declared valid and relevant.

Keywords: Government regulations, framework, and best practices, CVI, CVR, and IT governance.

1 Introduction

1.1 Background

Development of ICT applications is growing rapidly throughout the world, many governments in both developed and developing countries have implemented Electronic Government to digitize business processes in government [1]. Based on a survey conducted by the United Nations (UN) regarding the implementation of E-Government in Indonesia, it is ranked 88th for the development and implementation of e-government or electronic-based government systems which in Indonesia is known as SPBE, then in 2022 for its performance in creating and putting into place an Electronic-Based Government System (SPBE), Indonesia was ranked 77th in the United Nations (UN) E-Government Survey [2]. The implementation of E-Government is expected to be able

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to build effectiveness and efficiency in government business processes, and able to accommodate important aspects related to IT Governance, that consist of people, process and technology, therefore a re-evaluation of the SPBE assessment instrument is carried out, and based on the results of this evaluation, suggested to design people capability maturity model criteria to enhance the assessment instrument for SPBE to address the elements of people, process, and technology in IT Governance.

2 Literature Review

2.1 IT Governance

IT Governance is an effort to synergize the roles of IT and Governance to achieve government/organizational goals and objectives [3]. IT focuses on technology while Governance focuses on governance [4]. IT Governance is a framework and processes used by an organization to ensure that information technology (IT) systems and processes are aligned effectively with its business goals and strategies [5]. IT governance primary objective is to make sure that IT resources are used effectively, risks are properly controlled, and IT investments help the organization succeed [6]. The urgency of information technology (IT) governance refers to the importance of managing IT aspects in an organization are in order, structured and effective manner [7]. It involves the development and implementation of processes, policies, and practices aimed at ensuring that information technology is used in a manner that is appropriate, secure, and adds value to the organization [8]. This research will carry out an analysis regarding the fulfillment of IT Governance aspects which include people, process, and technology in the SPBE assessment instrument.

2.2 IT Maturity Level (ITML)

The concept of maturity level model is a measurement model development of an organization's capabilities/abilities in a field which is indicated by maturity level. Each level of maturity will be described by a criterion [9]. An essential indication for mapping the structure and activities of IT resources (applications, information, infrastructure, and human resources) is the maturity level value [10]. Valid data are used for validity and reliability assessments in maturity level analysis practice [11]. Measuring the level of capability of aspects related to information technology aims to optimize information system performance [12]. Furthermore, ITML definitely impacts management and stakeholders who oversee the organization [13]. Because effective IT governance can boost IT effectiveness, information technology must be maintained and expanded in line with the organization's business plan and objectives [14].

And to standardize the technical guidance/guidelines for assessing IT Maturity Level in government institutions, an Electronic Based Government System, hereinafter referred to as SPBE, has been prepared, which is regulated in Presidential Decree No. 95 of 2018.

2.3 PANRB Ministerial Regulation Number 59 of 2020

PANRB Ministerial Decree Number 59 of 2020 (Minister of State Apparatus Empowerment and Bureaucratic Reform Regulation) concerning monitoring and evaluation of electronic-based government systems is a regulation issued by the Ministry of State Apparatus Empowerment and Bureaucratic Reform to assess the capability of an agency that running SPBE to achieve the objectives of implementing governance and management. PANRB Ministerial Regulation Number 59 of 2020 is published to execute Article 71 Paragraph 3 of Presidential Regulation Number 95 of 2018 about electronic-based government systems.

2.4 Human Resources

Human resources (HR) or workforce is a strategic factor that drives organizations in the current era of globalization [15]. Human Resource Management often involves a framework of policies, procedures, and best practices designed to create a positive and productive work environment [16]. IT HR management is important to ensure that organizations can optimize the use of information technology, achieve business goals, and keep IT employees engaged and productive [17]. HR Management IT Governance refers to the management of human resources (HR) in the context of information technology (IT) governance in an organization. This involves managing employees in designing, implementing, supervising and managing IT systems as well as ensuring compliance with relevant governance standards and policies [18], therefore it is necessary to develop assessment instruments on IT HR management that have the potential to provide useful insights for organizations in identifying weaknesses and areas requiring improvement, with the aim of increasing the maturity level of IT HR management. In its implementation, maturity assessment provides a systematic evaluative framework for measuring and analyzing several critical dimensions related to IT HR management.

2.5 People Capability Maturity Model (People CMM)

People CMM is classified into five levels that build the foundation successfully to continue improve individual competency, develop effective teams, motivate increased performance, and form the workforce organization needs to achieve its future business plans. Each maturity level represents a clearly defined evolution in the workforce development of a business. Organizations can put into practice effective methods by adhering to a maturity framework [19].

2.6 Content Validity Index

In this research, researchers will ask for opinions from experts. Experts are asked to carry out and provide assessments and opinions regarding SPBE maturity level recommendations that have been made. The validation is carried out by giving an assessment questionnaire to experts. Researchers use the Content Validity Index (CVI)

to determine the relevance scale. Experts were asked to rate each item by providing a CVI relevance scale, namely 1 (very irrelevant), 2 (not relevant), 3 (relevant), and 4 (very relevant). If more than half of the experts point out a relevant item, then the item can be said to have sufficient content validity [20].

2.7 Content Validity Ratio

The CVR (Content Validity ratio) method is used to measure the level of expert agreement on a single item and express the level of content validity through a single indicator that ranges from -1 to 1. Researchers continue calculating content validity based on expert judgment after the expert judgment process is complete [21, 22].

3 Discussion and Results

3.1 Existing SPBE Assessment Instruments

Regarding measurement, it is divided into two, the maturity level criteria for process and service capabilities. In the process aspect, it accommodates assessments related to domains of internal regulations, SPBE management, SPBE services, and SPBE governance. The capability maturity level process is a measurement of an organization's capabilities in a process and will be used to measure the maturity level of SPBE policy, governance and management. The level of capability maturity process is measured by 5 (five) levels, classified into initial, managed, defined, predictable, and optimizing. The process capability maturity level criteria can be seen in the following table 1:

Table 1. Process capability maturity level

	<i>Level</i>	<i>SPBE Capability Level</i>
1	Initial	<ul style="list-style-type: none"> ▪ The SPBE implementation process was carried out without planning.
2	Managed	<ul style="list-style-type: none"> ▪ Initial level criteria have been met. ▪ The process of implementing SPBE has been carried out in accordance with management functions and is applied to several work units in the organization.
3	Defined	<ul style="list-style-type: none"> ▪ The Managed level criteria have been met. ▪ The process of implementing SPBE has been carried out in accordance with management functions and guidelines/standards and is applied to all work units in the organization.
4	Predictable	<ul style="list-style-type: none"> ▪ Defined level criteria have been met. ▪ The integrated SPBE implementation process has contributed to organizational performance. The performance of SPBE implementation can be measured through review and evaluation activities in each SPBE implementation process.
5	Optimizing	<ul style="list-style-type: none"> ▪ Integrated and measurable level criteria have been met.

<i>Level</i>	<i>SPBE Capability Level</i>
	<ul style="list-style-type: none"> ▪ The SPBE implementation process has carried out continuous quality improvement based on the results of reviews and evaluations.

Regarding service aspects, it accommodates assessments related to domains of administration services and public services. The level of service capability maturity is measured by 5 (five) levels, they are information, interaction, transaction, collaboration, and optimization. The service capability maturity level criteria can be seen in the following table 2:

Table 2. Service capability maturity level

<i>Level</i>	<i>SPBE Capability Level</i>
1 information	<ul style="list-style-type: none"> ▪ The SPBE services are offered as one-way information.
2 interaction,	<ul style="list-style-type: none"> ▪ Criteria for the information level have been met. ▪ SPBE services are delivered through two-way communication.
3 transaction,	<ul style="list-style-type: none"> ▪ The interaction level criteria have been met. ▪ SPBE services are used in a single operational transaction.
4 collaboration	<ul style="list-style-type: none"> ▪ Transaction level criteria have been met. ▪ SPBE services are provided through integration/collaboration with other SPBE services.
5 optimization.	<ul style="list-style-type: none"> ▪ Collaboration level criteria have been met. ▪ SPBE services have been improved in quality to adapt in vary of needs in internal or external environment.

Regarding IT Governance, there are 3 most important aspects, people, process, and technology, which are the three elements for organizational/company transformation towards continuous improvement. Based on the evaluation results, the new SPBE guidelines only accommodate two aspects, namely:

1. Process aspect: accommodated in the domains of SPBE internal policy, SPBE governance and SPBE management.
2. Technological aspects: accommodated in the domain of administration services and public services.

3.2 SPBE Assessment Instrument Gaps

The People aspect has not been accommodated, so it is necessary to study the people capability maturity model that will be used as a reference in preparing proposed people capability maturity model criteria for electronic-based government systems (SPBE).

3.3 SPBE Model Target

The following Figure 1 is a target model for the SPBE framework, with the addition of the people domain.

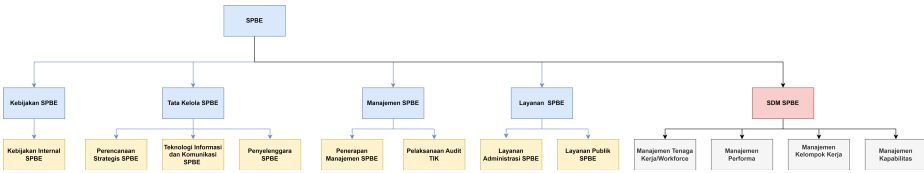


Fig. 1. SPBE Target Model

3.4 People Capability Maturity Model as Reference

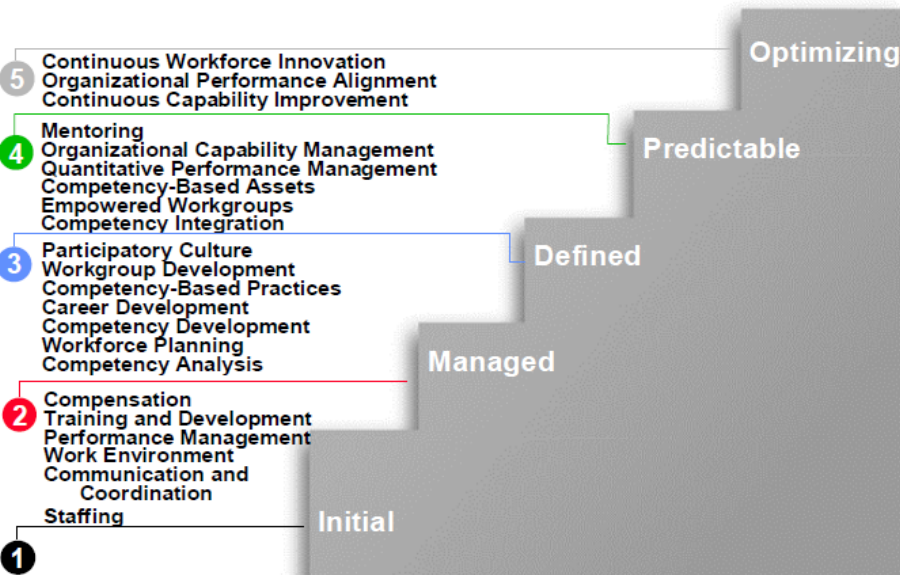


Fig. 2. Process Areas of P-CMM (captured from [23])

Figure 2 is about the Process Areas of P-CMM. Each maturity level in People CMM, except the initial level, consists of three to seven process areas. Each process area is identified as a group of related practices that, when implemented collectively, achieves a set of objectives considered important for increasing maturity levels. SPBE People Instrument Recommendations. Based on the P-CMM behavioral characteristics of maturity levels, a proposed people capability maturity model criteria for an electronic-based government system (SPBE) were prepared based on the P-CMM Model. This assessment instrument consists of several components: maturity level criteria, and maturity attributes.

3.5 Maturity Level Criteria

Maturity level criteria are based on behavioral characteristics of maturity levels. Where in each leveling dimension there is a required process area, the following is a table 3 of maturity level criteria that defines Levels 1-5.

Table 3. People capability maturity level

<i>Level</i>		<i>SPBE Capability Level</i>
1	Initial	<ul style="list-style-type: none"> SPBE area management/process management practices resources are carried out without planning and are inconsistent.
2	Managed	<ul style="list-style-type: none"> Basic SPBE area management/process management practices resource has been established, and have accommodated staffing processes, work environment, performance management, compensation, communication/coordination, and training/development.
3	Defined	<ul style="list-style-type: none"> SPBE area management/process management practices resource is well defined, and accommodate processes related to Workforce planning, career development/Competency based practices, workgroup development/participatory culture, and Competency development/Competency analysis.
4	Predictable	<ul style="list-style-type: none"> SPBE area management/process management practices resource is well predictable, have accommodated processes related to organizational capability Management, quantitative performance Management, Competency integration/empowered workgroups, Competency based assets, and mentoring.
5	Optimizing	<ul style="list-style-type: none"> SPBE area management/process management practices resource has been optimized, by accommodating processes related to continuous Workforce innovation, organizational performance alignment, and continuous capability improvement.

3.6 Maturity Attribute

The preparation of maturity attributes is based on the characteristics of each process area at the related level. The following is a maturity attribute in table 4 for each maturity level criteria: Levels 1-5.

Table 4. People capability maturity level attribute

NO	Workforce Management	Performance Management	Work Group Management	Capability Management
1	The process of implementing the formation of SPBE	The process of implementing performance management for	The process of implementing and managing the SPBE working	The process of implementing SPBE resource capability

NO	Workforce Management	Performance Management	Work Group Management	Capability Management
	workers/organizer was carried out without planning and was inconsistent.	SPBE organizers was carried out without planning and was inconsistent.	group was carried out without planning and was inconsistent.	development management was carried out without planning and was inconsistent.
2	Ensure that the formation of SPBE organizers is filled with individuals who meet the requirements to be recruited, selected and transferred to SPBE organizing assignments.	There is a process for implementing performance management for SPBE organizers, along with compensation mechanisms, and attention to a comfortable work environment for SPBE organizers.	There is a timely communication process throughout the organization and ensures that SPBE organizers have the skills to share information and coordinate SPBE work programs efficiently.	Identify and accommodate capability development needs in the form of IT personnel training needs, to run SPBE.
3	Ensure that there is a process for analyzing the adequacy/needs of workforce for the implementation of SPBE.	The process of implementing IT performance management focuses on developing the competencies and careers of SPBE organizers	There is establishment and development of working groups to accommodate the implementation of SPBE, accompanied by routine communication and coordination patterns related to the SPBE program to accommodate participatory culture.	1. Ensure that competency development related to SPBE is carried out constantly. 2. Identify the competencies of SPBE organizer workforce that organization needs to achieve SPBE goals.
4	1. Ensure that there is documentation regarding the number of individuals who have skills/knowledge/a	Apply evaluation to performance data collected and analyzed.	Implementing competency integration and empowering the SPBE organizing working group	There is a mechanism where every knowledge, experience and artifact in every activity/activity that requires

NO	Workforce Management	Performance Management	Work Group Management	Capability Management
	<p>bilities, based on their levels related to the SPBE Architecture.</p>			<p>certain competencies is recorded and documented, to be used as material for mentoring, evaluation and reference for continuous improvement.</p>
5	<p>2. There is an valuation process regarding the impact of competency levels on SPBE organizer workforce planning, which can be used as a basis for decision making regarding SPBE organizer workforce planning.</p> <p>Organizations implement innovation and continuous improvement in SPBE management practices, this can be in the form of applying relevant technology in resource management, or conducting comparative studies related to resource management in more advanced organizations.</p>	<p>Ensure that evaluation results and corrective actions related to the implementation of quantitative performance management are followed up.</p>	<p>Ensure that the results of the evaluation of working group empowerment through providing relevant training to carry out SPBE implementation are effectively followed up.</p>	<p>Ensure that evaluation results related to the implementation of capability development and knowledge management are followed up.</p>

3.7 Assessment Compilation

The validation process of the proposed draft criteria for the People capability maturity model for an electronic-based government system (SPBE) based on the P-CMM model has been carried out, the results obtained are as follows in table 5:

Table 5. Expert judgment list

No	Names of Experts	Score	Description
1.	Thea Nisaa Andi Saffanah, S. Kom., M.T.I., CAPM, TOGAF-F, LI ISO 27001, LA ISO 27001	3,75	Relevant
2.	Achmad Taufik Rizki, S.kom., CEH ISO27001, TOGAF-F.	3,75	Relevant
3.	Savanny Putri Safrina, S. Kom., ITSM Supervisor.	3,75	Relevant
4.	Andrian Wahyu Pahlevi, S.kom., COBIT-F, GAIQ.	3,75	Relevant
5.	Fadiana Anindita, S. Kom., CSXF	4	Very Relevant

$$\frac{CVR=ne-N/2}{N/2} \frac{CVR=5-5/2}{5/2} CVR = 1 \tag{1}$$

Information:

ne: Number of experts who provide relevant values.

N: Total number of experts.

The more experts give relevant scores to an item, the greater the level of content validity being assessed (Lawshe, 1975). Lawshe (1995) stated that the CVR value with 5 experts was 0.99, while the CVR value obtained by researchers in this study was 1. Based on this, the researcher concluded that the assessment instrument designed was valid or legal and could be used as a standard for implementing assessment instruments.

4 Conclusions

4.1 Conclusion

This research has successfully designed people capability maturity model criteria for an electronic-based government system (SPBE), it is become complementary to the SPBE assessment instrument domain and has completed the important IT Governance elements which is based on people, process, and technology with 5 experts. This proposed assessment instrument has also been validated by using CVI and CVR methods, and the score obtained is 1, which indicates the design is very relevant. It can be concluded that the proposed people capability maturity model criteria for an

electronic-based government system (SPBE), proposed by researchers, can be declared valid and relevant.

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