E-Government Maturity Model Based on SPBE at Department of Spatial Planning and Development

Endang Amalia

Department of Information System, Universitas Widyatama, Bandung, Indonesia

Dani Hamdani

Department of Information System, Universitas Widyatama, Bandung, Indonesia

Ucu Nugraha

Department of Information System, Universitas Widyatama, Bandung, Indonesia

Abstract: Sistem Pemerintahan Berbasis Elektronik known as SPBE is a government administration that utilizes information and communication technology to provide services with the aim of realizing clean, effective, transparent, and accountable government governance, quality, and trustworthy public services. Because he role of ICT in supporting work processes and services in achieving the vision and mission of the Regional Government of West Java Province is very important, it is necessary to evaluate the use and implementation of ICT solutions for continuous improvement in all Regional Apparatus. In the department spatial planning and development, e-government maturity measurements are carried out in 4 domains (application, infrastructure, information security and IT governance and) by adopting a descriptive research method using questionnaire data with a scale of 5 likers. The results showed the evaluation of the maturity of the SPBE in department spatial planning and development obtained a "Very Poor" category with a total index value of 0.61. This research also provides recommendations and considerations in making decisions on how to take policies in implementing e-Government Implementation in the community development service to determine the development priority scale from the level of maturity.

Keywords: Department Spatial Planning and Development, E-Government, Maturity, Model, SPBE

Correspondents Author:
Endang Amalia, Department of Information System, Universitas Widyatama, Bandung, Indonesia
Email: endang.amalia@widyatama.ac.id

Received May 30, 2024; Revised July 6, 2024; Accepted July 17, 2024; Published July 20, 2024

Introduction

The Era of Industrial Revolution 4.0 has begun to be recognized in the provision of public services in Indonesia (Hamirul, 2018; Hidayatno et al., 2019). Industrial revolution 4.0 is a collaborative phase that requires the entire service process to be carried out digitally and integrated (Burhan, n.d.). The Indonesian Government's current development priority is the public service sector (Pratama, 2019). Public services play an important role in activities organized by the Central, Regional and Environmental Governments to meet the basic needs of every citizen (Yusriadi & Farida, 2019). Sistem Pemerintahan Berbasis Elektronik known as SPBE (Electronic Based Government System) is a government administration that focuses on serving SPBE users to utilize the latest information and communication technology. This aims to create effective, good, accountable, and transparent government governance, quality, and reliable services to the public, as well as realizing an integrated electronic-based government system. To improve the integration and efficiency of electronic-based government systems, national governance and management of electronic-based government systems is also very necessary (Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi, 2020).

PAN-RB Ministerial Regulation Number 5 of 2018 was developed into PAN-RB Ministerial Regulation Number 59 of 2020 in September 2020 by the Minister of State Apparatus Empowerment and Bureaucratic Reform of the Republic of Indonesia. This change has an impact Department of Spatial Planning and Development, where this change becomes a new benchmark for Department of Spatial Planning and Development. In connection with these regulatory changes, the government of the Republic of Indonesia hopes that all West Java regional officials can prepare self-assessments as soon as possible in accordance with applicable regulations. The results will become a work guideline in order to improve and improve the quality of SPBE. In the future, the goals of government governance will be easily achieved within the scope of efficiency, transparency and accountability and the quality of public services will become more affordable and easier and fast (P. P. Indonesia, 2018).

Related research is research entitled Collaborative Governance in the Implementation of Electronic-based Governance Systems: Best Practices from Local Governments in Eastern Indonesia which was conducted by (Madya Putra Yaumil Ahad & Nugraha Barsei, 2023) in this research using a case study approach at the Communication Service and Informatics of Polewali Mandar Regency to find out the application of Collaborative Governance in the implementation of SPBE. The research results show that encouraging collaboration, understanding, and shared goals and policies is an important instrument. And the key to successful implementation is leadership commitment, the SPBE Index is integrated with KPI (Key Performance Indicator) in the RPJMD (Regional Medium Term Development Plan),

cooperation between OPDs, and a culture of continuous improvement. Therefore, Polewali Mandar Regency can be used as a locus of best practice for implementing SPBE in Indonesia, especially in Eastern Indonesia.

Analysis of the Maturity Level of the Electronic-Based Government System (SPBE) in the South Sulawesi Provincial Government was carried out by (Hidayah & Almadani, 2022) using the observational study research method and the results of the research obtained a figure of 2.05 which was categorized as sufficient for the SPBE maturity level in Sulawesi Province. Several aspects of the assessment results have a low value contribution because there is no supporting evidence that meets the predetermined criteria. These aspects consist of indicator 29, implementation of SPBE infrastructure audits, indicator 30, implementation of SPBE application audits, and indicator 31, implementation of SPBE security audits. Another research entitled Evaluation of Electronic-based Government Systems (SPBE) in Bekasi City in 2020 was conducted by (Anugrah et al., 2022) with research methods using qualitative descriptive methods and SPBE evaluation in 2018. The results of the research show that Bekasi City has a category SPBE Good with an index value of 3.36 and in the good category.

The results of research conducted by (Damopoli et al., 2024) with the title Implementation of the Electronic-Based Government System (SBPE) in the North Sulawesi Provincial Government have not run optimally because the supporting elements in the Regional Regulation indicators in the form of SPBE architecture have not been implemented, which 6 SOPs of the 31 existing SOPs have been carried out. Meanwhile, the thesis (Ambarwati, 2023) with the title Evaluation of the Electronic Based Government System (SPBE) Policy on the Wargaku application in the City of Surabaya is that the use of the Wargaku application is appropriate, effective, efficient and achieves the objectives of the SPBE policy, although in several aspects it needs improvement and equitable use of the application and enthusiasm from the public is also positive. In the Innovation Policy in Implementing Electronic-Based Government Systems (SPBE) in Dumai City carried out by (Amri et al., 2022) it is stated that SPE has been running well, but there are several obstacles that are limiting the implementation of SPBE. Research entitled Optimizing the Implementation of Electronic-Based Government Systems (SPBE) in Lampung Province conducted by (Khaidarmansyah & Ridwan, 2022) contains the lack of ASN human resources who master information and communication technology both in quality and quantity, which is one of the main obstacles for the Regional Government in developing SPBE.

In international level, maturity in E-Government used in classifying them according to the stages of maturity of electronic government, the result of Filipe's research (De Carvalho et al., 2024) is São Paulo (SP), Rio de Janeiro (RJ), Salvador (BA), Belo Horizonte (MG) and Fortaleza (CE). The results showed that the municipalities of São Paulo (SP) and Rio de

Janeiro (RJ) showed greater compliance with the criteria analyzed in the model considered, being classified in the 'integrated' stage, the most developed level. The municipalities of Salvador, Belo Horizonte, and Fortaleza were classified in the transactional stage. Besides, based on Carsten's research (Rietmann & Mufeti, 2024), the result is most Namibian OMAs can be classified as currently belonging to intermediary stages of e-government maturity, with a few solely relying on web presence thus far. Features of all websites are described in the paper and enriched with recommendations on advancing e-government in Namibia.

With the conditions described in the previous paragraphs, the author integrates the e-Government maturity model in the Department of Spatial Planning and Development Service using the 2020 Menpan SPBE to produce an e-government maturity model, where from the results of this research it is hoped that the maturity model obtained can become a proposal Information technology policy recommendations for Department of Spatial Planning and Development to become an encouragement and guideline for increasing the maturity of electronic government to an even better stage. Apart from this, this research also provides recommendations and considerations in making decisions on how to take policies in implementing e-Government Implementation in the community development service to determine the development priority scale from the level of maturity. The results are expected to help e-government managers in determining priority scales and measuring the level of e-government maturity in West Java regional apparatus.

Research Method

We adopted quantitative descriptive research method, where data collection is carried out in the field in the form of numbers, theories and photos or images both primary and secondary (Sekaran & Bougie, 2019a; Sekaran & Bougie, 2019b). This data was obtained from the results of field recording, interviews, video recordings, photos and other records carried out in Department of Spatial Planning and Development.

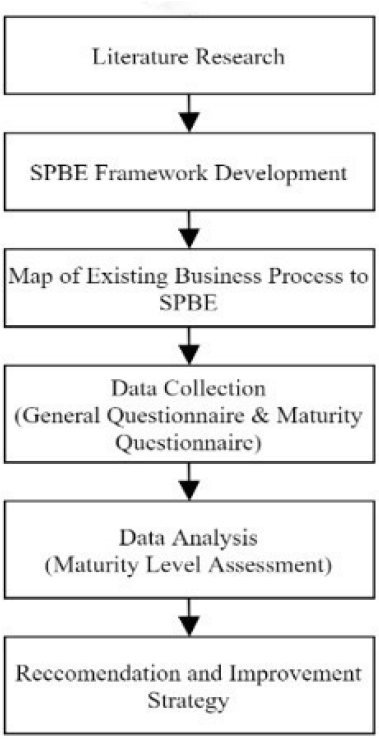

Figure 1 Research Method

Based on Figure 1, our first step began with a literature search and previous research regarding e-government maturity models. Second step, we develop SPBE Framework, in this step, the maturity level method for evaluating ICT maturity developed based on maturity level models that have been widely practiced, namely based on the CMMI model and the e-government Maturity Model as shown in the figure 2.

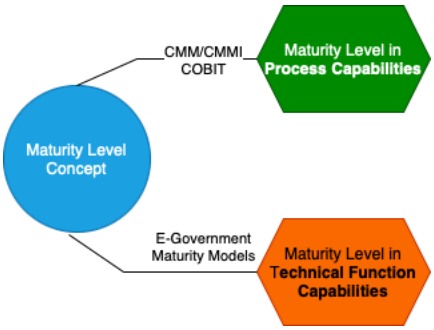

Figure 2 SPBE Framework Development

Next, we create a map of Existing Business Process to SPBE, there are 4 business process domains that will be measured in this step, namely: Governance Domain, the assessments assessed are Strategic Aspects of Information Technology in Organizations (GD01), Information Technology Policy (GD02), Information Technology Implementation Procedures and Guidelines (GD03), Organizational/Institutional Structure (GD04) and Information Technology Human Resources (GD05). Infrastructure Domain, the assessment assessed is Data Network which includes Local Network, Intranet, and Internet (ID01), Data Center and Monitoring (ID02) and Network Operations (ID03). Application Domain includes

assessments of Application Types which include Generic, Special Applications, Public Services, and Decision-Making Analysis (AD01) and Application Integration and Management (AD02). Information Security Domain, Includes assessment of information security management policies/procedures (ISD01) and information security infrastructure (ISD02).

Next step is collecting data from the previous step is collected, including recording documentation, conducting interviews, and conducting questionnaires. The questionnaire we conducted used an open and closed questionnaire with a scale of 5 likers which was equipped with an explanation column for each question which could be filled in by Department of Spatial Planning and Development as an additional explanation or attaching evidence that strengthened the answer to the question asked (K. P. A. N. dan R. B. Indonesia, 2018; K. P. A. N. dan R. B. Indonesia, 2020). Next step the data we gathered from previous step will be analyze and categorize as the index values of the assessment results obtained from the field. We use the assessment scale used by the 2020 SPBE Menpan summarized in Table 1:

Table 1 Rating Scale

Scale	Grade Description
4.2-5.0	Excellent
3.5-<4.5	Good
2.6-<3.5	Fair
1.8-<2.6	Poor
<1.8	Very Poor

Our last step in this research is giving any recommendations and improvement Strategies. we will list justification of results, and finally preparation of reports as recommendation and improvement strategy which are describing a portrait of the overall condition of the domain of utilization and implementation of ICT solutions is used to explain the existing conditions as material for evaluating improvements in accordance with the portrait of the minimum required target conditions. The existing gap conditions will be the basis for compiling recommendations for improvement for the future.

Result and Discussion

SPBE Analysis Result

After gathering the data collection (General Questionnaire & Maturity Questionnaire), we analyse the maturity level in Department of Spatial Planning and Development that divided into 4 domains as explained below:

Governance Domain

In Table 2 is the result of a recapitulation of the Governance domain, data collection gathered by 11 questions of open and closed questionnaire summarized below:

Table 2 Governance Domain Index Value

Sub Domain	Index	Standard
GD01	0.50	3.00
GD02	1.00	3.00
GD03	0.25	3.00
GD04	1.00	3.00
GD05	0.50	3.00

The results obtained in the Governance domain are depicted in a chart in Figure 3, so we can see clearly the gap between the Governance domain index value and maturity index value. The average assessment value of the 5 subdomains is 0.65, the assessment scale of which is categorized as Very Poor.

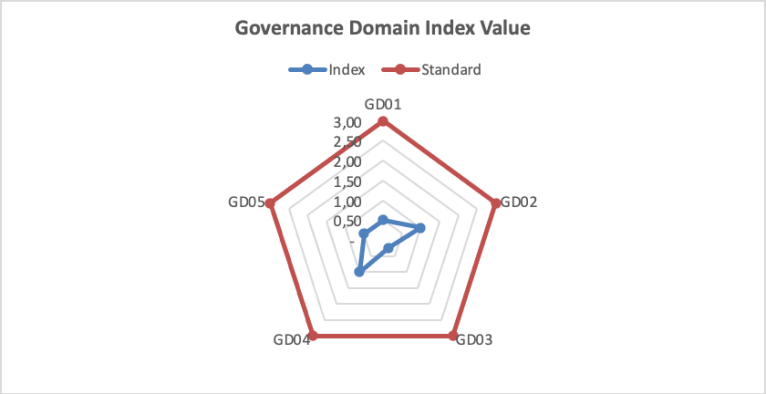

Figure 3 Chart of Governance Domain Index Value

Based on the results of the field assessment in the Governance domain, we found the factors that make the assessment scale for the Governance domain very poor are summarized as follows: (1) There is no decree as a form of leadership's written support for ICT. (2) There is no regional strategic planning as a statement of IT priorities in document form. (3) There is no Decree from the Head of Regional Apparatus in the master plan for policy preparation. (3) There is no Decree from the Head of Regional Apparatus for the preparation of policies in information and communication technology planning and budgeting. (4) There is no master plan for regional information and communication technology equipment. (5) There is no coordination with the provincial level ICT management unit (Ministry of Communication and Information Technology) for ICT planning and budgeting. (6) There is no increase in the quantity and quality of IT management human resources.

Infrastructure Domain

Table 3 is the result of a recapitulation of the infrastructure domain, data collection gathered by 4 questions of open and closed questionnaire summarized below:

Table 3 Infrastructure Domain Index Value

Sub Domain	Index	Standard
ID01	2.33	3.00
ID02	1.00	3.00
ID03	1.00	3.00

The results obtained in the infrastructure domain are depicted in a chart in Figure 4 so we can see clearly the gap between the infrastructure domain index value and maturity index value. The average assessment value of the 3 subdomains is 1.44, the assessment scale of which is categorized as Very Poor.

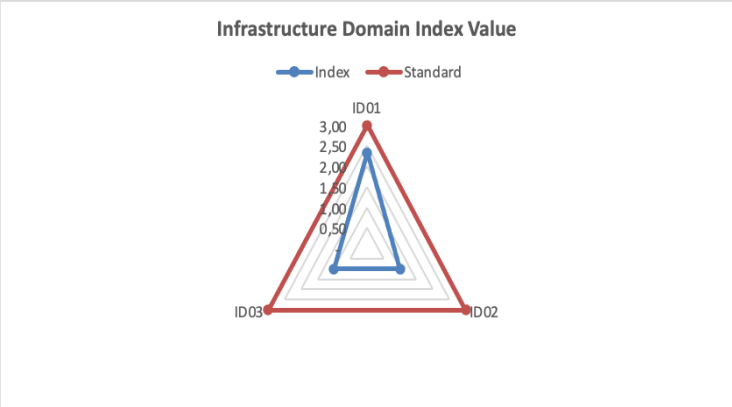

Figure 4 Chart of Infrastructure Domain Index Value

Based on the assessment results obtained for the infrastructure domain, we found the factors that make the assessment scale for the infrastructure domain very poor are summarized as follows: (1) There is no local computer network (LAN) development within the scope of Regional Apparatus work units that is implemented and integrated. (3) The internet network meets work needs, needs to be maintained and monitored. (4) There is no development of data centers or telecommunications server rooms that comply with standards. (5) There is no improvement in accordance with standards in the Monitoring and Operations sub domain.

Application Domain

Table 4 is the result of the recapitulation of the Application domain data collection gathered by 20 questions of open and closed questionnaire summarized below:

Table 4 Application Domain Index Value

Sub Domain	Index	Standard
AD01	0.73	3.00
AD02	0	3.00

The results obtained in the Application domain are depicted in a chart in Figure 5 so we can see clearly the gap between the application domain index value and maturity index value. The average assessment value of the 2 subdomains is 0.36, the assessment scale of which is categorized as Very Poor.

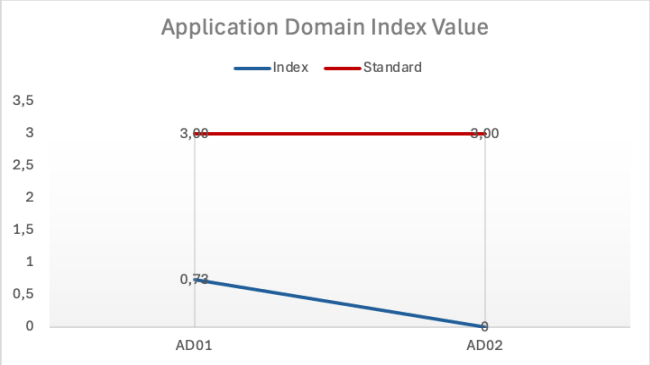

Figure 5 Chart of Application Domain Index Value

Based on the assessment results obtained for the application domain, we found the factors that make the assessment scale for the application domain very poor are summarized as follows: (1) It is necessary to optimize all existing features for use of this type of service application. (2) There is no use of official email for official letters. (3) There is no standard integration for all applications used. (4) There is no standardization of information system data management.

System Security Domain

Table 5 is the result of a recapitulation of the System Security domain gathered by 2 questions of open and closed questionnaire summarized below:

Table 5 System Security Domain Index Value

Sub Domain	Index	Standard
ISD01	0	3.00
ISD02	0	3.00

The results obtained in the System Security domain are depicted in a chart in Figure 6 so we can see clearly the gap between the system security domain index value and maturity index value. The average assessment value of the 2 subdomains is 0 and the assessment scale is categorized as Very Poor.

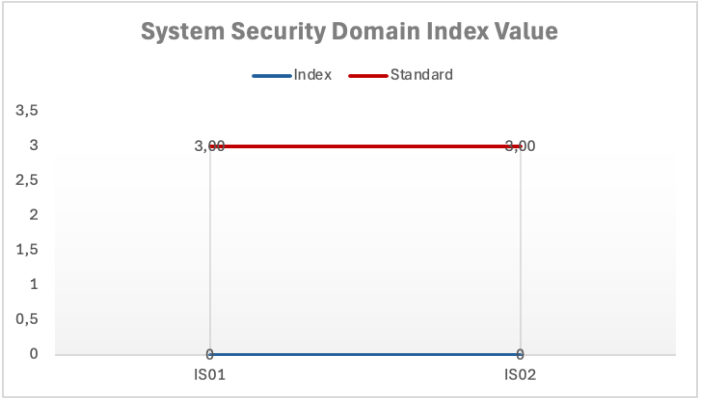

Figure 6 Chart of System Security Domain Index Value

Based on the assessment results obtained for the system security domain, we found the factors that make the assessment scale for the system security domain very poor are summarized as follows: (1) System security management is not available. (2) Information security infrastructure is not available.

Discussion

Based on the results of the study, it can be concluded that Department of Spatial Planning and Development has not been in a mature condition. With the details that of the four domains of E-Government maturity have very low index values. The Department of Communication and Information Technology as a stakeholder managing the Regional Government website is advised to start creating IT priorities in strategic documents, creating ICT master plan document, creating IT service/operational management procedures, and identifying IT HR competency needs in Governance domain so that this domain can develop information technology management optimally and comprehensively.

The Department of Communication and Information Technology also advised the data center/server/telecommunications room needs to follow applicable standards, thus the infrastructure domain well support e-government service. In application domain, The Department of Communication and Information advised using official application for email and letter that has been provided by West java Provincial Government. In general Department Spatial Planning and Development, generic applications are used for all features but need to be improved for optimal use. In System Security Domain, Department Spatial Planning and Development need to create an Information Security Management System procedure provide information security infrastructure.

Conclusions

Based on the assessment that has been carried out in Department of Spatial Planning and Development, the maturity level of SPBE evaluation in Department of Spatial Planning and Development based on PAM-RB Ministerial Regulation Number 59 of 2020 is 0.61 which is obtained from an average of 4 domains which include the Governance domain which is 0.65, the Infrastructure domain as much as 1.44, the Application domain as much as 0.36 and the Information System Security domain as much as 0. The maturity level value is included in the Very Poor predicate. This value is obtained from the assessment results which are supported by supporting evidence obtained from the field and have been analysed and evaluated by SPBE field experts and authors. Due to the author's limited time and space, it would be better if in the next research the supporting evidence is more complete and the research can use

international E-Government standards such as ISO/IEC 385000, COBIT, ISO/IEC 27002, COSO, NIST, or ITIL.

Acknowledgements

This research was supported by LP2M Widyatama University. We thank our colleagues from Widyatama University who provided insight and expertise that greatly assisted the research.

References

Ambarwati, P. (2023). *Evaluasi Kebijakan Sistem Pemerintahan Berbasis Elektronik (SPBE) pada Aplikasi Wargaku di Kota Surabaya*. https://repository.upnjatim.ac.id/18789/1/Cover.pdf

Amri, U., Adianto, A., & Asari, H. (2022). *Kebijakan Inovasi dalam Penyelenggaraan Sistem Pemerintahan Berbasis Elektronik (SPBE) di Kota Dumai*. *6*(2). https://www.jptam.org/index.php/jptam/article/view/4404

Anugrah, Z. E., Zakaria, S., & Darmawan, I. (2022). Evaluasi Sistem Pemerintahan berbasis Elektronik (SPBE) di kota Bekasi Tahun 2020. *Jurnal Administrasi Pemerintahan (Janitra)*, *2*(1), 13. https://doi.org/10.24198/janitra.v2i1.41097

Burhan, M. (n.d.). Proyeksi Pelayanan Publik ERA 4.0. *OMBUDSMAN RI*. https://ombudsman.go.id/artikel/r/artikel--proyeksi-pelayanan-publik-era-40

Damopoli, T., Amalia, R., & Dione, F. (2024). *Implementation of the Electronic-Based Government System (SPBE) in the North Sulawesi Provincial Government*. *13*(1). http://seaninstitute.org/infor/index.php/pendidikan/article/view/2199

De Carvalho, F. P. N., Felisoni, P. R., Gaspar, M. A., & Mutango, R. B. (2024). Maturity of e-government in Brazilian municipalities: Analysis of the dissemination of information and knowledge about the Covid-19 pandemic to Society. *OBSERVATÓRIO DE LA ECONOMÍA LATINOAMERICANA*, *22*(2), e3282. https://doi.org/10.55905/oelv22n2-133

Hamirul, H. (2018). Patologi Pelayanan Publik di Era Revolusi Industri 4.0. *Jurnal Ilmiah Tata Sejuta STIA Mataram*, *4*(2), 1–16. https://doi.org/10.32666/tatasejuta.v4i2.37

Hidayah, E. S., & Almadani, M. (2022). Analisis Tingkat Kematangan Sistem Pemerintahan Berbasis Elektronik (SPBE) pada Pemerintah Provinsi Sulawesi Selatan. *Jurnal Teknologi Dan Komunikasi Pemerintahan*, *4*(2), 49–67. https://doi.org/10.33701/jtkp.v4i2.2680

Hidayatno, A., Destyanto, A. R., & Hulu, C. A. (2019). Industry 4.0 Technology Implementation Impact to Industrial Sustainable Energy in Indonesia: A Model

Conceptualization. *Energy Procedia*, *156*, 227–233. https://doi.org/10.1016/j.egypro.2018.11.133

Indonesia, K. P. A. N. dan R. B. (2018). *Pedoman Evaluasi Sistem Pemerintahan Berbasis Elektronik Instansi Pusat dan Pemerintah Daerah*. https://peraturan.bpk.go.id/Details/132500/permen-pan-rb-no-5-tahun-2018

Indonesia, K. P. A. N. dan R. B. (2020). *Peraturan Menteri Pendayagunaan Aparatur Negara dan Reformasi Birokrasi Nomor 59 Tahun 2020 tentang Pemantauan dan Evaluasi Sistem Pemerintahan Berbasis Elektronik*. https://peraturan.bpk.go.id/Details/150381/permen-pan-rb-no-59-tahun-2020

Indonesia, P. P. (2018). *Peraturan Presiden (PERPRES) Nomor 95 Tahun 2018 tentang Sistem Pemerintahan Berbasis Elektronik*. https://peraturan.bpk.go.id/Details/96913/perpres-no-95-tahun-2018

Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi. (2020). *Sistem Pemerintahan Berbasis Elektronik (SPBE)*. https://www.menpan.go.id/site/kelembagaan/sistem-pemerintahan-berbasis-elektronik-spbe-2

Khaidarmansyah, K., & Ridwan, S. (2022). Optimalisasi Penyelenggaraan Sistem Pemerintahan berbasis Elektronik (SPBE) di Provinsi Lampung. *Jurnal Manajemen*, *16*(1).

Madya Putra Yaumil Ahad, & Nugraha Barsei, A. (2023). Sistem Pemerintahan Berbasis Elektronik: Best Practice dari Pemerintah Daerah di Indonesia: Collaborative Governance in the Implementation of Electronic-based Governance Systems: Best Practices from Local Governments in Eastern Indonesia. *Jurnal Transformasi Administrasi*, *13*(01), 52–74. https://doi.org/10.56196/jta.v13i01.236

Pratama, A. B. (2019). The landscape of public service innovation in Indonesia: A comprehensive analysis of its characteristic and trend. *Innovation & Management Review*, *17*(1), 25–40. https://doi.org/10.1108/INMR-11-2018-0080

Rietmann, C., & Mufeti, V. H. (2024). Assessing the status quo of e-government maturity in Namibia. *Electronic Government, an International Journal*, *20*(3), 277–300. https://doi.org/10.1504/EG.2024.138161

Sekaran, U., & Bougie, R. (2019a). *Metode Penelitian untuk Bisnis I: Pendekatan Pengembangan-Keahlian 6th Edition* (6th ed.). Salemba Empat.

Sekaran, U., & Bougie, R. (2019b). *Metode Penelitian untuk Bisnis II: Pendekatan Pengembangan-Keahlian 6th Edition* (6th ed.). Salemba Empat.

Yusriadi, Y., & Farida, U. (2019). Bureaucracy Performance in Public Services in Indonesia. *Jurnal Ad'ministrare*, *6*(1), 17. https://doi.org/10.26858/ja.v6i1.9434