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Mapping Civil Servants' Digital Literacy: A Readiness Model for Indonesia's E-Government Transformation

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A B S T R A C T

This study aims to map the digital literacy competencies of Indonesia's State Civil Apparatus (ASN) as a foundation for assessing e-government (SPBE) readiness. Focusing on Muara Enim Regency, South Sumatra, the research examines the relationship between ASN characteristics and their levels of digital literacy to develop a comprehensive readiness model. Employing a mixed-method approach with quantitative data from 238 respondents and qualitative validation through interviews, the study utilizes Law et al.'s (2018) Digital Competence Framework alongside the Ministerial Regulation on ASN Competencies. The findings reveal that 60.5% of respondents possess a high level of digital literacy, corroborated by the 2023 SPBE evaluation by KemenpanRB, which rated Muara Enim's SPBE implementation as "good" (score 3.00). The analysis produces an ASN Digital Literacy Mapping Model consisting of four interrelated dimensions: (1) operationalization of analytical technology tools, (2) digital data and information management, (3) digital interaction and collaboration, and (4) digital security knowledge. This model contributes a new analytical framework for assessing digital readiness within Indonesia's public sector and supports the integration of digital literacy assessment in SPBE self-evaluation. Although limited to one regency and cross-sectional data, the model provides a replicable foundation for broader regional and longitudinal studies.

INTRODUCTION

Advances in information and communication technology are driving changes in various public sectors. Changes in information technology not only impact daily life but also change interactions between the government and the public sector (Gracia & Casaló Ariño, 2015). In recent years, the implementation of e-government has become the main focus in response to the need for data transparency, digital-based public services, and modern infrastructure such as the Internet of Things (Bharosa et al., 2020). In Indonesia, technological innovation in public administration has shown increased efficiency, transparency, and community involvement through the digitization of public services and process automation, which reduces operational costs (Prayitno, 2023).

The use of information and communication technology (ICT) in the transformation of regional bureaucracy, such as in Sidenreng Rappang Regency, shows how the e-government system implemented can create public services that are more responsive, transparent, and efficient while accelerating the transformation of a hierarchical bureaucracy to become more open and flexible (Razak, 2023). Another study in Banyumas found that digitalization increased accessibility and accountability in public services, which contributed to a significant transformation in public service management (Suaedi & Zulfikar, 2023).

However, challenges such as resistance to change, the digital divide, and legal issues pose significant obstacles to the implementation of ICT innovations in public policy. This research emphasizes that public digitalization can be a major driver in achieving positive transformation in public administration, provided that existing obstacles can be overcome with the right strategy(Prayitno, 2023). The adoption of e-government not only depends on technology but also on the perception of usefulness and ease of use by public employees, which is a major factor in the success of such systems (Ioannou et al., 2022). Therefore, implementation is very complex and requires various approaches to achieve the final goal (Alharbi et al., 2020).

In 2022, Indonesia will be ranked 88th out of 193 countries in the index e-Government (Nations, 2020). This index generally measures the government's ability and willingness to use public services (service index online), the measurement of infrastructure that enables citizens to participate in e-government (telecommunications infrastructure index), and citizens' ability to use e-government services.

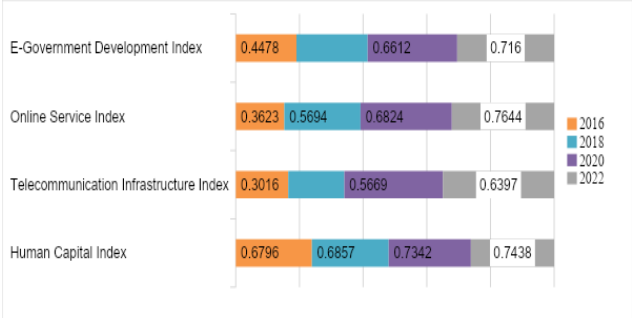

Figure 1. Indonesia's E-Government Development Index
Source: UN (2022)

Figure 1 shows that the government electronic index figures in Indonesia continue to increase from year to year. However, from these data, the inequality between the human capital index and with online service index needs attention from policy makers. The Human Capital Index (HCI) discusses digital literacy in

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society. Meanwhile, the Online Service Index (OSI) discusses community readiness. This means that statistically, Indonesian society is ready to use technology for government affairs, but the government and its staff have not prepared an optimal platform. This data also opens up new problems related to the level of adoption of government implementation related to this electronic-based government system. Comparative analysis of digital readiness between countries also shows that although digital literacy (HCI) plays a positive role in the adoption of e-government, gaps in online services (OSI) often hinder effective implementation (Fesenko, 2024). A study on the Eurasian Economic Union revealed a strong link between the level of economic development, HCI, and OSI, confirming that strong digital infrastructure and good public services are essential for maximizing societal potential and economic growth (Azoeva et al., 2022). To overcome this problem, Indonesia has prepared various regulatory frameworks related to the implementation of electronic-based government systems, including Presidential Regulation Number 95 of 2018 concerning Electronic-Based Government Systems (SPBE), PANRB Ministerial Regulation Number 5 of 2019 concerning SPBE Evaluation, and Presidential Decree No. 39 of 2019 concerning One Indonesian Data which has a lot to do with transparency and evaluation of government performance to the public.

Law et al. proposed a comprehensive approach to measuring digital literacy by taking into account various competencies that individuals need to master. According to Law et al., digital literacy encompasses several key aspects, including information and data literacy, communication and collaboration skills, digital content creation, security, and problem-solving abilities (Solahudin et al., 2022).

One of the fundamental aspects that must be understood in digital literacy is its core components, which include technical skills, digital security, digital ethics, and digital culture (Muslimah & SS, 2023). Strong digital competence positively influences the ability of civil servants (ASN) to deliver public services and access critical information for decision-making processes (Herlambang et al., 2023). Therefore, ASNs need comprehensive training across various dimensions of digital literacy to adapt to technological developments and enhance their performance in the public sector (Kurniawan & Gunawan, 2021).

A high level of digital literacy has been shown to positively impact innovative work behavior among civil servants (Fransisca et al., 2024). Research findings indicate that ASNs with strong digital literacy are more receptive to adopting new innovations and technologies, which in turn contributes to greater efficiency in task execution (Aminy et al., 2023; Suriadiman et al., 2023). In an era increasingly shaped by digitalization, digital literacy is no longer merely an additional skill but has become an essential competency to enhance civil servants' performance in delivering public services.

Meanwhile, research on the digital literacy of State Civil Apparatus (ASN) has been carried out in various countries. For example, research in South Africa mapped the digital literacy of ASN and found that a lack of digital skills was a major barrier to better service delivery, emphasizing the need for ongoing training in the public sector (Mbatha, 2015). Research in Russia also highlights that ASNs often have to learn digital technologies independently due to a lack of adequate training programs, indicating the need for a more structured competency model for ASNs (Sergeevich, O, 2022).

In Southeast Asia, Digital literacy is increasingly recognized as a crucial issue among civil servants (ASN). It encompasses the ability to use information technology efficiently, understand and manage digital information, and interact securely in online environments (Satria et al., 2023). Several studies have highlighted that the digital competence of ASNs plays a vital role in improving the quality of public services and the efficiency of government administration (Pitrianti et al., 2023; Suriadiman et al., 2023). However, in many Southeast Asian nations including Indonesia digital literacy levels are still considered low by global standards and are accompanied by significant challenges and gaps in implementation (Pramudyo, 2023).

Data from the Program for International Student Assessment (PISA) indicates that Indonesia ranks low in terms of literacy, highlighting a major challenge in preparing civil servants (ASN) with adequate digital competencies (Wijayanto et al., 2024; Sitepu & Sinaga, 2023). This situation has led to a significant gap in the digital capabilities of Indonesian ASNs compared to neighboring countries such as Singapore and Malaysia (Sujarwanto et al., 2022; Mulyaningsih et al., 2024).

Meanwhile, this research seeks to fill the empty research gap regarding electronic government in Indonesia. The research trends related to digital literacy in Indonesia in the last five years are described as follows:

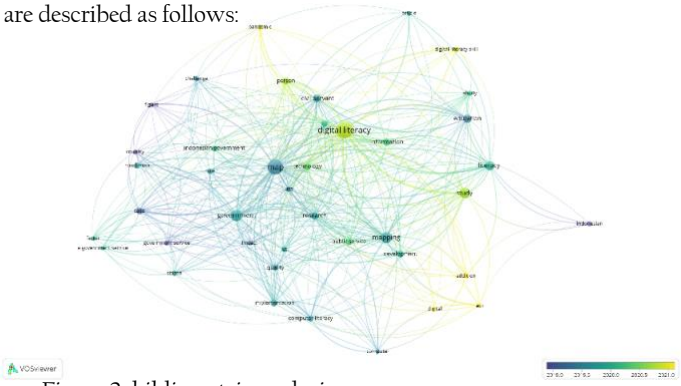

Figure 2. bibliometric analysis
Source: VOSviewer

Based on a bibliometric analysis using VOSviewer of research trends from 2016 to 2025, it is evident that the topic of digital literacy has been extensively explored in relation to education, technology, and public services. However, there remains a notable research gap concerning the specific focus on digital literacy among Indonesia's ASN. This is particularly critical given the implementation of SPBE, where ASNs serve as key actors in driving digital governance. Existing policies and readiness evaluation frameworks for SPBE have yet to explicitly consider the role and preparedness of ASNs as a primary subject of assessment. Therefore, this study offers a novel contribution by developing a digital literacy mapping model tailored to ASNs, aiming to fill this gap and provide both theoretical insights and practical recommendations to strengthen the capacity of civil servants in supporting more effective and sustainable digital governance in Indonesia.

This study asks several research questions which include: What is the current level of digital literacy among civil servants in Muara Enim Regency? How do civil servant characteristics (e.g., age, education, work unit) relate to their level of digital literacy? And how can a contextualized digital literacy model support SPBE readiness assessment?

The expected result of this research is the production of a digital literacy competency mapping of ASN in Indonesia, with a

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case study in Muara Enim Regency, then design a digital literacy competency mapping model that is contextual to the conditions of ASN in Muara Enim Regency, and to determine the implications of the digital literacy competency mapping model that has been formulated for the SPBE readiness assessment model in Indonesia. This is important because it can become the basis for regional SPBE development policies.

To answer the research questions, researchers elaborated the digital literacy theory from Techataweewan & Prasertsin (2018) and the digital literacy competency theory from Law et al (2018). This research contributes to the literature on digital governance by offering an empirically grounded, four-dimensional digital literacy mapping model tailored to the needs of Indonesian civil servants. It also proposes a policy refinement for SPBE readiness assessments, emphasizing the strategic role of human digital competency in public sector reform.

METHOD

This research was conducted using a mixed approach (mixed methods). In the quantitative part, researchers analyzed the frequency distribution based on indicators and digital literacy levels. Next, an analysis of the relationship between respondent characteristics and digital literacy levels was carried out by category. In the qualitative part, researchers will conduct in-depth interviews with several key information people and document the analysis to gain deeper insight into respondents' perceptions, experiences, and context regarding digital literacy. Quantitative data were gathered using a 26-item instrument derived from established frameworks and pilot-tested for content validity. Qualitative insights from key informants were thematically coded, enriching the interpretation of statistical results. Apart from that, researchers also use observation techniques and documentation studies to build in-depth understanding.

RESULTS AND DISCUSSION

This research involved 238 respondents from various agencies in Muara Enim Regency. The largest number of respondents, namely 140 people or 58.8%, came from the RSUD M. Arbain. A total of 29 respondents (12.2%) worked at Disdukcapil, and the same number came from DPMPTSP. Bappeda and Diskominfo were each represented by 20 respondents (8.4%).

Of the 238 respondents who participated in this research, the majority were women, namely 156 people or 65.5% of the total respondents. Meanwhile, there were 82 male respondents, namely 34.5% of all respondents. This distribution indicates that more than half of the study participants were women, reflecting significant female gender representation in this study.

Apart from that, the respondents in this study had a varied age range; the majority were in the 35–44-year age group, namely 105 people or 44.1% of the total respondents. The 25–34-year age group is the second largest age group, namely 65 respondents or 27.3%. A total of 61 respondents (25.6%) were in the age range of 45-54 years. Only a few respondents were under 25 years old and over 55 years old, amounting to 3 people (1.3%) and 4 people (1.7%), respectively. This age distribution shows that the majority of respondents are in the productive age range, namely between 25 and 54 years.

Based on educational level, most of the respondents in this study had a higher educational background; namely, 153 people (64.3%) had a final education of D4 or S1. A total of 55 respondents (23.1%) had completed education at the Diploma 3 (D3) level, while 26 people (10.9%) had a Master's degree (S2). Only 4 respondents (1.7%) had a high school/vocational school equivalent. These data indicate that the majority of respondents have completed tertiary education, which may reflect the level of competence and intellectual capacity relevant to the digital competence context studied.

Based on their length of service, respondents in this study showed variations in work experience, with the majority being in the 11-15 years work experience category, amounting to 79 people or 33.2% of the total respondents. A total of 51 people (21.4%) had worked between 16-20 years, while 42 people (17.6%) had worked for 6-10 years. There were 39 respondents with a working period of 1-5 years (16.4%), and 27 respondents (11.3%) had worked for more than 20 years. This data shows that the majority of respondents have quite a long work experience, with more than a decade of work, which can influence their level of digital competence in the context of work in the ASN environment.

Respondents in this study had various groups; the majority were in group III/d, namely 64 people or 26.9% of the total respondents. Group III/c is also quite dominant, with 45 people (18.9%), followed by rank IV/a, which is held by 42 people (17.6%). A total of 26 respondents (10.9%) had rank III/b, and a group of 24 people (10.1%) had rank III/a. Respondents with ratings IV/b and IV/c were 12 (5.0%) and 3 (1.3%) people respectively. In group II, there were 15 respondents (6.3%) in group II/c, while in group II/an II/b, very few respondents were ranked II/d, respectively 2 (0.8%), 1 (0.4%), and 4 (1.7%) people. The data shows that the majority of respondents are in groups III and IV, which reflect a higher level of position and responsibility in the ASN structure.

1. Mapping of Digital Literacy of Civil Servants in Muara Enim Regency

This digital literacy mapping analysis uses the theoretical framework of Law et al., which divides digital literacy into several dimensions: understanding the operation of devices and software, information and data literacy, communication and collaboration, digital content creation, security, problem-solving using digital tools, and domain-specific competencies (Law et al., 2018).

Device and Software Operation

This dimension examines the ability of civil servants (ASN) to use digital devices and identify appropriate software to carry out their work. Based on the analysis of survey data, it is evident that the majority of ASNs in Muara Enim Regency possess strong capabilities in identifying and utilizing the appropriate hardware and software to complete their tasks. A convincing 82.35% of respondents reported effective use of both hardware and software. The use of application "Mandiri" and "e-Kinerja" system further demonstrates that ASNs in Muara Enim have integrated digital technology into various aspects of their work, indicating a sufficient level of digital literacy to support an electronic-based government system.

Information and Data Literacy

This dimension focuses on several indicators, including the ability to collect digital information or content, as well as the ability to evaluate and manage data, information, and digital content. Based on the survey results, 84.45% of respondents are

capable of searching for and filtering digital information or content, 81.91% are able to evaluate data, information, and digital content, and 86.14% demonstrate strong skills in processing such data and content. These findings are supported by real practices across various government institutions, such as the management of social media and other digital platforms. Government agencies in Muara Enim Regency actively manage platforms like Instagram and Facebook, although challenges remain in maintaining consistent content updates. The use of social media, radio, and other digital platforms illustrates that ASNs in Muara Enim have incorporated digital information management into their daily tasks an essential skill in the digital era that supports the implementation of an electronic-based government system.

Communication and Collaboration

This dimension relates to the ability to interact, share content, and collaborate through digital devices, as well as understanding digital ethics, etiquette, and identity. Based on the survey results, 84.87% of respondents reported engaging in interactions using digital technology, 76.05% actively shared content through digital channels, and 80.25% had collaborated using digital tools. Furthermore, 88.47% of respondents demonstrated an understanding of internet ethics and etiquette, while 86.97% showed a good grasp of how to manage their digital identity. These results are supported by additional information obtained by the researchers, indicating that most civil servants (ASN) and their work-related activities have incorporated various digital platforms—both for information dissemination and collaboration. Several informants interviewed also expressed an awareness of the importance of maintaining ethical behavior and etiquette online, particularly in preserving respectful and professional relationships among digital platform users.

Digital Content Creation

This dimension focuses on the ability to develop, integrate, or recreate digital content, understanding copyright and content licensing, as well as the capability to plan specific programs. Based on the survey results, 78.57% of respondents were able to develop digital content, 78.15% had the ability to integrate and recreate digital content, 77.31% understood copyright and licensing regulations, and 79.41% had the capability to plan specific programs through digital content. Interviews with key informants revealed that program planning—such as the development of systems for the one data policy—has been effectively implemented, including long-term planning and the management of competent human resources. These skills are crucial in carrying out administrative and managerial tasks, supporting work effectiveness among civil servants (ASN) in Muara Enim Regency.

Security

This dimension relates to the security system, including the protection of devices and data. Based on the survey results, 85.29% of respondents reported understanding how to secure digital devices, and 93.7% stated they understood how to protect data and privacy. These findings were further explored through interviews with key informants, leading to the conclusion that the respondents' relatively high level of awareness regarding system security is based on the fact that there have been no reported incidents of data breaches or privacy violations involving the digital systems and devices managed by the local government. This is largely attributed to the protection and oversight provided by the National Cyber and Crypto Agency (BSSN), in accordance with relevant regulations.

Problem Solving Using Digital Devices

This dimension relates to the ability to resolve technical issues, respond to technological needs, apply creativity, identify digital competency gaps, and engage in computational thinking. Based on the survey results, 79.41% of respondents demonstrated the ability to solve various technical problems related to digital device usage, 75.21% were able to identify technological needs and responses, 78.89% had used digital technology creatively, 79.41% could identify digital competency gaps, and 73.95% showed the ability to think computationally. These findings are supported by information from the previous dimensions, which highlight the frequent and active use of various digital platforms and tools by civil servants in the Muara Enim Regency Government both institutionally and individually.

Field-Specific Competency

This dimension focuses on the ability to operate technological devices and interpret data, information, and digital content according to the needs of one's specific work field. Based on the survey results, 73.85% of respondents reported being able to operate technological tools relevant to their respective job areas, while 84.29% demonstrated the ability to interpret data, information, and digital content in alignment with their professional duties. These findings indicate that the majority of respondents feel confident in their ability to learn and utilize technology relevant to their field of work—an essential skill for supporting effective and efficient performance within the ASN environment of Muara Enim Regency.

2. Analysis of ASN Digital Literacy Levels in Muara Enim Regency

Based on the 238 respondents involved in this study, the data shows that 144 respondents or 60.5% in this category. A total of 90 respondents (37.8%) were in the medium digital literacy level category, while only 4 respondents (1.7%) had a low digital literacy level.

Table 1. Digital Literacy Level of ASN in Muara Enim

Digital Literacy Level Categories	Frequency	Percentage
High	144	60.5
Enough	90	37.8
Low	4	1.7
Total	238	100,0

Source: Processed by researchers based on the results of the 2024 survey

Based on the data, it can be analyzed thatthe majority of ASN in Muara Enim Regency have a high level of digital literacy, it can be concluded that 60.5% of respondents possess high digital literacy aligns with Law et al.'s framework, particularly in terms of operational and communication competencies. However, gaps remain in areas related to data security and content creation, as highlighted in the interview data. While only 1.7% of ASN demonstrated low digital literacy, these individuals were disproportionately concentrated in administrative roles within RSUD, indicating a potential skills gap in health-related public service delivery.

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Based on the decision of the Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi (KEMENPANRB) in 2024 regarding the results of the evaluation of electronic-based government systems in public institutions and regional governments in 2023, the Muara Enim Regency Government received a score of 3.00 or a good predicate, along with the results of related decisions issued by KEMENPANRB. The results of this level of digital literacy are also proven by the results of the SPBE evaluation of central agencies and local governments carried out by the Ministry of State Apparatus Empowerment and Bureaucratic Reform of the Republic of Indonesia in 2023. The indicators used in the evaluation include Services, Policy, Governance, and SPBE Management.

This evaluation shows that the Muara Enim Regency Government received a score of 3.00 with the predicate (Good). This score is the third highest score after the Ogan Komering Ilir Regency Government, which received a score of 3.04 (Good), and the Prabumulih City Government, with a score of 3.35 (Good), even far above the average score for South Sumatra Province. Muara Enim's relatively high SPBE score (3.00) tends to be influenced by its stronger digital literacy profile, which directly impacts SPBE services. However, Prabumulih, which achieved a higher score (3.35), demonstrates that digital literacy alone is not sufficient without strong support from policy, governance, and SPBE management.

Table 2. South Sumatra Regional Government SPBE Evaluation Results in 2023

Agency name	Index	Predicate
Musi Banyuasin	2,62	Good
Ogan Komering Ulu	2,67	Good
Muara Enim	3,00	Good
Lahat	2,23	Enough
Musi Rawas	2,64	Good
Ogan Komering Ilir	3,04	Good
Banyuasin	2,13	Enough
Ogan Komering Ulu Timur	2,96	Good
Ogan Komering Ulu Selatan	2,31	Enough
Ogan Ilir	2,91	Good
Empat Lawang	1,97	Enough
Musi Rawas Utara	2,35	Enough
Penukal Abab Lematang Ilir	2,45	Enough
Palembang	2,66	Good
Pagar Alam	2,14	Enough
Lubuk Linggau	2,86	Good
Prabumulih	3,35	Good

Source: KepmenpanRB 2024

Nevertheless, the increase in SPBE scores must continue to be increased, especially in terms of the digital literacy maturity of ASN in the Muara Enim Regency government environment, because the SPBE size is not only determined by ranking based on the SPBE score achieved at the provincial level, but in reality, the government through its agencies must be able to adapt to technological developments in the context of better government administration and public services. Based on the results of interviews conducted with key informants at Diskominfo, in the context of SPBE digital instrument management, resources are very limited, there are only two people, and in the long term, along with the development of increasingly complex digital instruments. These additional resources comply with Diskominfo standards as the spearhead of digital instrument development in regional government must be met.

Based on the research results and SPBE scores of the Muara Enim Regency Government, the government should pay attention to the importance of digital literacy in the context of developing SPBE, especially Regional Apparatus Organizations (OPD), which act as service providers and developers of digital instruments to realize SPBE at the regional government level. Digital competency greatly influences the quality of public services, especially in aspects of program planning and implementation, which are very relevant to ASN duties (Budai et al., 2023). for example at the Mal Pelayanan Publik Muara Enim, based on interviews conducted with elements of the leadership of DPMPTSP, information was obtained that the digital instruments used in public services at the Mal Pelayanan Publik Muara Enim were running very well, supported by excellent ASN digital literacy.

Meanwhile, computer literacy is a key pillar in effective public administration, enabling employees to manage and analyze information more efficiently, thereby improving the quality of program planning (Herout, 2015). Based on the explanation of informants from Disdukcapil and BAPPEDA, the basic indicators in assessing ASN digital literacy can currently be assessed from ASN ability to operate basic technological devices such as computers/laptops and handphones. The use of computers is the main instrument that ASN must master in completing their duties in the office, because all work activities in the Muara Enim Regency government environment are very intense with the use of computers/laptops. While using Handphones have become a part that ASN also uses in supporting the distribution of information from the Government to the Community.

Additionally, Nikolsky et al. also underlines the importance of digitalization in strategic planning tasks, which contributes to the efficiency and effectiveness of implementing public policies (Nikolsky, V., Ivanova, E., & Petrova, 2021). In the context of Muara Enim Regency ASN, digital literacy not only strengthens employee confidence in planning programs but also increases their ability to integrate technology into managerial processes and SPBE development.

According to Silitonga, he highlighted that the digital skills gap is still a challenge in the digital transformation of the public sector in Indonesia, especially in supporting the wider implementation of SPBE (Silitonga, 2023). This was also found in Muara Enim Regency; although most ASN have mastered basic technology skills such as using computers/laptops, not many of them have mastered special application-based skills or web specifically in order to support work in the government environment. For example, in terms of design, some ASNs have used web-based applications to produce better design results, while others still depend on other units. Certain and still using conventional applications.

Therefore, uniform good digital literacy collectively is very important to ensure ASN can manage and utilize digital technology effectively in carrying out increasingly complex and dynamic administrative tasks. The integration of technology in

ASN management shows that digital literacy is part of a very important managerial skill in implementing SPBE, which will have a direct impact on increasing the efficiency and transparency of public services.

Based on the findings in this section, it can be concluded that 60.5% of respondents possess high digital literacy aligns with Law et al.'s framework, particularly in terms of operational and communication competencies. However, gaps remain in areas related to data security and content creation, as highlighted in the interview data.

3. Analysis of the relationship between respondent characteristics and the digital literacy level of ASN in Muara Enim Regency

Based on test results, Chi-Square was carried out to test the relationship between the respondent's area of origin and the level of digital literacy. Test results show the value Pearson Chi-Square amounting to 26.220 with degrees of freedom (df) 8 and an asymptotic significance level (2 sides) of 0.001. Because the significance value is smaller than 0.05, the researcher can conclude that there is a significant relationship between the respondent's home institution and their digital literacy level. In addition, test results Likelihood Ratio also supports this conclusion with a value of 28.006 and a significance level of 0.000 which also indicates a significant relationship. The survey results indicate that Bappeda and Diskominfo are the regional government agencies with the highest levels of digital literacy compared to others. This aligns with the interview findings, which revealed that Bappeda plays a significant role in SPBE planning, while Diskominfo serves as the main implementing agency for SPBE at the regional level.

Regarding test results Chi-Square, which was carried out to test whether there was a significant relationship between gender and the level of digital literacy of respondents, the results showed that the value Pearson Chi-Square of 3.189 with 2 degrees of freedom (df) and an asymptotic significance level (2 sides) of 0.203. Because this significance value is greater than 0.05, it can be concluded that there is no significant relationship between gender and the respondent's digital literacy level. In addition, test results Likelihood Ratio also supports this conclusion with a value of 3.238 and a significance level of 0.198 which also shows there is no significant relationship. The test results show that gender does not have a significant effect on the digital literacy level of ASN in Muara Enim Regency. In other words, both men and women have the same level of digital literacy, and gender factors cannot be used as a significant predictor of digital literacy among ASN.

Next, to test whether there is a significant relationship between the age of the respondent and the digital literacy level of ASN, the results obtained are: Pearson Chi-Square totaling 17,333 with 8 degrees of freedom (df) and an asymptotic significance level (2 sides) of 0.027. Because this significance value is smaller than 0.05, it can be concluded that there is a significant relationship between age and the respondent's digital literacy level. Test results Likelihood Ratio also supports this conclusion with a value of 17.362 and a significance level of 0.027 which shows there is a significant relationship between age and digital literacy. Additionally, the test Linear-by-Linear Association gives a value of 8.307 with a significance level of 0.004, which also shows the existence linear trend significant relationship between age and digital literacy level. The significant correlation between age and digital literacy suggests that mid-career professionals (aged 35–44) represent a digital competency sweet spot. This could reflect both exposure to training and greater operational responsibility, as noted by informants at Diskominfo.

Regarding the next characteristic, namely the respondent's highest level of education and the digital literacy level of ASN, the test results show that Pearson Chi-Square amounting to 6,358 with 6 degrees of freedom (df) and an asymptotic significance level (2 sides) of 0.384. Because this significance value is greater than 0.05, it can be concluded that there is no significant relationship between current education and the respondent's digital literacy level. The test results Likelihood Ratio also supports this conclusion with a value of 6.145 and a significance level of 0.407, indicating there is no significant relationship. Additionally, the test Linear-by-Linear Association gives a value of 0.898 with a significance level of 0.343, which also shows that there is no significant linear trend between recent education and digital literacy level.

Based on test results, Chi-Square was carried out to test whether there was a significant relationship between the respondent's work experience and their level of digital literacy. The test results show that the value Pearson Chi-Square of 22,027 with 8 degrees of freedom (df) and an asymptotic significance level (2 sides) of 0.005. Because this significance value is smaller than 0.05, there is a significant relationship between work experience and the respondent's digital literacy level. The results of the Likelihood Ratio test also support this conclusion with a value of 21.766 and a significance level of 0.005, which indicates a significant relationship. Apart from that, the Linear by Linear Association test gives a value of 10.498 with a significance level of 0.001, which also shows that there is a linear trend significant relationship between work experience and digital literacy level. This is consistent with information obtained from several informants and literature studies, which indicate that work experience places employees in a better position to understand and apply creativity in using various work tools effectively to complete tasks. Work experience is also closely related to the training and education facilitated by institutions as part of efforts to improve performance.

The next relationship analysis is to test whether there is a significant relationship between the respondent's rank/class and their level of digital literacy. The test results show that the value Pearson Chi-Square is equal to 10.808 with 20 degrees of freedom (df) and significance level without symptoms (2 sides) of 0.951. Because this significance value is much greater than 0.05, there is no significant relationship between rank/class and the respondent's digital literacy level. Test results Likelihood Ratio also supports this conclusion with a value of 14.246 and a significance level of 0.818, which indicates there is no significant relationship.

4. Contextual competency digital literacy mapping model with ASN conditions in Muara Enim Regency

The Digital Literacy Mapping Model used empirically in this research refers to the digital literacy framework proposed by Law et al (2018), which includes the digital literacy competency area consisting of Device and Software Operations, Information and Data Literacy, Communication and Collaboration, Digital Content Creation, Security, Problem Solving, as well as work-related competencies. This competency area is used to see trends in several indicators that show the conclusion regarding the digital literacy level of ASN in Muara Enim Regency, especially

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several OPDs that are directly related to the planning and implementation of electronic-based government systems. Based on the results of research using a digital literacy framework, it was concluded that the digital literacy level of ASN in Muara Enim Regency is in the high category, namely 60.5%.

After empirically testing the digital literacy competency framework according to Law et al., (2018) in formulating a digital literacy mapping model, this research also perfects the analysis of the digital literacy framework by referring to the digital literacy framework according to Techataweewan & Prasertsin (2018) which includes Operational Skills, Thinking Skills, Collaboration Skills, and Awareness Skills. Furthermore, the formulation of the digital literacy mapping model is also adapted to the government context, namely the ASN as well as the main tasks and functions of institutions in general.

Based on the results of the research and analysis carried out, the author developed a contextual mapping model with four dimensions that can be used in mapping ASN digital literacy; the model is described as follows:

1. **Operationalization of Technology Devices.** This dimension is used to measure and determine ASN's ability to use hardware and software to support its digital activities. These abilities can include basic abilities and the level of mastery of using simple hardware such as computers, gadgets, and so on. Meanwhile, in terms of ability and mastery of the operationalization of various software, it covers a wide range of software up to date, either directly related to its use in the field of work or the software is used as other supporting activities.
2. **Digital Data and Information Analysis.** This dimension is used to explore the level of understanding and ability of an ASN to understand data and information needs, the ability to search for and identify data and information, as well as the ability to process data and information through various digital media. Understanding the needs and process of searching for data and information can be analyzed from ASN's understanding of several search engines or websites/platform digital. Meanwhile, the ability to identify data and information is related to the analytical ability of an ASN in filtering and eliminating data based on an analysis of the validity of the data that can be accounted for. Furthermore, the ability to process data and information can be analyzed from the understanding and ability to identify appropriate digital media to be used as a tool in processing data and information, as well as the level of ability to use them.
3. **Digital Interaction and Collaboration.** This dimension is used to analyze ASN's understanding of the potential for collaboration that can be utilized through digital media in developing networks both personally and institutionally. Apart from that, understanding and mastery platform digital is intended to see the extent to which an ASN understands a number of digital media that are widely used by the public so that interaction and collaboration targets become effective. Regarding the ability to create digital content, it is used to analyze an ASN's ability to produce interesting digital content in the form of narrative, visual, or audio-visual. Meanwhile, indicators of understanding ethics and etiquette in the digital world are used to measure the media ethics of an ASN, which includes positive narratives in the digital content created, ethics in interacting with other users, and ethics in disseminating various data and information.
4. **Digital security knowledge.** This dimension includes ASN's understanding of the negative impacts of using digital technology in various sectors and the potential for using digital media for a number of crimes. Meanwhile, indicators of understanding personal data and digital privacy in the security of digital devices and accounts include ASN's understanding and ability regarding digital security, which includes usage of user name and strong passwords, limiting access to both personal and institutional digital accounts and pages, as well as understanding and the ability to add hardware and devices additional software that can help improve the security system of digital devices and accounts.

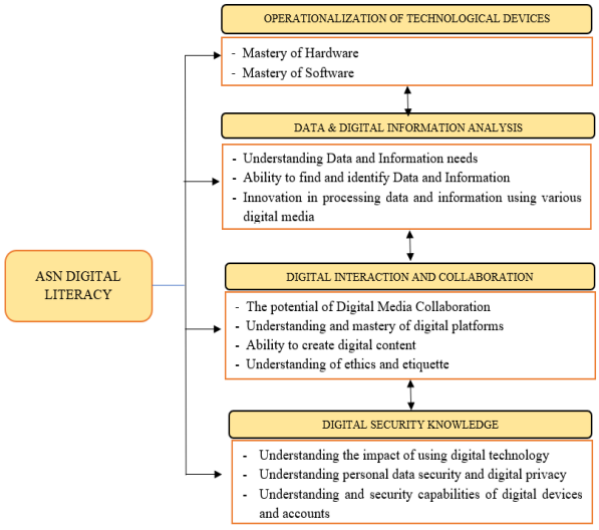

Figure 3. ASN Digital Literacy Mapping Contextual Model
Source: Processed by researchers, 2024

5. Implications of The ASN Digital Literacy Competency Mapping Model for The SPBE Readiness Assessment Model in Indonesia

Based on the Regulation of the Minister Pendayagunaan Aparatur Negara dan Reformasi Birokrasi (PermenPAN RB) Number 59 of 2020 concerning Monitoring and Evaluation of Electronic-Based Government Systems (SPBE), Assessment and Evaluation of the readiness of SPBE refers to 4 (four) domains, 8 (eight) aspects and 47 (forty-seven) Indicators. SPBE readiness assessment/evaluation model is described as follows:

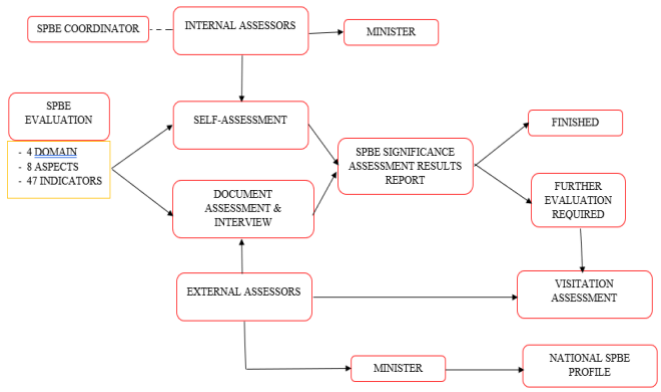

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Figure 4. Existing Model for SPBE Readiness Assessment/Evaluation
Source: Processed by researchers based on PermenPAN RB Number 59 of 2020

Through the existing SPBE readiness assessment and evaluation model, the SPBE evaluation focuses on four domains, eight aspects, and 47 indicators, which then become the object of assessment, both independent assessment and document and interview assessment. In this assessment model, measuring human resources, or, in this case, ASN is still positioned as part of the indicators and does not fully accommodate the strategic digital literacy mapping of ASN, which plays an important role in the implementation of SPBE. After analyzing the assessment model for SPBE based on the Regulation of the Minister for KemenpanRB (figure 3) and the formulation of a contextual digital literacy model for ASN (figure 2), a formulation of a policy recommendation model for assessment/evaluation of readiness for implementing SPBE in Indonesia was obtained.

In Figure 4, the SPBE assessment/evaluation policy model focuses on four domains, eight aspects, and 46 indicators, which then become the objects of assessment, both independent assessment and document and interview assessment. In the picture, it can also be seen that there has been a change in the mechanism self assesment carried out by internal assessors in coordination with the SPBE coordinator and then reported to the Minister. Self-assessment It also carries out a specific assessment of ASN digital literacy through four assessment dimensions, which include Operationalization of technological devices, analysis of digital data and information, digital interaction and collaboration, and digital security knowledge. Meanwhile, document assessment and interviews are carried out by external assessors which are then used as material for the national SPBE profile. The results of the self-assessment, as well as document assessment and interviews, are used as a report on the results of the SPBE readiness assessment, the results of which can be concluded as follows: no further assessment is needed, or a further assessment is necessary. Required. If this report concludes that further assessment is needed, the external assessor will carry out a visitation assessment.

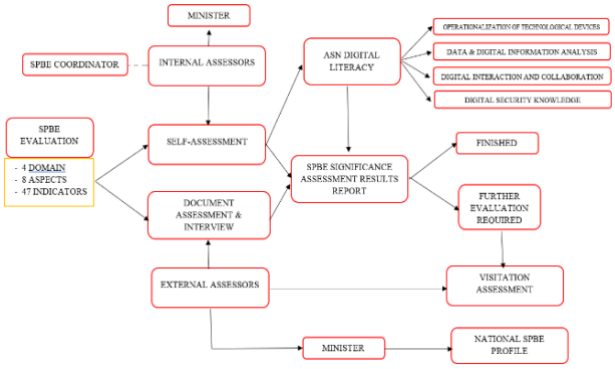

Figure 5. Policy Recommendation Model for SPBE Readiness Assessment/Evaluation
Source: Processed by researchers, 2024

The policy model formulated shows that there is a continuous mapping process related to digital literacy mapping of ASN as actors in implementing SPBE so that regular and continuous quality control of ASN digital literacy can be implemented and become a guaranteed quality of SPBE implementation. Apart from that, digital literacy mapping, as an important part of assessing and evaluating readiness to implement SPBE, can also provide an overview of the weak points in ASN's digital literacy level. However, with a number of indicators that have been formulated, analysis of the achievements of each indicator can be used as a basis for analysis of digital literacy improvement programs in anticipating a decline in ASN digital literacy levels.

The findings call for targeted digital upskilling programs for specific work units, especially those not directly involved in planning and digital platform development. Institutionalizing regular literacy assessments could serve as a predictive tool for SPBE readiness.

CONCLUSION

Based on the results and discussion of the research, several conclusions were obtained, namely that the digital literacy competency level of ASN in Muara Enim Regency showed that 144 respondents, or 60.5 percent, were in the high category. These findings are strengthened by the results of the 2023 SPBE evaluation carried out by KemenpanRB which shows that the Muara Enim Regency Government has a good rating with a score of 3.00. After conducting an analysis using the digital literacy competency framework from Law et al (2018), the Minister of Administrative and Bureaucratic Reform Regulation on ASN Competencies, and an analysis using several theories and concepts about digital literacy and the factors that influence it, the ASN digital literacy mapping model was formulated. The ASN Digital Literacy Mapping Model consists of four main dimensions, namely the operationalization of analytical technology devices, digital data and information, digital interaction and collaboration, and digital security knowledge. This study introduces a novel framework for evaluating digital readiness among Indonesia's civil servants. While promising, the findings are limited to a single regency and cross-sectional data. Future studies should assess the model's validity longitudinally and across diverse regional contexts.

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