

Bridging the digital divide: analyzing public participation in Indonesia's e-government through the e-participation index

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Abstract

This study explores the level of public participation in e-government in Indonesia, focusing on the Electronic Participation Index (EPI). This research uses qualitative methods and qualitative content analysis. The main data was obtained from the UN E-Government Knowledgebase, especially the E-Participation Index for 2016 to 2022 and Indonesia's E-Participation Index ranking data from 2004 to 2022. The results of this study show that the improvement of e-government infrastructure and services has not been fully successful in increasing public participation. The challenges faced include inadequate regulations, lack of data integration, gaps in ICT infrastructure, and inequality in internet access, especially in rural areas. The culture of bureaucracy, corruption, collusion, and nepotism also hinder public trust in the e-government system. Some government initiatives, such as the Peduli Lindungi application, have shown positive results but have not been fully optimal. To overcome these challenges, it is necessary to improve regulations, integrate data, reduce the digital divide, and increase government transparency and accountability. What is new about this study lies in its comprehensive analysis of the E-Participation Index in the Indonesian context, which provides a unique perspective on the correlation between e-government infrastructure and public participation levels. In addition, the study offers actionable insights and recommendations for policymakers to improve e-government services by addressing specific regional and cultural barriers.

Keywords: e-government, e-participation index, public service, participation

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Introduction

Governments around the world are increasingly integrating digital capabilities; for example, technologies like artificial intelligence (AI) and the Internet of Things (IoT) can be utilized to enhance the efficiency and effectiveness of public service delivery (Mittal 2020; Mittal & Gautam, 2023). For example, the implementation of e-government in Indonesia has shown a positive impact on the efficiency of public services, encouraging better public access to information and promoting accountability and transparency (Gupta et al., 2022). However, challenges such as differences in technology access and data security concerns remain prevalent (Farida & Lestari 2021). The adoption of AI in the public sector, as seen in China, highlights the potential for significant improvements in service delivery. However, it is still in its infancy and requires comprehensive planning and longitudinal tracking to fully realize its benefits (Chen, et al., 2019). In addition, the success of e-government initiatives often depends on the government's ability to engage with citizens and incorporate their feedback into policy design, as evidenced by Italy's public administration reforms (He 2011). The integration of ICT in government

services has been an important factor in increasing citizen satisfaction and trust, as seen in various studies, including those focusing on the quality of electronic services in Indonesia (Chinnasamy et al., 2023; Mulyana & Jamaludin, 2023). In addition, according to Saifullah (2019), the development of e-government services in Italian municipalities underscores the importance of internal competencies and regional factors in determining the reach and quality of digital services offered. Overall, while technological advancements provide great potential to improve public services, governments must address existing challenges and ensure robust data security and equitable access to technology to maximize the benefits of e-government initiatives (Hadi et al., 2021; Mergel et al., 2023).

The results of various studies also show that adopting e-government has significantly improved the efficiency and quality of public services, as evidenced by the positive impact on the country's ranking in the UN survey (Saifullah et al. 2019). Community participation plays an important role in the success of e-government initiatives, as it promotes transparency and accountability, thereby increasing public trust (Afriana et al. 2020; G. Kauma et al., 2022). Digital literacy levels, technology accessibility, and public perception of security and trust are key factors that encourage or hinder the adoption and effectiveness of e-government services (Anon, 2013; Kanaan et al., 2023). Security and privacy challenges are significant concerns for e-government services, especially in the face of cyber threats and privacy risks (Mustapa 2011; Pramuka et al., 2015). Adequate policy implementation and robust security mechanisms are essential to build public trust and ensure the sustainability of these services (Avianto, 2022; Doran et al., 2023). Cultural and contextual factors also play an important role in the success of e-government. Other research has also shown that adapting e-government solutions to local cultures and community needs can significantly increase their adoption rates and effectiveness (Nulhusna et al. 2017; Saifullah, 2019)—the importance of technological innovation and government involvement in advancing E-government Public Services. The government's efforts to utilize the latest technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), can have a significant positive impact on service quality (Heiden & Tonino-Heiden 2021; Ayuningtyas 2022). The implementation of E-government in Indonesia has had a positive effect on the efficiency of public services. However, challenges still need to be addressed, such as disparities in access to technology and concerns related to the security of public service data (Karim & Wahyu, 2020). Meanwhile, public services in Indonesia have undergone significant changes in line with the advancement of information technology (Aprinato 2021; Badri 2017; Rosana 2010). Implementing E-government or electronic-based public services is the main focus of improving the efficiency and accessibility of services for the community (Karman et al. 2021; Alfredo M. 2019).

The development of e-government in Indonesia aims to improve public services by utilizing information and communication technology (ICT) to increase accessibility, transparency, and efficiency (Alfredo, 2019). This initiative is particularly important in globalization and the digital revolution, which has significantly impacted various sectors, including government operations (Danu, 2023; Kotelnikova, 2022). However, the implementation of e-government in Indonesia faces several challenges, especially the heterogeneous availability of IT infrastructure in different regions, which affects accessibility to digital services, especially in less developed areas (Abadi & Supatno, 2018; Weningsih et al., 2022). In addition, the success of e-government is closely linked to the formulation of supportive policies and regulations and the need for a reformed

bureaucratic culture that includes ICT for the efficient provision of public services (Darono & Irawati, 2015). Efforts such as developing electronic services in rural areas and implementing electronic tax services demonstrate the potential benefits of e-government, including time efficiency, transparency, and improved service quality (Andayani, 2023; Ratih, 2012). In addition, local governments, such as in South Jakarta and Bali, have made strides in adopting e-government to optimize public services, reflecting the importance of digital literacy and the need for continuous improvement in ICT infrastructure and human resource capabilities (Dharmika & Subanda, 2023; Nugroho & Ma'ruf 2019).

The above background shows that implementing e-government has become the main focus of efforts to improve public services in Indonesia. One of the important aspects of the implementation of E-Government is community participation, which refers to the active involvement of citizens in the process of providing public services through digital platforms (Utami, 2018; Wirawan, 2020; Sitokdana, 2016; Abdussamad, 2020). The study by Bachtiar 2020 & Sulisty 2020 also revealed that public participation in E-Government is very influential. However, there is still a need to analyze this study more deeply, including using the E-Participation Index. Several previous studies have discussed the level of community participation in implementing E-Government in Indonesia. One of the research by Axelsson (2010), Dharma (2020), & Malek (2015) highlights the important role of community participation in ensuring the successful implementation of E-Government, finding that the level of community participation can affect the effectiveness and efficiency of digital public services. This finding is in line with research by Yusmanizar (2023), Rachman (2020), & Ganapati (2011), which highlights the factors that affect public participation in the use of the E-Government application.

Therefore, there is still a gap in understanding the impact of public participation on the effectiveness of e-government in Indonesia, especially due to the lack of comprehensive analysis using tools such as the E-Participation Index (EPI). Previous research (Axelsson, 2010; Dharma, 2020; Malek, 2015) underlines the importance of public participation but does not use EPI for more in-depth analysis. This research addresses this gap by leveraging the EPI to measure and analyze public engagement across various aspects of e-government, aiming to provide a standardized assessment framework.

This study aims to offer a fresh and more comprehensive insight into community participation in implementing E-Government in Indonesia, utilizing the E-Participation Index as an analytical tool. The findings are expected to contribute to research on community involvement in E-Government, ultimately enhancing public engagement in its implementation across Indonesia.

Table 1 Taxonomy of E-government application

No	Name/Year	Findings	Variables/Concepts			
			TI	SPSS	CRM	BPM
1	(Keco, Tomorri, & Tomorri 2023)	The key findings focus on addressing challenges in e-government implementation, analyzing the importance of public services, assessing the quality of e-services, and identifying potential future obstacles and challenges.	✓	✓	✓	-

2	(Lourenço 2023)	Development of a public e-service transparency framework, including a full list of information that must be disclosed online. Despite previous research, the study highlights the shortcomings of a comprehensive framework for the transparency of public e-services.	✓	-	✓	-
3	(Tremblay-Cantin et al., 2023)	Identify factors influencing the adoption of e-government services and develop classification models detailing their relationships, providing practical implications for governments and practitioners alike.	✓	-	✓	-
4	(Yohanes et al., 2023)	The effectiveness of e-government relies more on the quality of its systems and services rather than solely on the quality of information or transparency.	✓	-	✓	-
5	(Mustafa, Bajrami, & Islami 2022)	Electronic services can be enhanced by focusing on accessibility, reducing wait times, and ensuring the quality of information. People's willingness to use e-government services is influenced by how well these services are managed and their awareness of and satisfaction with them. This study is important for understanding how electronic services are managed within Kosovo's local government and other regions.	✓	✓	✓	✓

Note: Customer Relationship Management – CRM / Business Process Management System (BPM)
Source: author's processed data, (2024)

Table 1 summarizes recent studies on e-government applications, highlighting various findings and variables examined across different contexts. Studies such as Keco et al. (2023) and Yohanes et al. (2023) emphasize the importance of system quality and service evaluation in e-government implementation. Lourenço (2023) critiques transparency frameworks, underscoring gaps despite comprehensive disclosures. Tremblay-Cantin et al. (2023) & Mustafa et al. (2022) explore factors influencing e-government adoption and service quality, offering practical insights for governmental and practitioner use. These studies collectively inform global strategies to enhance electronic service management and public sector efficiency.

Research Methods

This research uses qualitative methods and qualitative content analysis. The main data was obtained from the UN E-Government Knowledgebase, especially the E-Participation Index for 2016 to 2022 and Indonesia's E-Participation Index ranking data from 2004 to 2022. This data is then analyzed comprehensively and in-depth to identify trends, changes, and challenges in community participation in applying information and communication technology in public services. The qualitative content analysis approach is used to understand the narrative and context behind the numerical data, thereby providing a more holistic picture of the factors that affect public participation in E-Government in Indonesia. This analysis is expected to provide in-depth and relevant insights to support understanding the role and impact of E-Government in the transformation of public administration in Indonesia.

The Electronic Participation Index (EPI) is an additional index in the UN E-Government Survey (Musiał-Karg, 2019). Understanding electronic participation starts with recognizing the underlying processes. The initial stage is the informative level, where the government provides basic information to citizens, which progresses to two-way interaction, where the community is invited to provide input to the government and becomes a collaborative partnership, where citizens become leaders in the policy-making process (Retnowati, 2022). This framework is closely linked to the UN version's three-level structure of electronic participation. Since it was first introduced in the Survey in 2003, EPI has become a multifaceted framework consisting of three main components: electronic information, electronic consulting, and electronic decision-making.

Results and Discussion

The findings from examining the E-Participation Index data about Indonesia, spanning 2016 to 2022, will be articulated and scrutinized extensively. The primary emphasis will be directed towards the trajectory of civic engagement within the framework of E-Government implementation in Indonesia, alongside the ramifications of these conclusions on the efficacy and efficiency of digital public service delivery. The discourse will thoroughly analyze the determinants affecting public involvement, juxtaposition with global data, and the pertinence of the outcomes to prevailing public policy frameworks. This segment will furnish an exhaustive understanding of the intricacies of electronic participation in Indonesia and its role in enhancing public services via information and communication technology.

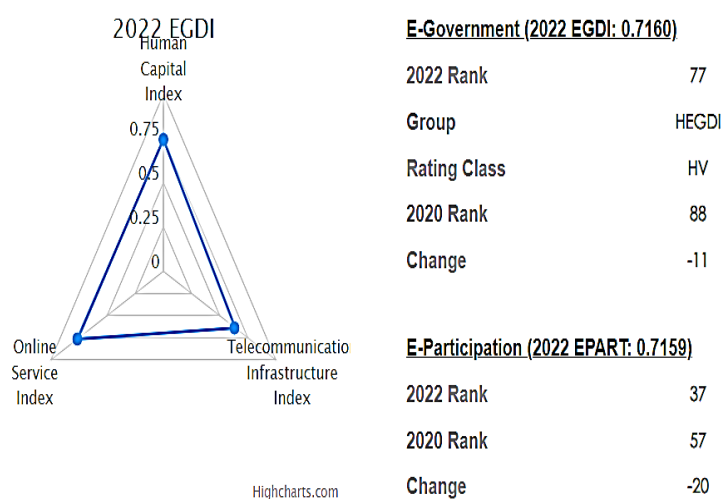


Figure 1. E-Government Development Index and E-Participation Index Survey
Source: United Nations e-government survey 2024

Figure 1 shows Indonesia recording an E-Government Development Index (EGDI) value of 0.72 in 2022, placing it 77th globally. This shows a significant increase from the ranking in 2020, which was in 88th position, an increase of 11 places. The rating class is High (HV), and Indonesia is included in the countries with a high level of E-Government development (HEGDI). This improvement is in line with several aspects measured in the EGDI component. The Human Capital Index reached a value of 0.74, indicating an increase in the use of human resources in the implementation of e-government. Meanwhile, the Telecommunication Infrastructure Index reached 0.63,

indicating continued efforts to improve the accessibility and reliability of telecommunications infrastructure throughout the country.

On the online services side, the Online Service Index reached 0.76, reflecting the better availability and quality of online services for the community. In addition, in terms of electronic participation (e-participation), Indonesia recorded a value of 0.72 in 2022, ranking 37th globally. Despite the downgrade of 20 positions in 2020, it is still committed to electronically expanding public participation in government processes (Wahyuni et al. 2024). This reflects Indonesia's ongoing efforts to improve e-government, although there is still significant room for improvement, especially in increasing public engagement through electronic platforms.

The Electronic Participation Index (EPI) measures how governments implement electronic participation mechanisms compared to other countries, providing insight into the use of online tools to foster interaction between government and society and among communities for the common good (Wagola et al., 2023). Indonesian government initiatives, such as the Peduli Lindungi app, have shown positive results in managing the COVID-19 pandemic by facilitating data sharing and public participation. However, their use has not been fully optimized (Khairunnisa et al., 2023). In addition, the implementation of e-government in Indonesia faces several challenges, including inadequate regulations, lack of data integration, and ICT infrastructure gaps across the region (Mulyono and Mutiarin, 2022; Ummah, Maryam, and Wahidin, 2022).

The digital divide and inequality of internet access are particularly evident in rural areas, where the effectiveness of e-government initiatives is hampered by digital literacy and limited infrastructure (Rahman, 2023). Despite these challenges, Indonesia has made strides in digital governance, as seen by the increased transparency and accountability efforts during the pandemic (Siahaan et al. I., 2022). The government's focus on simplifying business licensing through the Online Single Filing Risk-Based Approach (OSS-RBA) under the Job Creation Act highlights its commitment to leveraging digital tools for economic recovery and investment facilitation (Firmandayu and Elfaki, 2023). However, to fully realize the potential of e-government, Indonesia must address existing gaps and continue to innovate in policies and technologies to ensure inclusive and effective public participation.

E-Participation Index

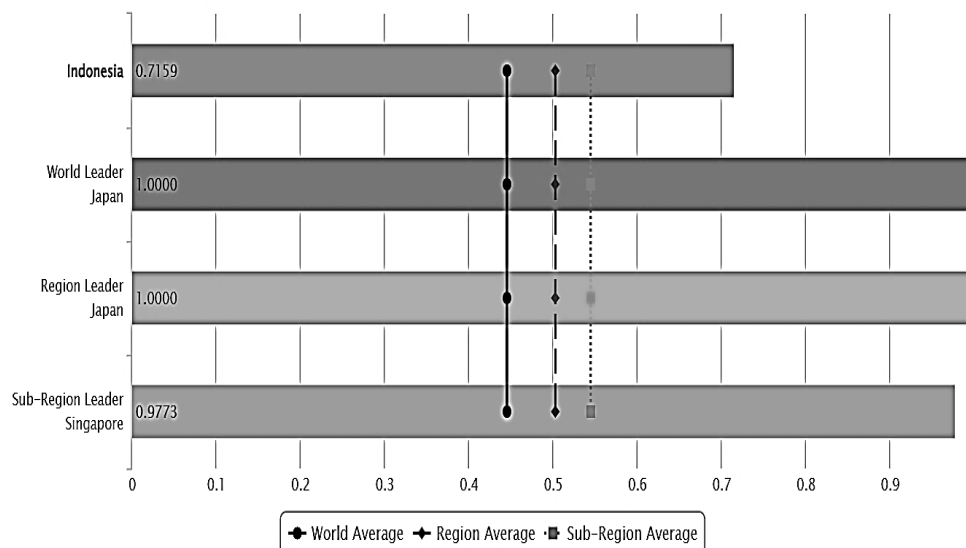


Figure 2. E-Participation Index 2022

Source: United Nations e-government survey 2024

Figure 2 shows that the E-Participation Index Data for Indonesia in 2022 shows a value of 0.72, which puts it in a fairly good position at the global level despite a 20-position downgrade from the previous year. Furthermore, the data shows that Indonesia is below the world average in terms of the E-Participation Index, which reaches a value of 1.0000. Indonesia's e-participation performance is below regional and sub-regional averages, with values of 1.0000 and 0.9773, respectively. However, it should be noted that these values still surpass the global average of 1,0000, indicating that Indonesia is making good progress in enhancing citizenry engagement within the e-government framework (Miller et al., 2022). Nonetheless, there is significant upside potential, especially when compared to countries like Japan, which is recognized as a global leader in e-participation. By learning from these countries' successful strategies, Indonesia can further enhance public engagement in e-governance, ensuring that the digital governance framework more accurately reflects the aspirations and needs of its citizens (Donou 2019).

The significance of civic engagement in electronic governance is underlined by the need for effective and efficient public services, as highlighted by the IT Literacy Village Information System (SIDEMIT) initiative, which aims to digitize public services and improve information dissemination through trained local operators. In addition, the integration of non-medical interventions in public health programs, as seen in the SPICES project, demonstrates the value of community-based strategies in achieving broader public health goals. Furthermore, the use of Boolean logic in academic research and the importance of structured data analysis, as discussed in various contexts, can provide a methodological framework for analyzing e-participation data and identifying areas for improvement. By leveraging these insights and adopting a multilevel governance approach that encourages vertical and horizontal integration, Indonesia can improve its e-participation framework, ensuring more effective local implementation of its climate strategy and other governance policies (Goorha 2015). This holistic approach will increase public participation and encourage economic development in the green sector, aligned with national and global climate policy goals. Considering civic engagement in electronic governance via a governance framework, scholars scrutinized the subsequent facets of e-participation.

E-participant Index in Indonesia

Tabel 2. E-participant Index Indonesia Tahun 2022

Country Name	E-Participation Index			
	2022	2020	2018	2016
Indonesia	0.72	0.75	0.62	0.38

Source: processed by author, 2024

Table 1. The increase in the value of the E-Participation Index in Indonesia from 2016 to 2022 marks significant progress in public participation in e-government. During that period, the index increased from 0.38 to 0.72, indicating a strong push towards more interaction between the government and citizens through electronic platforms. Although there were small fluctuations in the value of the Electronic Participation Index between 2018 and 2020, with index values reaching 0.62 and 0.75, significant increases have occurred in the last two years. This increase reflects the efforts made by the Indonesian government to improve accessibility, transparency, and public involvement in the policy process through e-government initiatives.

The year-on-year increase in Indonesia's EPI score indicates that efforts are being made to increase public participation through e-government initiatives. However, further steps are needed to overcome these obstacles and reach their full potential. In 2024, issues such as the need for better data integration increased digital literacy at all levels of society, and stronger data privacy and security policies will be crucial to ensure the continuity and effectiveness of e-government services in Indonesia. Analyzing and understanding this EPI data in depth can provide more comprehensive insights for policymakers and practitioners in improving future inclusive and sustainable e-government strategies.

The increase in the score of the Electronic Participation Index in Indonesia from 2016 to 2022 is also consistent with the findings that describe a positive trend in public participation in e-government. For example, implementing e-KTP (electronic KTP) has significantly improved administrative efficiency and public participation. However, it has also raised problems related to the involvement of foreigners in local politics (Hansson, et al., 2023). In addition, the COVID-19 pandemic has accelerated the adoption of digital platforms for public services, contributing to the recent increase in the Electronic Participation Index (Anon 2024). Government efforts to strengthen e-government infrastructure and expand the scope of online services and information are crucial (Saribulan et al., 2023).

However, further analysis is needed to understand the factors underlying this increase and to identify areas where further improvement efforts are still required to promote public participation in e-government in the future. This aligns with the trend of increasing wider internet usage in Indonesia, facilitating easier access to health information and other public services, thereby increasing public engagement (Rahmawati 2022). The positive impact of these efforts is evident in improved public participation metrics, but ongoing efforts are needed to maintain and build on these gains. Thus, the increase in the value of the Electronic Participation Index can be interpreted as the result of concrete steps taken by the Indonesian government based on previous research findings to increase public participation in e-government.

Rank E-Participation Index Indonesia

Table 3. Rank E-Participation Index Indonesia

E-Participation Index	Tahun									
	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004
Rank	37	57	92	114	110	66	86	135	34	32

Source: Processed data, 2024

Figure 2. The presented data elucidates the ranking and value of the E-Participation Index for Indonesia from 2004 to 2022. The data analysis reveals that Indonesia has undergone notable fluctuations in its index value and ranking throughout the specified timeframe. Notably, there was a pronounced upward trajectory in the index value from 2008 to 2020, culminating in improved ratings observed in 2020. Nevertheless, in the year 2022, a deterioration in the ranking was evident despite the index value remaining comparatively elevated. The phenomenon of public engagement in e-government within Indonesia is multifaceted and shaped by various factors, including governmental policies, information technology advancements, and the public's cognizance of the significance of participation in the public policy formulation process. Prior empirical

studies have demonstrated that trust in e-government, influenced by perceived ease of use and overall usability, is pivotal in enhancing citizen participation (Atmojo & Nurwulan 2020).

However, challenges such as limited access to up-to-date information and low levels of public participation remain, especially in areas such as Pemalang District (Hutahaean et al., 2023). The effectiveness of e-participation is also hampered by socioeconomic constraints, including income and network infrastructure, which affect people's readiness to engage digitally (Susanti et al. 2021). To address this issue, governments must improve public information services and ensure the quality and transparency of information disseminated through social media and other digital platforms (Ruman & Pane 2017). Thus, governments can improve accessibility, transparency, and public involvement in e-government, strengthening democratic participation and effectiveness of public services (Nugroho 2020).

This increase is largely driven by government efforts to improve the accessibility and efficiency of public services through digital platforms. Initiatives such as the Peduli Lindungi app and efforts to increase transparency and public participation have contributed significantly to this increase. However, there are still significant challenges, especially related to the disparity in ICT infrastructure between regions in Indonesia. Rural and remote areas still experience a large internet access gap, limiting active e-government participation.

Improving EPI in Indonesia is further developing equitable ICT infrastructure, improving data security and privacy regulations, and improving people's digital literacy. Success in addressing these challenges will allow Indonesia to achieve a higher ranking in the EPI, improving efficiency, transparency, and accountability in the administration of government and public services.

E-Government Development Index (EGDI) Score

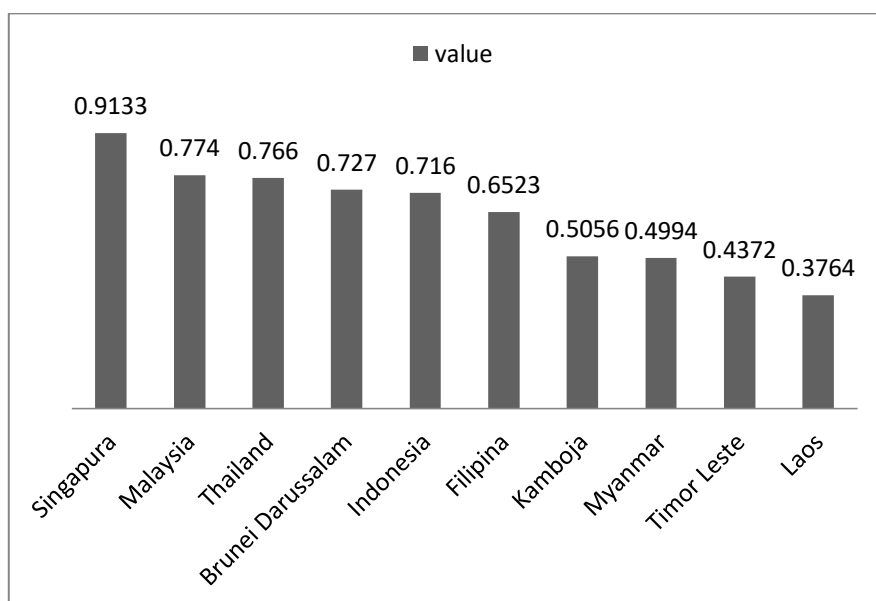


Figure 3. Countries with the highest E-Government Development Index (EGDI) Scores (2022)
Source: author's processed data from UN data, 2022

According to a United Nations (UN) report titled E-government Survey 2022, Indonesia occupies the fifth position within Southeast Asia concerning electronic-based governmental frameworks, commonly referred to as e-government, in 2022. The electronic government development index (EGDI) for Indonesia is registered at 0.7160

points out of a possible total of 1 point, thereby situating the nation at the 77th position on a global scale. On the other hand, Singapore tops the ranking in the Southeast Asia region with an EGD score of 0.9133 points, which places it 12th in the world. Malaysia and Thailand ranked second and third, respectively, in Southeast Asia, with their EGD scores of 0.7740 and 0.7660 points. Brunei Darussalam took fourth place with an EGD score of 0.7270 points.

Then, below Indonesia, the Philippines and Cambodia have EGD scores of 0.6523 points and 0.5056 points, respectively. Myanmar and Timor Leste followed with EGD scores of 0.4994 points and 0.4372 points, respectively. On the other hand, Laos recorded the lowest EGD score in Southeast Asia, with a score of 0.3764 points. On the other hand, Denmark ranks highest in the world regarding e-government development in 2022, with a score of 0.9717 out of 1 point. The methodological framework employed in this United Nations survey is predicated upon three fundamental dimensions, specifically the breadth and calibre of digital services, which is operationalized as the Online Services Index (OSI), the advancement of telecommunications infrastructure, referred to as the Telecommunications Infrastructure Index (TII), and the associated human capital metrics, denoted as the Human Capital Index (HCI). (Heriyanto 2022) Highlighting the need for public involvement in decision-making, consultation, and information provision through e-government systems. This aligns with the finding that participation in governance, including these three elements, is essential for evaluating electronic involvement, including in Indonesia. The interaction between the community and e-participation is facilitated by information technology, making it easier for the community to be directly involved in governance activities (Lwin, 2023; Kaligis, 2021)

Research by Napitupulu (2015) shows that public participation in e-government in Indonesia remains low, with less than 40% involvement, despite high interest in electronic participation exceeding 90% and positive perceptions reaching nearly 99%. This discrepancy is attributed to the gap between available services and community needs and inadequate community involvement in handling complaints. The implementation of e-participation in Indonesia faces several challenges, including insufficient regulations, lack of data integration, and ICT infrastructure gaps across the region (Firmandayu & Elfaki, 2023). In addition, the dominance of pro-authority groups and the lack of socialization related to development plan deliberations further hinder effective public participation (Indartini et al., 2023). The digital divide and inequality of internet access, especially in rural areas, exacerbate this problem, as seen in the case of Desa Cijantur, where limited digital tools and infrastructure hinder the success of e-government initiatives (Fajri, 2023). In addition, bureaucratic and leadership culture, along with corruption, collusion, and nepotism in public services, contribute to the negative image of the government and reduce public trust in the e-government system (Farezi Efendi, 2023). To address these challenges, it is imperative to develop a green constitution-based e-government policy model that ensures efficiency, effectiveness, accountability, and transparency while reducing e-waste through green ICT practices (Wagola et al., 2023). In addition, integrating innovative digital platform-based technologies and fostering multi-actor collaboration can improve e-waste management and support sustainable development goals. The development of e-participation must be aligned with the advancement of e-government, digitalization of government services, and conventional regulation of participation to bridge the gap between services and people's needs, ultimately encouraging a more inclusive and effective e-government system in Indonesia.

Conclusion

The findings indicate that substantial challenges pertaining to the augmentation of electronic participation persist, notwithstanding advancements in the Electronic Government Development Index (EGDI) indicative of enhancements in e-government infrastructure and services. The decline observed in the Electronic Participation Index (EPI) suggests that, despite governmental efforts to enhance the accessibility and quality of online services, the active engagement of the populace has not reached an optimal level. To enhance public services via e-government, it is imperative to bolster electronic participation, which entails fortifying regulations, integrating data systems, and mitigating the digital divide. Furthermore, it is essential to cultivate public trust through transparency and accountability, ensuring that e-government initiatives align with the needs and aspirations of the citizenry.

The ramifications of this inquiry regarding the degree of community engagement in the execution of e-government in Indonesia bear considerable significance. Firstly, an imperative exists to amplify public cognizance and education regarding the criticality of participation in e-government to enhance public services. This necessitates implementing educational initiatives to inform the public about the utilization of e-government platforms and their concomitant benefits. Secondly, the investigation revealed that the inadequacy of telecommunication infrastructure represents a principal impediment to the efficacy of public participation in e-government, thereby underscoring the necessity for enhancements in telecommunication frameworks within Indonesia.

Thirdly, this implication accentuates the crucial involvement of both governmental and private sector entities in facilitating public engagement in e-government initiatives. The government is required to extend support for the advancement of superior telecommunications infrastructure. Concurrently, the private sector has the potential to provide e-government services and applications that are more readily accessible to the public. Fourthly, the significance of transparency and openness within e-government frameworks to foster public trust is also underscored. Governments must guarantee that information regarding public policy processes is readily available and that mechanisms for public participation are characterized by openness and transparency. Lastly, these implications highlight the necessity for evidence-based and robust data-driven policies, alongside the ongoing requirement to conduct research and analysis focused on community participation in e-government to elucidate existing challenges and needs. By attending to these implications, the government and other stakeholders can undertake tangible measures to enhance public participation in e-government and improve public services in Indonesia.

References

- Abadi, S., & Diono S. (2018). Improving Services To Communities In Pringsewu District Government With E-Government Concept. *bit-Tech* 1(1):34–39. doi: 10.32877/bt.v1i1.8.
- Abdussamad, Zuchri. (2020). *Cakrawala* Public Service in Third World Countries. LEGAL MEDIA CV.
- Afriana, W., Harmawan Susetiyana., Oktarina Putri., & Harry Azis. (2020). E-Government Effectiveness In Combating Corruption And Improving Public Services. *CosmoGov* 6(1):28. doi: 10.24198/cosmogov.v6i1.23944.
- Alfredo M. Ronchi Politecnico. (2019). *E-Services*. Springer Nature Switzerland AG.

- Andayani, Nopi, & Miftah Faiz Ali Ramdhani. (2023). Building Organizational Governance and Service Culture Based on Digital Platforms. *Indonesian Journal of Social Science Research* 4(1):42–49. doi: 10.11594/ijssr.04.01.04.
- Rosana, A . S. (2010). Advancement of Information and Communication Technology in the Media Industry in Indonesia. *Gema Eksos* 05(02):144–56.
- Anon. (2013). Stakeholder Adoption of e-Government Services: Driving and Resisting Factors. *Online Information Review* 37(1):152–54. doi: 10.1108/14684521311311739.
- Anon. (2024). Corrigendum. *Children & Society* 38(1):251–251. doi: 10.1111/chso.12653.
- Aprinato, Naerul. (2021). The role of information and communication technology in business. *International Journal Administration, Business and Organization (IJABO)* | 2(1):1–7.
- Atmojo, Bambang Tri., & Nurul Retno Nurwulan. (2020). E-Government Global Trends And Future Perspective In Indonesia. *Natapraja* 8(2):167–80. doi: 10.21831/jnp.v8i2.34855.
- Avianto, Bhakti Nur, Marry Ismowati, & Nanda Amelia. (2022). Implementation E-Government in supporting of online-based Service Quality and Accessibility. *Journal Research of Social Science, Economics, and Management* 2(5). doi: 10.59141/jrssem.v2i05.317.
- Axelsson, Karin, Ulf Melin, & Ida Lindgren. (2010). Exploring the importance of citizen participation and involvement in e-government projects: Practice, incentives, and organization. *Transforming Government: People, Process and Policy* 4(4):299–321. doi: 10.1108/17506161011081309.
- Ayuningtyas, Apriana Anggraeni. (2022). Application of the Internet of Things (IoT) to Realize Digital Libraries in the Era of Society 5.0. *Journal of Library Science* 11(1):29–36.
- Bachtiar, Rizqi, Dewi Laksmi Dwi Pramesti., Hanna Eka Pratiwi., & Naghma Saniyyah. (2020). Digital Bureaucracy: A Study of Community Participation and Readiness. *Journal of Governance and Social Policy* 1(2):104–29. doi: 10.24815/gaspol.v1i2.18585.
- Badri, Muhammad. (2017). Rural development communication system based on information and communication technology. *Proceedings of the 2016 National Seminar on Communication* 1(1):41–53.
- Chen, Tao, Longya Ran, & Xian Gao. (2019). AI Innovation for Advancing Public Service: The Case of China's First Administrative Approval Bureau. *Proceedings of the 20th Annual International Conference on Digital Government Research*. Dubai United Arab Emirates: ACM. 00–108
- Chinnasamy, P., D. Tejaswini, S. Dhanasekaran, K. Ramprathap, K. Lakshmi Priya, and Ajmeera Kiran. (2023). E-Governence Services using Artificial Intelligence Techniques. *2023 International Conference on Computer Communication and Informatics (ICCCI)*. Coimbatore, India: IEEE.
- Danu, Danu Eko Agustinova, Supardi Supardi, Sutanto Tri Juni Putro Sutanto, & Riko Septiantoko Riko. (2023). E-Services: Implementation of Digital-Based Public Services in The 4.0 Era. *Athena: Journal of Social, Culture and Society* 1(3):87–92. doi: 10.58905/Athena.v1i3.40.

- Darsono, Agung, & Dessy Irawati. (2015). Service Innovation in the Complex Environment of Tax Administration: The Indonesian Public Sector Perspective. *International Journal of Innovation and Regional Development* 6(1):102. doi: 10.1504/IJIRD.2015.067650.
- Dharma, M. S., Bahar, B., Nurhidayat, & Rahmat, R. (2020). Public Information Management Strategy In Realizing Good Governance At The Communication, Informatics And Coding Office Of Sinjai Regency. pp. 268–91 in Proceedings of the National Symposium": Challenges of Governance in the Industrial Revolution Era 4. O.
- Dharmika, Ida Bagus Made Putra, & I. Nyoman Subanda. (2023). The Effectiveness of Public Services in Realizing Good Governance. *Aptisi Transactions on Technopreneurship (ATT)* 5(1Sp):77–83. doi: 10.34306/att.v5i1Sp.327.
- Donou, Charlotte. (2019). Étude des références (partie 5) extraites des recommandations de bonne pratique analysées dans le cadre du projet SPICES.
- Doran, Nicoleta Mihaela, Silvia Puiu, Roxana Maria Bădîrcea, Marilen Gabriel Pirtea, Marius Dalian Doran, George Ciobanu, & Lavinia Daniela Mihit. (2023). E-Government Development—A Key Factor in Government Administration Effectiveness in the European Union. *Electronics* 12(3):641. doi: 10.3390/electronics12030641.
- Fajri, M. Nurul. (2023). Legitimacy Of Public Participation In The Establishment Of Law In Indonesia. *Jurnal Konstitusi* 20(1):123–43. doi: 10.31078/jk2017.
- Farezi Efendi, Muhammad Alief. (2023). Effectiveness Of Implementing E-Voting As A Representation Of Election Law Development In Indonesia: *Constitutional Law Society* 2(1):18–30. doi: 10.36448/cls.v2i2.45.
- Farida, Ida, & Annisa Lestari. (2021). Implementation of E-Government as a Public Service Innovation in Indonesia. *RUDN Journal of Public Administration* 8(1):72–79. doi: 10.22363/2312-8313-2021-8-1-72-79.
- Firmandayu, Nilam, & Khalid Eltayeb Elfaki. (2023). The Electronic Government Policy-Based Green Constitution Towards Good Governance. *Journal of Sustainable Development and Regulatory Issues (JSDERI)* 1(2):108–21. doi: 10.53955/jsderi.v1i2.11.
- G. Kauma, Jim, Willy N. Irerib, & Noel O. Olweny. (2022). Challenges Facing Coherent Digitization of Government Processes Across All Policy Areas and Levels of Government to Enhance Efficient Public Service Delivery in Kenya. *International Journal of Research Publications* 111(1). doi: 10.47119/IJRP10011111020224034.
- Ganapati, Sukumar. (2011). Uses of Public Participation Geographic Information Systems Applications in E-Government. *Public Administration Review* 71(3):425–34. doi: 10.1111/j.1540-6210.2011.02226.x.
- Goorha, Prateek. (2015). RETRACTED: <i>Reference Points as Information Frames</i>; *Theoretical Economics Letters* 05(03):410–14. doi: 10.4236/tel.2015.53047.
- Gupta, Ayush, Prabhat Mittal, Pankaj Kumar Gupta, & Sakshi Bansal. (2022). Implication of Privacy Laws & Importance of ICTs to Government Vision of the Future. Hmm. 383–91 dalam *International Conference on Innovative Computing and Communications*. Vol. 1394, *Advances in Intelligent Systems and Computing*,

- edited by A. Khanna, D. Gupta, S. Bhattacharyya, A. E. Hassanien, S. Anand, dan A. Jaiswal. Singapore: Springer Singapore.
- Hadi, Hajar, Ibtissam Elhassani, & Souhayl Sekkat. (2021). Electronic Public Services in the AI Era. Hlm. 70–82 dalam *Innovations in Smart Cities Applications Volume 4*. Vol. 183, *Lecture Notes in Networks and Systems*, edited by M. Ben Ahmed, İ. Rakıp Karaş, D. Santos, O. Sergeyeva, dan A. A. Boudhir. Cham: Springer International Publishing.
- Hansson, Lisa, Claus Hedegaard Sørensen, & Tom Rye, ed. (2023). Index. Hlm. 195–97 *deep Transport and Sustainability*. Emerald Publishing Limited.
- He, Zhang. (2011). E-Government and Government's Public Services. Hlm. 1–4 *deep 2011 International Conference on Management and Service Science*. Wuhan, China: IEEE.
- Heiden, Bernhard, & Bianca Tonino-Heiden. (2021). Key to artificial intelligence (AI). *Advances in Intelligent Systems and Computing* 1252 AISC(2):647–56. doi: 10.1007/978-3-030-55190-2_49.
- Heriyanto, Heriyanto. (2022). The urgency of implementing e-government in public services. *Musamus Journal of Public Administration* 4(2):066–075. doi: 10.35724/mjpa.v4i2.4128.
- Hutahaean, Marlan, Ixora Javanisa Eunike, & Andri Dayarana K. Silalahi. (2023). Do Social Media, Good Governance, and Public Trust Increase Citizens' e-Government Participation? Dual Approach of PLS-SEM and fsQCA edited by Z. Yan. *Human Behavior and Emerging Technologies* (2023):1–19. doi: 10.1155/2023/9988602.
- Indartini, Mintarti, Novy Rachma Herawati, Hartirini Warnaningtyas, Nurharibnu Wibisono, Muhammad Imron, Choirum Rindah Istiqaroh, Arini Wildaniyati, & Henry Windrianto Darmoko. (2023). Behind the Low Level of Public Participation in Local Budget Management: A Piece of the Story of Budgeting in Indonesia. *International Journal of Science and Management Studies (IJSMS)* 41–47. doi: 10.51386/25815946/ijsms-v6i1p103.
- Indrajit, R. E. (2006). *Electronic Government: The Concept of Internet-Based Public Service and Information Technology*. Jakarta: Aptikom.
- Kaligis, M. F., Tulus, F., & Ruru, J. .. (2021). Community participation in the new normal era in Perkamil Village, Paal II District, Manado City. *Journal of Public Administration*, 7:102.
- Kanaan, Anas, Ahmad AL-Hawamleh, Anas Abulfaraj, Hazem Mohammad Al-Kaseasbeh, & Almuhammad Alorfi. (2023). The effect of quality, security and privacy factors on trust and intention to use e-government services. *International Journal of Data and Network Science* 7(1):185–98. doi: 10.5267/j.ijdns.2022.11.004.
- Karim, Navarin, & Hendriyaldi Wahyu. (2020). Analysis of public satisfaction with services through e-service quality in Jambi City. *PUBLIKA: Journal of Public Administration Science* 6(2):135–50. doi: 10.25299/jiap.2020.vol6(2).5964.
- Karman, Karman, Rudi Deswanto, & Sri Adhi Ningsih. (2021). Implementation of e-government in local governments. *Journal of Government Science Studies* 2(2):43–50. doi: 10.35326/jsip.v2i2.1525.

- Keco, Remzi, Ilir Tomorri, & Kejsi Tomorri. (2023). Quality Evaluation of E-Government Services – the Case of Albania. *Transylvanian Review of Administrative Sciences* 2023(68):20–33. doi: 10.24193/tras.68E.2.
- Khairunnisa, Tiara, Achmad Nurmandi, Titin Purwaningsi, Mohammad Jafar Loilatu, & Annisa Ghina Savira. (2023). Open Government Index in Local Government During the COVID-19 Pandemic. *Jurnal Borneo Administrator* 19(1):1–16. doi: 10.24258/jba.v19i1.1149.
- Kotelnikova, Iuliia. (2022). Features of the development of electronic services in the digital society. *Ukrainian Journal of Applied Economics and Technology* 7(3):107–13. doi: 10.36887/2415-8453-2022-3-15.
- Kumurur, V. (2012). The implementation of e-government encourages the realization of good governance in Indonesia (Response to the Presidential Instruction of the Republic of Indonesia Number 3 Year 2003). *EKOTON* 8(2).
- Lourenço, Rui Pedro. (2023). A Framework for Public eServices Transparency. *International Journal of Electronic Government Research* 19(1):1–19. doi: 10.4018/IJEGR.317415.
- Lwin, Hnin Nu Nu, Prattana Punnakitikashem, & Trin Thananusak. (2023). E-Health Research in Southeast Asia: A Bibliometric Review. *Sustainability* 15(3):2559. doi: 10.3390/su15032559.
- Malek, Jalaluddin Abdul, & Mohammad Noer. (2015). Malaysia's Public Administration's Willingness to Address Globalization and the E-Government Era Post Food Policy Ratification of the Agreement on Agriculture (AoA) - WTO. *Journal of Political Studies and Development Issues* 11(02):1679–98.
- Mergel, Ines, Helen Dickinson, Jari Stenvall, & Mila Gasco. (2023). Implementing AI in the Public Sector. *Public Management Review* 1–14. doi: 10.1080/14719037.2023.2231950.
- Miller, Paul Allen, Alessandro Carrera, Leah Culligan Flack, Edith Hall, & Nancy Worman. (2022). *Foucault's Seminars on Antiquity: Learning to Speak the Truth*. 1 ed. Bloomsbury Publishing Plc.
- Mittal, Prabhat. (2020). Impact of Digital Capabilities & Technology Skills on Effectiveness of Government in Public Services. *Hmm*. 1–5 deep 2020 *International Conference on Data Analytics for Business and Industry: Way Towards a Sustainable Economy (ICDABI)*. Sakheer, Bahrain: IEEE.
- Mittal, Prabhat, & Suruchi Gautam. (2023). Logistic Regression and Predictive Analysis in Public Services of AI Strategies. *TEM Journal* 751–56. doi: 10.18421/TEM122-19.
- Mulyana, Yaya, & Maun Jamaludin. (2023). Effects of government electronic service quality on citizen satisfaction with integrated service delivery in urban areas. *International Journal of Public Policy and Administration Research* 10(1):24–33. doi: 10.18488/74.v10i1.3293.
- Mulyono, Hendrawan Agung, & Dyah Mutiarin. (2022). The Public Participation In Dealing With Covid-19 Through The Use Of 'Pedulilindungi' Application (Special Region Of Yogyakarta). *JOURNAL OF COMMUNITY SERVICES PUBLIC AFFAIRS* 3(1):16–26. doi: 10.46730/jcspa.v3i1.57.

- Musiał-Karg, Magdalena, & Izabela Kapsa. 2019. Citizen e-Participation as an Important Factor for Sustainable Development. *European Journal of Sustainable Development* 8(3):210. doi: 10.14207/ejsd.2019.v8n3p210.
- Mustafa, Naim, Adrian Bajrami, & Xhavit Islami. (2022). International Journal of Sustainable Development and Planning Electronic Services Management in Local Governance – Evidence from a Transitional Economy. 17(2):615–21.
- Mustapa, Zainuddin. (2011). Bureaucratic Reform Through E-Governance: Opportunities or Challenges in Public Services? *Otoritas: Jurnal Ilmu Pemerintahan* 1(2):145–55. doi: 10.26618/ojip.v1i2.29.
- Napitupulu, D. (2015). Study of success factors for e-government implementation Case study: Bogor City Government. *Jurnal Sistem Informasi*, 5(3):229–36.
- Nugroho, Alih Aji. (2020). Effect Of Digital Community Towards Democracy Process: Digital Participation Analysis In Indonesia. *Jurnal Good Governance* 15(2). doi: 10.32834/gg.v15i2.123.
- Nugroho, Hanantyo, & Rosyid Ma'ruf. (2019). Elements and Success Factors of the Electronic-Based Public Service to the Active Role of the Community in the Lukadesi Program in Wukirsari Village Government. dalam *Proceedings of the International Conference of Democratisation in Southeast Asia (ICDeSA 2019)*. Serang, Indonesia: Atlantis Press.
- Nulhusna, Rizqa, Puspa Indahati Sandhyaduhita, Achmad Nizar Hidayanto, & Kongkiti Phusavat. (2017). The Relation of E-Government Quality on Public Trust and Its Impact on Public Participation. *Transforming Government: People, Process and Policy* 11(3):393–418. doi: 10.1108/TG-01-2017-0004.
- Pramuka, Bambang Agus, Siti Maghfiroh, & Sugiarto. (2015). Electronic-Based Accounting Information System in Sharia Microfinance Institutions. *Jurnal & Prosiding FEB Unsoed* 5(1):1–14.
- R Pamungkas, Agung, Lukito Edi Nugroho, & Selo Sulisty. (2020). Evaluation of Information System Failure Factors on E-Government Implementation Readiness: A Literature Study. *JIKO (Jurnal Informatika dan Komputer)* 3(3):143–52. doi: 10.33387/jiko.v3i3.2176.
- Rachman, Taufiq, & Darmawan Napitupulu. (2020). The quality of public participation in e-government through citizen acceptance factors. *International Journal of Innovation, Creativity and Change* 12(5):340–51.
- Rahman, Hardiyanto. (2023). Bibliometric Analysis of the Development of Policy Innovation Research in Indonesia. *Matra Pembaruan* 7(1):37–48. doi: 10.21787/mp.7.1.2023.37-48.
- Rahmawati, Linda. (2022). Implications of providing e-KTP for foreigners in population administration & elections. *Semarang Law Review (SLR)* 2(1):104. doi: 10.26623/slr.v2i1.3434.
- Ratih Wulandari, Florentina, & Yuli Tirtariandi El Anshori. (2012). Optimizing Public Service Through E-Gov Services (The Case Of Public Service In South Jakarta Municipality). *Journal of Government and Politics* 3(2):369–90. doi: 10.18196/jgp.2012.0021.

- Ruman, Yustinus Suhardi, & Murty Magda Pane. (2017). The potent role of information technology in today's Indonesian democracy. Hlm. 223–26 deep 2017 3rd *International Conference on Information Management (ICIM)*. Chengdu, China: IEEE.
- Saifullah, Saifullah, Madaling, & Lili Hafid. (2019). Implementation of E-Government and Public Service in Sidenreng Rappang Regency: Study of Village Website in Bulu Wattang, Carawali, Kanie, and Lagading Village. dalam *Proceedings of the International Conference of Democratisation in Southeast Asia (ICDeSA 2019)*. Serang, Indonesia: Atlantis Press.
- Saribulan, Nur, Saddam Rasanjani, & Dahlawi Dahlawi. (2023). Content and Bibliometric Analysis of Employment Issues in Indonesia. *Journal of Governance and Social Policy* 4(1):64–82. doi: 10.24815/gaspol.v4i1.31248.
- Siahaan, Septony B., Arthur Simanjuntak, Wesley A. Simanjuntak, & Dompok Pasaribu. (2022). Implementation of Good Governance Based on Digital Government Bureaucracy to Overcome the Covid-19 Pandemic in Indonesia. *METHOSIKA: Jurnal Akuntansi dan Keuangan Methodist* 5(2):154–63. doi: 10.46880/jsika.Vol5No2.pp154-163.
- Sitokdana, M. N. N., & Kom, S. (2016). Electronic-Based Government Development Strategy: A Step to Realize Papua Rising Independently and Prosperously. PT Kanisius.
- Susanti, E., Harta, R., Diana, B. A., & Utami, S. B. (2021). E-Readiness and The Effectiveness of E-Participation in Indonesia. *MIMBAR: Jurnal Sosial Dan Pembangunan* 37(1):138–49. doi <https://doi.org/10.29313/mimbar.v37i1.6931>.
- Susanti, Elisa, Ridho Harta, Bambang Agus Diana, & Sawitri Budi Utami. (2021). E-Readiness and The Effectiveness of E-Participation in Indonesia. *MIMBAR: Jurnal Sosial dan Pembangunan* 37(1). doi: 10.29313/mimbar.v37i1.6931.
- Tremblay-Cantin, Claudie Ann, Sehl Mellouli, Mustapha Cheikh-Ammar, & Hager Khechine. 2023. E-government Service Adoption by Citizens: A Literature Review and a High-level Model of Influential Factors. *Digital Government: Research and Practice* 4(1). doi: 10.1145/3580369.
- Ummah, Aniqotul, Siti Maryam, & Danis Tri Saputra Wahidin. (2022). E-Government Implementation to Support Digital Village in Indonesia: Evidence from Cianjur Village, Bogor Regency. *Jurnal Studi Sosial dan Politik* 6(2):245–59. doi: 10.19109/jssp.v6i2.14038.
- Utami, Nahdah Ayu. (2018). The Role of Indonesia-South Korea Cooperation for Defense Industry Development in Indonesia.
- Wagola, Riswan, Achmad Nurmandi, Misran, dan Dimas Subekti. (2023). Government Digital Transformation in Indonesia. Hlm. 286–96 dalam *HCI International 2023 Posters*. Vol. 1835, *Communications in Computer and Information Science*, edited by C. Stephanidis, M. Antona, S. Ntoa, dan G. Salvendy. Cham: Springer Nature Switzerland.
- Wahyu, Putri Ghesa Gusliana, Ignatius Setiawan, & Rosalina Intan Saputri. (2023). Description of Community Behavior in Seeking Health Information Through the Internet (Study in Pasirjambu District, Bandung Regency). *Padjadjaran Journal of Dental Researchers and Students* 7(1):81. doi: 10.24198/pjdrs.v7i1.40474.

- Wahyuni, Hermin Indah, Andi Awaluddin Fitrah, Deby Febriyan Eprilianto, & Ida Mardalena. (2024). Technology, transparency, and collaboration/integration: Analysis of digital government problems from public communication perspective during the COVID-19 pandemic in Indonesia. *Information Polity* 29(1):93–111. doi: 10.3233/IP-211545.
- Weningsih, Sri, Adhi Iman Sulaiman, Chusmeru Chusmeru, & Tri Nugroho Adi. (2022). Public Services Based On e-Government in Digital Age. *Technium Social Sciences Journal* 37:153–66. doi: 10.47577/tssj.v37i1.7723.
- Wirawan, Vani. (2020). Application of E-Government in Welcoming the Era of Contemporary Industrial Revolution 4.0 in Indonesia. *Jurnal Penegakan Hukum dan Keadilan* 1(1):1–16. doi: 10.18196/jphk.1101.
- Yohanes, Yulius, Syarif Redha, Fachmi Al, & Laras Putri Olifiani. (2023). E-Service in the government sector: To what extent does NTB exist? care affected as a smart citizen reporting site for raising government performance. 04010.
- Yusmanizar, Nur Alim Djalil, Yulhaidir, Alyas. (2023). Developing e-government policy through social media platform in Makassar city, Indonesia. *Jurnal Ilmu Pemerintahan* 13(3):454. doi: : <https://doi.org/10.26618/ojip.v13i3.11641>.