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The challenges of digital governance in the Regions: Study in Central Lampung Regency, Indonesia

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Abstract
Purpose: Adopting digital technology in government processes is believed to improve a state's administration. Almost any change management theory emphasizes the importance of technology as one of the main components to address whether an organization, including public organizations has the ability to win competitions. Digital technology adoption for public services responds to inefficiency, participation frustration, and minimum collaboration and service innovation. This paper investigates the application of digital technology in an integrated digital government modernization, its implications, and challenges in creating expected public values in the Middle Lampung Regency, Indonesia.
Methods: This qualitative study involved informants with authority in regional digital government administration. Data were collected through interviews and document analysis. Data were analyzed by using a descriptive content analysis procedure.
Results: The results show that although digital government services have been implemented in various types of public services, they are not integrated with public service business processes so digital service applications spread across various types of services cannot be integrated properly.
Limitations: There are gaps between applications and service qualities, including fraud in some cases.
Contributions: The digital government that is expected to be the optimal method for improving innovation, value, and public service quality cannot be implemented quickly because of complex challenges that must be addressed.
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1. Introduction

Governments around the globe face declining public trust (Organization for Economic Cooperation and Development (OECD, 2020), rapid digital era changes, crises, and transformational challenges for governance at the same time because of the COVID-19 pandemic. Surviving with the conventional government administration means welcoming worse crises in the future. The COVID-19 pandemic allows the government to make up its mind again concerning the importance of technology in building social and economic reliance with strategic and innovative approaches. The government empirically has a significant opportunity to create efficiency through digitalizing and modernizing public administration and services by adopting digital technology and integrating it into the public sector (digital government).

Adopting digital technology in government processes is believed to improve a state's administration. Almost any change management theory emphasizes the importance of technology as one of the main components to address whether an organization, including public organizations, should win competitions (Behrens, 2012). Information and internet technology allow any individual or public to acquire and exchange information unlimitedly in time and space (Barriyah and Permatasari, 2017). Communication and information technology are integrated to encourage digital transformation in government administration and build a democratic culture (Lawson & Samson, 2001). Using some technology applications shows that technology can mitigate corruption because it allows more considerable public access to government processes and information (Bhatnagar, 2013). A successful digital transformation allows public sector organizations to operate efficiently and effectively (Greenway, Terrett, & Bracken, 2021). This ideal condition shall need paradigm shifting from using technology in governmental activities (e-government) to digital government by integrating technology adoption into all public sector business processes. At the micro-level, digital governance use has a significant impact on students' learning abilities, writing skills, and academic performance including in the mediating role of learning motivation (Caratiquit & Caratiquit, 2023; Mohammed, Philip, & Labaran, 2024).

Some works of literature show similar concepts to digital government innovation, such as e-democracy, e-government, and open government (Gilman & Peixoto, 2019). However, the closest term in this paper is digital government, sometimes using e-government for quotation and referring to a regulation. The emphasized definition of digital government has a broader scope than the concept of 'using technology for the public interest' (Sifry (2011) in Graeff (2018)), 'using information technology and communication to provide benefits for citizens' (Karlsson, Åström, & Adenskog, 2021), or 'technology that is explicitly designed and used to improve and deepen public participation' (Gilman & Peixoto, 2019), as well as 'electronic-based government system' in Indonesian legislations.

At the regulation level, the initiative of digital government development has long been conducted by the National Management Information System (the 1980s), Nusantara-21 (1997), National Information Technology Framework (1998), Information Infrastructure Development Program (1998), National Information System (2002), Presidential Instruction Number 3 of 2003 concerning National Policy and Strategy for Electronic-based Government System Development, and finally Presidential Regulation Number 95 of 2018 regarding Electronic-based Government System. The long journey of digital government regulation strengthens the existence of the electronic-based government system in implementing government functions.

However, many studies show that digital government development in Indonesia does not run well. In coverage terms, Indonesia faces a digital challenge where there is a difference or imbalance in access between one person and another in information and communication technology. The digital government application in Java Island is more dominant compared to provinces outside Java (Rohimat, 2021).

On the side of the innovation context of using applications, most regional governments said that they have applied the digital government, which stepped into the 'emerging stage' and 'web presence stage,' and didn't show any e-government that is indeed operated sincerely through an 'interactive stage.' Kominfo (2018) evaluated websites to find out the current condition of Indonesian e-government. It said that 55% of regional governments were still in the 'emerging stage,' 28% reached the 'enhanced stage,' and 17% were in the 'interactive stage.' Only one regional government came into the 'transaction stage.'

The 'emerging stage' is the lowest level of e-government adoption, where a government has websites, but they provide limited and static information. The 'enhanced stage' means that the website contents and data are continuously updated periodically, and the 'interactive stage' means that the government websites provide form file downloading and official contact features that enable users to interact with the government via the websites.

Kominfo (2020) also showed that the majority of regional and regional autonomous government websites were in the first level (preparation), and only a few of them were in level two (mature). None reached levels three (enhanced) and four (utilization). Research by Prahono (2015) concerning e-government implementation status in the public administration reform in Indonesia concluded that only 15.6% of government websites belonged to the sound and excellent categories with index scores between 2.75 and 4.00.

On the contrary, according to the Ministry of Finance data, the total government expenditure for purchasing information and communication technology reaches 2.15 trillion rupiahs annually. This significant investment is not proportional to the government's electronic system quality and the development of it. Indonesia, on national and global index scales, is stagnant annually. This year, Indonesia reached the 107th rank of the E-government Development Index, only crawling up 9 from the 116th rank in the previous year. Despite competing globally, this rank only places Indonesia in the 7th position among 11 ASEAN countries.

These realities indicate that the digital government idea in Indonesia to improve public value in government implementation efficiency and service quality still needs a big concern. Therefore, the problem statements in this study are: How does the implementation of digital government affect regional government? What are the implications that have been achieved? What are the challenges to address in designing the Indonesian digital government in the future?

The theoretical contribution of this study is to evaluate the digital government innovation forms by analyzing challenges comprehensively from various theories. The practical contribution is to provide readers with a case study of digital government innovation implementation in the Middle Lampung Regency, one of the broadest autonomous regions with an enormous population in Lampung Province, Indonesia, with challenges to address in the future.

There are some references to evaluate digital government challenges. According to Cook, Matthews, and Irwin (in Anggadwita and Dhewanto (2013)), the supporting factors for e-government are leadership, human resources, and technology. A similar notion says that the challenges of digital government to succeed in e-government include policy, institution, and leadership (Putri, Sensuse, Mishbah, & Prima, 2020). Siddique (2016) identifies the five most influential variables in the success of e-government policy implementation. They are leadership, strategic planning, communication and coordination, skill and ability, and trust.

Qaisar and Khan (2010) explain that e-government cannot be implemented without top leaders' commitments, especially financial commitment, because e-government projects need huge funds. Poor commitment from all levels of implementation and minimum involvement of low-level managerial staff can also cause the policy to fail to be implemented (Memon, 2007). E-government initiatives will fail unless skillful and qualified human resources are used (Noorzai, Jafari, Golabchi, & Hamedi, 2016). Less skill and ineffective training mechanisms will not produce effective results (Qaisar & Khan, 2010). These varying opinions are intertwined, and most are similar in leader support, human resource ability, technology, and public trust level.

2. Literature review

2.1 Concept of Government Innovation through E-Government

According to the World Bank (2002, in Cahyana (2023)), e-government is an information and communication technology system owned or operated by the government that can change the government's relationship with the public, private sector, and/or other government agencies as well as to promote community empowerment, improve service delivery, strengthen accountability, increase transparency, or improve government efficiency. E-Government aims at making government interactions with the public (G2C/C2G), government with business (G2B/B2B), government with its employees (G2E/E2G), and relationships between government agencies (G2G) become more friendly,

convenient, transparent, and inexpensive. The phases of e-Government development according to the World Bank include presence, interaction, transaction, and transformation.

E-Government in Indonesia is known as the Electronic-Based Government System (EGB). SPBE aims to realize clean, effective, efficient, accountable, and reliable governance and public services. SPBE comprehensively regulates SPBE governance, management, ICT audit, organizers, acceleration, and monitoring and evaluation. The scope of SPBE services includes G2G (e-office, e-Planning, e-Budgeting, e-monv), G2E (e-Personnel, e-Pension), G2C (e-Complaints, e-Education, e-Health), and G2B (e-Procurement, e-Licensing).

According to Black, Jang, and Kim (2003), there are four e-government models, including:

- First, the bureaucratic model; has a primary policy objective that focuses on efficient administrative functions within government structures and individual sectors. The model is immature in civil society, with consequently very low citizen participation in policy decisions.
- Second, is the information management model; which is the relationship between government and citizens in terms of electronic public services. However, there is still insignificant input into policy decisions, as citizen participation in civil society has weakened.
- Third, the participation model; emphasizes that citizens have a positive and strong involvement in policy decisions through two-way interaction. The model tries to emphasize democracy and transparency by using information technology. However, there are many services available through internet applications or information technology. In this model, the level of civil society has matured.
- Fourth, the governance model; explains that various civic groups and citizens actively participate in all policy decision-making processes and express their opinions through the Internet. All political and administrative activities have a place in the field of e-government. Obviously, a strong democratic and transparent process has been emphasized.

2.2. The Determinative Factors of Successful E-Government

Public sector innovation is not a condition that can be successfully implemented with mere intention, let alone happen by itself. It requires several factors to ensure its success. Without the presence of these factors, government innovation will be difficult to realize. Therefore, it is necessary to identify these factors and ensure their availability (Muluk, 2009). These factors according to Cook, Mattthews and Irwin (in Anggadwita and Dhewanto (2013)) include Leadership, Human Capital, and Technology.

1. Leadership
   Cook, Matthew & Irwin interpret leaders as having a very crucial role and responsibility as a driving force in an organization. Leaders have an important role in creating processes and environments that encourage the birth of creative ideas. A leader must also be able to build trust with staff/subordinates, introduce process improvements, direct staff to be able to take the initiative and build cooperation throughout the unit. The main function of leadership is to create policies and procedures to facilitate innovation and encourage leadership and innovation at all levels in an organization.
2. Human Capital
   Cook, Matthew & Irwin interpret the potential of qualified and competent human resources in their fields as necessary to be able to respond to market competition, not only technological information is needed but also the drive and commitment of all organizational personnel. Staff training and development is an opportunity to increase the capacity for innovation within an organization. The need to identify employee skills as the best resource should be the company's priority.
3. Technology
   Cook, Matthew & Irwin interpret that utilizing technological advances can facilitate company management in the process of diffusing innovation to society. Utilizing information technology enhances the development of service product innovation. Technology is a tool between service providers and service users, providing convenience to users to access the desired information.

In relation to the implementation of government innovation in the form of e-government, the findings of Faizah and I. (2009) show that some of the problems faced in an effort to achieve successful implementation of e-government include:

1. Policies; Various regulations that produce a variety of information systems that must be organized by government agencies cause problems in the field of SPBE because each law seems to give a kind of power to the Implementing Agency to design, build, and organize its own information system without the need to integrate with other agencies. Coordination between agencies becomes difficult because each implementing agency of a law does not want its authority to be reduced or intervened by other agencies.
2. Institutions; In relation to the institutional capacity factor, the cause of problems in the field of SPBE is the lack of uniformity of institutions that carry out tasks in the field of SPBE. In each government agency, almost every unit/work unit can create an electronic system using the state budget, both at the centre and in the regions. As a result, in one agency more than one electronic system can exist, even though the functions of the various electronic systems are the same. To be efficient, it should be emphasized which unit/work unit is in charge of designing, building, and maintaining electronic systems, and which unit/work unit is in charge of using or organizing electronic systems.
3. Leadership; In relation to the interest factor, the cause of problems in the field of SPBE is the attitude of the leaders of government institutions who seem to deliberately not optimize the use of information and communication technology for the implementation of government administration and public services in their institutions. It is possible that the leaders of these institutions have personal or group interests, so they do not want to optimize the use of information and communication technology in their institutions. In fact, every institutional leader should realize that the use of information and communication technology can reduce opportunities for corruption and collusion, facilitate the public, collect data and knowledge, and have various other positive benefits.

Top-down e-government initiatives are much more supportive and conducive to implementing e-government development. This is related to the support, budget allocation, and problems faced. Not just throwing ideas or innovative ideas, the Regent/Mayor is also involved in decision/policy making related to the development of information technology. The initiative that comes directly from the Regent/Mayor is quite easy to realize. Only through three stages and involving the core team, the idea is converted into a decision that must be implemented immediately.

Kominfo (2018) states that the challenges in implementing e-government in Indonesia so far include several aspects:

a. Services provided through existing government websites are not fully supported by effective management systems and work processes. The readiness of regulations, procedures, and limited human resources in the regions greatly limit the penetration of computerization into the management system and government work processes in an integrative manner.
b. Inadequate strategy and budget allocated for e-government development in each agency. The initial budget in the form of application development has indeed been budgeted, but the management is still faced with this budgeting constraint, including budgeting for the improvement of human resource managers.
c. Initiatives to develop e-government applications by local governments are still the efforts of agencies (regional apparatus) individually. Thus, a number of factors such as standardization, information security, authentication, and various basic applications that enable interoperability between sites in a reliable, secure, and trustworthy manner to integrate management systems and work processes in government agencies into integrated public services, have not received careful attention.
d. The approach taken individually by government agencies (or by regional apparatus in the regions) is not strong enough to overcome the gap in the ability of the community to access the internet network so that the reach of public services developed is limited. As a result of this limited internet penetration, most people are still satisfied if they request services manually.

3. Research Method

This was a qualitative study (Creswell, 2009) to study digital government challenges in the context of electronic-based government system policy in Indonesia. Factors to examine were leadership support, human resource ability, technology (nla.gov.au, 2009), and public trust (Qaisar & Khan, 2010; Siddique, 2016) to find out a deep understanding of the social phenomena of the policy in its contexts (Dey, 2003). The authors explained the study's objective to the participants and convinced them of their confidentiality. They agreed to participate and allowed their data to be collected for this study. Eleven prominent persons involved in this study had authority in the digital government governance in the region, including the regional secretary, regional inspectorate, regional heads of apparatuses, the head of the technical division responsible for the digital environment implementation, and some individual service users.

Data were collected through interviews and document analysis. Data were analyzed using content analysis because data were official documents and interview transcripts that needed careful and accurate text interpretation for the study (Hsieh & Shannon, 2005). Triangulation was done to check data accuracy, validation, and credibility (Miles, Huberman, & Saldana, 2014).

4. Results and discussions

4.1. Digital Government Implementation (A Case Study in Middle Lampung Regency)

The digital government implementation studies in all government institutions in Indonesia, both at the central and regional levels, are based on the legislative provisions, not on policy implementation theories. From 2003 to 2008, not all government institutions considered digital government necessary, and only central and some regional government institutions implemented it as an innovation form. However, Presidential Regulation Number 95 of 2018 concerning the Electronic-based Government system requires all government institutions to build and develop digital government.

The digital government implementation in the Middle Lampung Regency was formalized by the Regional Government Regulation Number 8 of 2020 concerning the Electronic-based Government System for Government Administration. This is aimed to provide guidelines for using information and communication technology for excellent and qualified government administration according to legislation. The objectives of the e-government arrangement are: (a) to create a good government administration based on information technology, (b) to optimize public and non-public services, and (c) to create order and legal certainty in the electronic-based government administration system.

At the practical level, various forms and applications have been built and developed in this regency. They are the Online-based Mass Media Administration System (SIMASBRO), Staple Goods and Other Goods Price Information System (SIMAS-BAPOKTING), Fixed Term Employment Contract Recording System (PKWT Online), Shared data Storage Information System (SIPENTAMA), Worshiping House and Religious Institution Information System (SIRAGA), Online Population Administration Service System (SLAMDUNG), Regional Tax Payment System (BERJAYA TAX), Map-based Village Development Information System (SIPEKA), Teachers Allowance System (SITUGU), Electronic Signing Information System (SIPENANTANG), Regional Performance Fostering and Monitoring Information System (SIP-KIDAH), and Online Single Submission (OSS).

These 12 e-government innovations in the Middle Lampung Regency show that empirically and quantitatively, the electronic-based government system works. Various applications are built because they are either mandatory by the central government or by regional initiatives to meet dynamic needs, and they are the implementations of the existing regional government regulations.

> *"In principle, we have implemented e-government in Middle Lampung Regency. On the regulation side, we have regional regulation as the legal base to obey. On the implementation side, we have built many service applications in some regional apparatuses by central government instruction, such as OSS and poverty data, and autonomously by the regional initiative." (Interview with the Assistant of General Administration Division of Regional Secretary in Middle Lampung Regency)*

According to the Government Function Framework that describes government function grouping based on standard basic function blocks, six common essential functions must be manifested in the e-government application. They are service function, administration and management, legislation, development, finance, and employee affairs. Table 1 below shows the digital government implementation analysis in the Middle Lampung Regency.

Table 1. E-government application mapping based on government standard function blocks

No	Application Name	Service function	Management and administration function	Legislation function	Development function	Financial function	Employee affairs function
1	SIMASBRO	√					
2	SIMAS-BAPOKTING	√					
3	PKWT ONLINE	√					
4	SIPENTAMA				√		
5	SIRAGA		√				
6	SLAMDUNG	√					
7	BERJAYA TAX					√	
8	SIPEKA				√		
9	SITUGU						√
10	SIPENANTANG		√				
11	SIP-KIDAH		√				
12	OSS	√					

Source: Author Analysis Result, 2023

Table 1 shows that 12 e-government applications are primarily built to support public service functions in the Middle Lampung Regency, while an application for legislation function should be made. Referring to four levels of the e-government implementation model by Black et al. (2003), Middle Lampung Regency belongs to the second model, information management, where the public and the government have been connected in the electronic public service even though the public role is not yet optimal because offline public service mechanism still dominates. The website content and data are also not updated routinely.

Ojasalo (2008) divides innovation into three types. They are (1) product innovation, an innovation that produces income; (2) process innovation, an innovation by providing structures and infrastructures to save cost, maintain, and improve quality, which is further divided into technology and organization innovations; and (3) market innovation, innovation to increase market target and select best market that an institution shall serve. Middle Lampung Regency's innovation in building and developing e-government applications belongs to process innovation, technology, and organizational innovations.

National Information and Communication Technology Committee (2018) found the following interesting findings concerning e-government administration, which also occurred in the Middle

Lampung Regency. There are various regional electronic applications without integration between applications/systems. There are no primary reference data for the applications/systems. Bandwidth capacity is not sufficient, and there are gaps between regions. There is no data centre. Despite prioritizing risk study in information security, the e-government application prioritizes technology implementation. Some application copyrights are held by private parties (third parties), creating high dependence on the copyright holder. These findings become essential product and process evaluation homework.

4.2. Digital Government Challenges on Leadership Aspect

Some factors support the success of public sector innovation. The most crucial factor is the leadership quality. Muflihah and Susanto (2017) and Andika (2018) suggest that regional government innovation implementation is influenced by a collaboration of institutional settings, policymakers, and the public led by qualified leadership. A study result by Stratu-Strelet, Gil-Gómez, Oltra-Badenes, and Oltra-Gutierrez (2021) suggests that no matter the technology applied, it shall be less relevant to encourage public participation without government leadership support. Some regional governments in Indonesia with excellent digital government practices, such as the provinces of Bali, Jogjakarta, West Java, Jakarta, Bantul Regency, and Banyuwangi Regency, are all supported by the innovative leadership factor.

Indonesian bureaucracy culture is a top-down management model. Therefore, adequate government implementation support should start from the highest government leaders and go to lower levels. Top-down e-government initiatives shall be more supportive and conducive to e-government implementation. The support is related to budget allocation, intervention, and problem solutions. In most cases, the direct head of regional government support shall facilitate e-government realization.

> *"Innovative leadership becomes one of the keys to success in leading. A highly innovative leader can bring his organization to the goal to achieve and, of course, with the help of other organization members. Even though all apparatuses have their innovations, without a supporting leader, it is nothing. If the leader has no innovation, how will he make the final policy decision?" (The interview with the Head of Population and Civil Registration Office in Middle Lampung Regency).*

> *"We honestly admit that the Middle Lampung Regent's leadership factor in this period is the key to realizing technological innovation by building the Public Service Mall in Middle Lampung Regency as the fourth region of 15 regions in Lampung Province. All types of permit and non-permit services are centralized here with standardized services" (The interview with the Head of Investment and Integrated Services Office in Middle Lampung Regency)*

Sagarik, Chansukree, Cho, and Berman (2018) also underline that the central government's role in all countries is significant in forming and implementing the e-government strategy. The central government's role is to have good vertical and horizontal integration through its policies and their implementations. The central government's consistency in the regulations and standardization and the quality and support of the head of regional government become the second homework to address in building the future of provincial digital government.

4.3. Digital Government Challenges in Human Capital Aspect

Another critical aspect of developing and implementing digital government, besides the commitment of the head of regional government and regulation, is the qualified human resource ability and skill of someone competent in information and communication technology, with good encouragement and commitment. Limited human resource ability and low commitment prevent innovation success.

Human resources quantitatively becomes the third homework for Middle Lampung Regency. Only a few people have information technology skills and are not evenly distributed in the electronic public service administration. On the institutional side, this holds up the Role of the Communication,

Informatics, and Statistics Office to develop an integrated application system. The regional government barely conducts internal human resource training and development, implying no apparatus monitoring mechanism through applications. This results in deviations in some types of public services despite using online applications because of human resource weaknesses.

> *"We are checking some apparatuses committing deviations in permit services. There are also apparatus quality problems in the population administration service despite the SLAMDUNG online application, including some public services in social aid beneficiaries occurring outside the system/application, and it causes data error implications". (The interview with a young auditor in the Inspectorate Office of Middle Lampung Regency)*

Therefore, the human resource aspect of the challenge needs a particular strategy, such as staff training and development, to improve innovation capacity. It needs apparatus skill identification to distribute staff evenly among service units. The plan might include new civil servant recruitment by acquiring information technology skills.

4.4. Digital Government Challenges in Technology and Access Aspect

No study so far denies that technology can facilitate organizational management to deliver innovation to the public, and all agree that information technology can improve service product innovation. The digital government challenges in technological aspects are of two kinds: the application technology/system built and developed by the government and the access to technology-based public service access.

The regional government's problems originate from various central government regulations where each government institution's information system applications seem to be built. Each legislation provides authoritative power for each government institution to design, build, and implement their respective information system and not integrate into other institutions' systems. The digital government implementation has abundant systems/applications with poor integration.

Another technological challenge is access to technological-based public services. Indonesia faces a 'digital divide' where imbalance and differences in communication and information technology digital access happen between people. People on Java Island dominantly enjoy smoother access than their counterparts outside Java Island. 287 out of 301 villages in the Middle Lampung Regency have good cellular signal networks, while 14 villages do not. 246 out of 301 villages enjoy good internet signal, while 55 other villages do not. In fact, the experience of many villages in Indonesia shows this the online system increases flexibility, allowing access from any device (Indratno, Fardani, & Kuntoro, 2024). The findings of Restu, Gamayuni, and Yuliansyah (2024) and Alamsyah, Wibisono, and Satriawan (2023) also show that demands for accountability in managing village funds can be answered by using a financial information system.

Good internet access is a severe challenge for regional users to have online public services, so conventional access is still becoming their alternative option. Accessibility for qualified digital government requires a significant investment and cannot be solved solely by the regional government with limited fiscal allocation. On the electronic application side, the primary homework is integration.

4.5. Digital Government Challenges on the Service User Trust

Leadership, human resource quality, and technology are challenges on the government side as the service supplier. The e-government initiative will be useless if the public as users do not benefit. The public is the one who values how beneficial the e-government is, not the government itself. Therefore, the government should determine priorities for the e-government application types to build and develop so that the applications can provide significant values perceived by the public to build trust.

The trust level analysis in the regional e-government implementation in this study explores all standardized assessment results by the central government for all regions in Indonesia. This can also be

done using the public satisfaction index results of the technology-based public services implemented in the regions.

Since 2018, the Ministry of State Apparatus Empowerment and Bureaucratic Reform of the Republic of Indonesia has evaluated the implementation of the electronic-based government system in 8 aspects and 47 indicators. These evaluation results produce the annual index score and predicate of the electronic-based government system at the central and regional governments. In 2022, the Middle Lampung Regency received an 'adequate' predicate with a score of 2.10 out of a 4.00 index. This score increased by 0.53 points compared to the previous year at 1.67 with a 'less' predicate.

However, this index is still lower compared to Mesuji Regency (2.59 / sufficient predicate), which is geographically located in the outer part of Lampung Province and has a lower technological structure and infrastructure than the ones in the Middle Lampung Regency. Still, it is higher than Bandar Lampung Municipal (1.50 / less predicate) with good location, internet access, and better apparatus resources than Middle Lampung Regency. This indicates that some factors other than technology and apparatus ability are more dominant in the regional digital government implementation.

Table 2. Index score and predicate of the electronic-based government system of Lampung Province in 2021 and 2022

No	Institution	2022 Index Score	Predicate	2021 Index Score
1	Lampung Province Government	3.37	Good	2.76
2	Mesuji Regency Government	2.59	Adequate	1.69
3	Metro Municipal Government	2.49	Adequate	2.14
4	North Lampung Regency Government	2.43	Adequate	1.86
5	West Lampung Regency Government	2.26	Adequate	1.91
6	Way Kanan Regency Government	2.24	Adequate	2.10
7	Middle Lampung Regency Government	2.10	Adequate	1.67
8	West Tuba Regency Government	2.07	Adequate	1.97
9	Pringsewu Regency Government	2.00	Adequate	2.03
10	Tanggamus Regency Government	1.60	Less	1.00
11	Bandar Lampung Municipal Government	1.50	Less	1.20

Source: Decree of Minister of State Apparatus Empowerment and Bureaucratic Reform RB Number 108 of 2023 and Number 1503 of 2021

The Ministry of State Apparatus Empowerment and Bureaucratic Reform evaluated the 'one integrated permit service' innovation in the Middle Lampung Regency and gave it an 'A' score. After the 'Online Single Submission' application in the Public Service Mall was launched, the evaluation score turned into 'A', and even the Indonesia Investment Board placed the 'Online Single Submission' application in Middle Lampung regency as the 16th best regional application out of 490 regencies/municipals in Indonesia. However, the Ombudsman of Lampung Representative Office's evaluation results of the qualities of public services in health, population, social welfare, and integrated service commonly placed Middle Lampung Regency in a 'yellow' zone, except permit service in the Public Service Mall in the 'green' zone.

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The Ministry of State Apparatus Empowerment and Bureaucratic Reform's evaluation index score was 78.13 (good category) in the SLAMDUNG application for population administration service. The Online Single Submission application in the permit service on the Public Service Mall showed a higher index score of 88.25 (good category).

These various evaluation results indicate that the digital government implementation in the Middle Lampung Regency needs to be improved to increase user satisfaction, which will influence public trust in the provided services.

4.6. The Implications of E-Government as a Booster of Digital Democracy

Almost everyone agrees that democracy is the best form of government in terms of guaranteeing the rights and freedoms of the majority while potentially minimizing the role of the minority. In some countries, consensus mechanisms are in place to reconcile this tendency for majority tyranny over minorities. But whatever the shortcomings of democracy, it is still the best option and is currently used by more than 65% of countries in the world.

Democratic innovation in the form of e-democracy (digital democracy) is specifically designed to enhance and deepen citizen participation in the political decision-making process (Smith, 2009). This concept has been brought to the fore by political scientists and practitioners in response to the alarming deficit of democracy especially with regard to the level of political participation and public trust in the outcome of the democratic process i.e. elections.

Around the world, governments, local governments, researchers, non-governmental organizations, and the private sector are developing and experimenting with digital democracy innovations that can increase political participation and strengthen democracy (Fung & Wright, 2003; Gilman & Peixoto, 2019). Digital democratic innovations are ‘institutions specifically designed to increase and deepen citizens’ participation in the political decisions that affect their lives’ (Smith, 2019). are interested in the digital form of democratic innovation, i.e. technological tools to make democracy more inclusive, government more accountable, and representation more responsive (Pogrebinschi, 2018). Digital democratic innovation can be purely online or in a hybrid form (online and face-to-face) (Smith, 2020). Pogrebinschi (2018) argues that the real change in how democracy works comes from entirely new ways of electronic participation, and digital democratic innovations, rather than digitalized versions of traditional forms of political participation (e.g., e-voting, e-petitions). Innovations that use open data to increase the transparency of decision-making can change the way governments lead by making them more accountable (Pogrebinschi, 2018).

5. Conclusion

This paper aims to enhance discussion on the implementation of regional digital government, implications and achievements that have been produced, and challenges that must be addressed to design the future of digital government in Indonesia.

The findings showed that Middle Lampung Regency has formally implemented digital government through regional regulations concerning an electronic-based government system. Middle Lampung Regency has built various websites and applications to support service functions, administration and management, development, finances, and employee affairs. However, most websites and applications are still lower at the 'emerging stage' in e-government adoption. The regional government has websites with limited and static information. In addition, these various applications are not yet integrated between one service application and another.

The digital government is still limited to digitalizing public services without integration into more comprehensive public service businesses, with abundant applications and poor integration. Digital government innovation implementation still faces various challenges from the government assessment and the public satisfaction sides. It is very much influenced by leadership, human resource ability and quantity, and technology that still needs further penetration. Leadership is the most determinant aspect, especially instruction from the central government and institutions, influencing digital government success, especially at the regional level. The study finding also shows that public satisfaction and trust influence the success of digital government implementation.

These findings provided a more accurate description of the digital government challenges and opportunities to avoid the same mistakes in the future and to convince the public that this technological innovation will succeed in achieving its goal. If stakeholders fail to take the lesson, they will always doubt the ability of the digital government to create additional value for providers and users.

5.1 Limitation/s and study forward

The implementation of digital governance in the regions is still very large, and it is very possible that the description of the challenges in this article is still very limited. Therefore, research on other aspects is still a very relevant research theme in order to realize the benefits of digital governance as one of the innovations in improving the quality of public services.

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