

Model of Stages of Implementation of E-Government Development in Organizational Transformation in the Provision of Integrated Public Services in the Maros Regency MPP

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Abstract. *Organizational transformation in e-government development is key to improving the effectiveness of public service delivery, particularly in the Maros Regency Public Service Mall (MPP) as a model for cross-agency service integration. This study aims to analyze the stages of e-government implementation in the organizational transformation process at the Maros Regency MPP using Layne and Lee's (2001) four-stage framework: catalog, transaction, vertical integration, and horizontal integration. Through a qualitative approach with a descriptive design, this study focuses on how the process and identification of the stages of e-government implementation are formed. The study also examines the dynamics of organizational adaptation, resource readiness, and inhibiting and driving factors that influence the continuation of the transformation towards full integration. Data were collected through in-depth interviews, document analysis, and observations of service workflows at the MPP. The results of the analysis are expected to provide a comprehensive picture of the position of the e-government development stages at the Maros MPP, while also providing theoretical contributions through model findings to the study of public sector organizational transformation in accelerating the integration of digital-based services.*

Keywords: *Organizational Transformation; E-Government; Service Integration; Layne and Lee Model*

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INTRODUCTION

The development of information and communication technology (ICT) has transformed the way people interact, conduct transactions, and access public services (Liu & Yuan, 2015; Anttiroiko et al., 2014; Androutsopoulou et al., 2019; Yeh, 2017; Mahmood et al., 2020; Roztock et al., 2019). The government, as the state administrator, is inextricably impacted by this digital transformation. This transformation extends beyond the digitization of administrative procedures to include structural changes, internal processes, and inter-agency coordination patterns. In this context, the implementation of e-government has become a key strategy for governments at all levels to improve the effectiveness and efficiency of public service delivery (Chen et al., 2019; Gil-Garcia et al., 2014; Ma et al., 2022).

The concept of organizational transformation in e-government development arose from the need to adapt digital technology within bureaucratic systems to enable faster and more responsive public services. The implementation of e-government encompasses various

dimensions, including Government-to-Government (G2G), Government-to-Citizen (G2C), Government-to-Business (G2B), and Government-to-Employee (G2E). These dimensions aim to strengthen connectivity between agencies, accelerate public services, and increase the productivity of government officials (Khan, 2015; Sulehat & Taib, 2016; Chaijenkij, 2024). Globally, the United Nations E-Government Survey (2022) ranked Indonesia 77th out of 193 countries, with an increasing e-government index year after year. While this position demonstrates significant progress, it also reflects disparities in e-government implementation at the regional level, particularly regarding service integration and coherence. Nationally, Indonesia's e-government development is geared toward supporting the Digital Indonesia 2045 Vision, which emphasizes data-driven governance and integrated public services.

Public services in Indonesia still face various obstacles, such as lengthy bureaucratic processes, overlapping authority, a lack of transparency, and weak cross-sectoral coordination (Arifin & Maarif, 2024; Satika, 2024; Pereira & Hardyansah, 2024; Hadi et al., 2024; Genda et al., 2024). This situation has resulted in low public trust in government institutions. To address this, the government has made digitalization a key pillar of bureaucratic reform. Through Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System (SPBE), the government emphasized that e-government development is not merely the adoption of technology, but rather a systematic transformation to efficiently integrate government business processes. SPBE is expected to create a clean, effective, and transparent government, while providing quality and reliable public services.

Almadani et al. (2024), Herdiyanti et al. (2019), Amalia et al. (2024), SPBE implementation is also an important indicator in measuring the performance of government agencies. Regions with high levels of SPBE implementation tend to have better Bureaucratic Reform Index (IRB) and Public Satisfaction Index (IKM). This demonstrates that digitalization and service integration are strategic instruments for accelerating bureaucratic reform and enhancing public trust.

As part of its innovative public service transformation, the government introduced cross-agency service integration through the Public Service Mall (MPP), as stipulated in Presidential Regulation No. 89 of 2021. The MPP is a service center that combines various government administrative services in one easily accessible location (Wahyuni, 2024; Malia, 2021; Febrian et al., 2023; Suhermanto et al., 2022). The MPP's presence is strengthened by the implementation of SPBE, enabling the concept of service integration to evolve into a Digital MPP, optimizing electronic-based services in response to public needs in an era of technological disruption. Data from the Ministry of Administrative and Bureaucratic Reform (2024) shows that there are 206 MPPs and 60 Digital MPPs operating throughout Indonesia. The high level of internet usage (78 percent of the population) and mobile phone usage (67 percent of the population according to BPS, 2023) further emphasizes the need for the government to provide adaptive, fast, and digital-based public services.

Referring to national regulations regarding SPBE, the Maros Regency Government subsequently issued Regent Regulation No. 16 of 2024 concerning the Implementation of the Electronic-Based Government System (SPBE) in the Maros Regency to support the implementation of good, effective, efficient, transparent, and accountable governance in line with bureaucratic reform. It is proven that the implementation of the Electronic-Based Government System (SPBE) initiated by the Central Government has made a positive contribution to improving the quality of public service delivery in Maros Regency. The following are the results of the evaluation of the implementation of the SPBE of the Maros Regency Government held by the Ministry of Administrative and Bureaucratic Reform over the past 3 years.

Table 1. Evaluation Results of the Implementation of SPBE by the Maros Regency Government

Year	SPBE Evaluation Index	Rating
2022	2.07	Fair
2023	2.55	Fair
2024	3.15	Good

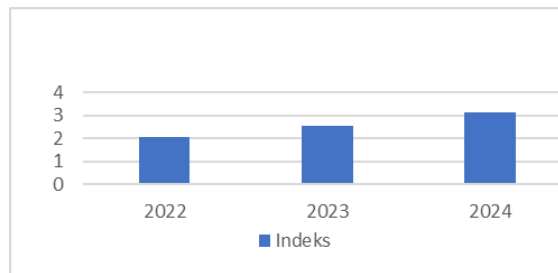


Figure 1. Diagram of Improvement in the Maros Regency Government's SPBE Evaluation Results
Source: Author's processing (SPBE Report, Ministry of Administrative and Bureaucratic Reform, 2022-2024)

Based on the data above, it is clear that there has been annual improvement in the implementation of the Maros Regency Government's Electronic-Based Government System. Based on the regulations regarding the implementation of the SPBE and MPP, it can be said that Maros Regency is one of the regions developing the e-government concept through the implementation of the SPBE and Public Service Mall (MPP). Maros Regency's topography covers 1,619.12 km², comprising 14 sub-districts and 103 villages/wards (Disdukcapil Maros Regency), with a relatively large and multicultural population. These conditions form the basis for developing the use of ICT technology in public service delivery as an effort to encourage broader citizen participation.

The Maros Regency MPP began operations in 2022 and was inaugurated on August 19, 2022, as the 61st MPP in Indonesia and the 5th in South Sulawesi Province. However, a problematic phenomenon has occurred at the Maros Regency MPP integrated public service mall. People seeking MPP public services prefer to come directly to the relevant agencies rather than the Maros Regency MPP office for various reasons. As a result, the service at the Maros Regency MPP is rarely visited by residents, even though various public services can be found at the Maros Regency MPP office.

Therefore, the Maros Regency Government MPP is striving to implement digital or online services as a form of e-government transformation in addition to direct and self-service services so that the people or residents of Maros can access digital/online services without having to go to the MPP. Therefore, in addition to operating direct services (onsite), the Maros MPP has also provided a Digital MPP to facilitate the public to access various services online. Currently, there are approximately 100 types of public services from approximately 20 government agencies that can be accessed by the public both directly and digitally.

However, the organizational transformation promoted in the development of e-government within the Maros MPP public service still faces a number of challenges. The Maros Regency MPP serves as a concrete example of how the government is attempting to integrate various services into a single system supported by digital technology. However, on-the-ground observations indicate that service integration still faces a number of challenges (Cornish et al., 2017; Yao et al., 2018).

Some agencies have implemented digitalization at an early stage, such as providing application-based information and services, but the process of inter-agency integration and alignment of information systems has not been fully optimized. Disparities in standard procedures, limited service interoperability, and differences in institutional capacity across agencies are factors that influence the success of e-government implementation within the MPP.

These conditions indicate that the organizational transformation process does not occur instantly, but rather through developmental stages that require structural readiness, coordination between stakeholders, and the organization's ability to adapt to the demands of digitalization. When the implementation stages are not directed or interrupted midway, the level of public service integration, the primary goal of the MPP, is difficult to achieve. This phenomenon

raises questions about how the e-government implementation stages are carried out in practice and how these stages affect organizational transformation within the Maros Regency MPP.

From an academic perspective, several studies on e-government in Indonesia tend to focus on technological aspects, infrastructure readiness, or user satisfaction. However, studies specifically examining the implementation stages of e-government in the context of public organization transformation, particularly in integrated public services such as MPP, are still relatively limited. This research gap indicates the need for more in-depth studies to understand how the implementation process is carried out, the obstacles that arise at each stage, and how public organizations respond to the dynamics of change in an effort to achieve effective service integration.

This is in line with what was proposed by Layne & Lee (2001), who explained that the transformation in e-government implementation is an evolutionary process that occurs through clear stages, starting from information cataloging to cross-agency integration. Furthermore, Layne & Lee emphasized that integration, as the ultimate goal of e-government transformation, can only be achieved if the government understands and goes through the appropriate implementation stages.

Understanding these stages is important because it allows the government to plan the gradual development of the system towards full integration, which is considered a mature form of e-government transformation (Ingrams et al., 2020; Sharma & Panigrahi, 2015; Hujran et al., 2023). This opinion is further supported by Andersen & Henriksen (2006), who assert that the e-government stage model represents the development of digital government transformation, where each stage illustrates the complexity of the processes, structures, and digitization of public services.

Organizational transformation in the development of e-government in public service delivery, as a public administration phenomenon, is driven by its ability to address public demands for improved public service quality, which prioritizes the use of information technology. Various challenges and obstacles faced in public service delivery demand an e-government transformation.

This research's strength lies in its novelty in examining the relevance of the Layne & Lee model in the context of modern MPP service integration. The Layne & Lee model, developed in 2001 (the early e-government era), examines its relevance to centralized public service integration (MPP), a new phenomenon in Indonesia, and whether it requires new stages in its current implementation. Therefore, an in-depth study of the stages of e-government implementation in the Maros MPP is crucial to identify the extent of progress achieved, as well as the obstacles and opportunities that can be optimized in the development of e-government transformation of integrated public services in Maros Regency.

Based on this background, this study aims to describe and analyze the stages of e-government implementation in the organizational transformation of integrated public service delivery at the MPP in Maros Regency. Using an inductive qualitative approach, this study seeks to identify how each stage of digitalization is implemented, the factors influencing its success, and how this process contributes to organizational change in the delivery of digital-based public services.

METHODS

This study employed a qualitative approach with the aim of in-depth understanding of the process and dynamics of e-government implementation stages in the organizational transformation of integrated public service delivery at the MPP in Maros Regency. A qualitative approach was chosen because this study focuses on the meanings, experiences, and practices of organizational actors in implementing digital transformation. These transformations cannot be measured numerically but require understanding from the perspectives of those involved in the field. Data were obtained through in-depth interviews with MPP management officials, service

agency representatives, and operational staff, as well as direct observation of service processes and the use of digital systems within the MPP environment. Furthermore, this study utilized documentation in the form of service SOPs, regulations, performance reports, and supporting documents related to e-government implementation as information triangulation materials. The data analysis process was conducted inductively, following the steps of thematic analysis. The collected data were reduced through repeated reading, initial coding, and categorization based on patterns of findings emerging from the interviews and observations. Next, the researchers presented the data in the form of thematic descriptions that illustrate the stages of e-government implementation and the dynamics of the organizational transformation that occurred. The research conclusions were drawn gradually through a process of repeated verification between field findings and the theoretical framework, ensuring that the resulting interpretations remained consistent, credible, and reflective of the actual conditions at the MPP in Maros Regency. To maintain data validity, this study employed triangulation of sources and methods, member checking, and reflexive note-taking throughout the research process.

RESULTS AND DISCUSSION

The Public Service Mall (MPP) is an innovation from the Maros Regency government which is committed to providing optimal services to the community. In the early history of the establishment of the Maros Regency public service mall, it was first echoed by the Maros Regency government in 2020, to provide integrated public services that serve various services in one place and it was proven that it did not take a long time, thanks to the full support of the Maros Regency government and all related elements, in 2022 the Maros Regency Public Service Mall was present and officially operational to provide optimal services to the community. The Maros Regency Public Service Mall was inaugurated by the Acting Minister of State Apparatus Empowerment of the Republic of Indonesia, Prof. Dr. Mahud MD on August 19, 2022, which became the starting point for a centralized and organized service system in one place at the Maros Regency MPP. The Maros Regency MPP carries out its duties as a forum for regional apparatus and local government and private institutions/agencies in carrying out services. Where the total number of those carrying out services at the Maros Regency MPP is 19 Government and Non-Governmental Agencies/Institutions. The agencies/institutions referred to include:

Table 2. Services Provided by Agencies/Departments/Business Entities at the Maros Regency MPP

State-Owned / Region-Owned Enterprises / Business Entities	Local Government Agencies & Related Services	Vertical Agencies / Ministries & National Institutions
PT Bank Sulselbar Syariah	SAMSAT Maros	District Attorney's Office of Maros
PT BRI (Bank Rakyat Indonesia)	Regional Revenue Agency (Bapenda) – local tax services	Maros District Police (Polres)
BPJS Kesehatan	Investment and One-Stop Integrated Service Agency (DPMPTSP) – business licensing	District Court of Maros
BPJS Ketenagakerjaan	Population Administration Services (Dukcapil, etc.)	Class II Immigration Office Makassar
PT Taspen	Social Affairs Office	Ombudsman Republik Indonesia – South Sulawesi Representative
PT PLN (ULP Maros)	Health Office	Primary Tax Service Office (KPP Pratama) Maros
PDAM Maros	Education Office	National Land Agency (BPN) Maros

PT Pos Indonesia (service outlets)	—	—
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Source: Author's Processed Results

There are approximately 20 agencies, both government and state-owned enterprises, involved in the Maros Regency Public Service Mall, providing approximately 100 services. Although the Maros Regency Public Service Mall (MPP) offers numerous services from various agencies, both government and business entities, the Maros Regency Integrated Service Development Agency (DPMP-PTSP) is the responsible agency for the Maros MPP. It is certainly not easy for the Maros MPP to provide efficient, integrated public services that integrate various services in one location. The various obstacles encountered along the way, given Maros Regency's vast area and large population spread across various villages and sub-districts, present a challenge for the city government in providing easy, affordable, and efficient services.

Therefore, the Maros City Government in this case the Maros MPP has tried to present public services that do not only serve independently or physically but strive to innovate and transform to adapt to the needs and developments in information technology, namely the development of e-government in the implementation of integrated public services at the Maros Regency MPP. Of course this is not easy, for that it is necessary to know the extent to which the stages of implementation of e-government development in the implementation of public services in Maros Regency refer to the opinion of Layne & Lee (2001) namely the stages of e-government implementation can be known through the following four stages which then become the basis for data collection and collection which are then included in the following research results:

Catalog

In Layne & Lee's (2001) e-government implementation model, cataloging refers to the initial stage of e-government development, characterized by the online provision of government information. At this stage, the government begins utilizing information technology to digitally display public service information. The information provided is generally one-way communication, with no full interaction or transaction between the public and the government. Websites or digital media serve as a showcase for service information. Simply put, the cataloging stage can be understood as the stage where the government "moves service information from physical bulletin boards to digital platforms."

Based on an interview with a DPMPPTSP staff member in the Secretariat section of the MPP, it was explained regarding the provision of online and digital information.

"For online/digital information, the Maros MPP has provided information channels via WhatsApp and the Maros MPP website at <https://mpp.maroskab.go.id/>. There, you can find information about the various services available. Further details can be found directly on the website. For direct inquiries, you can send a WhatsApp message to obtain detailed information and requirements. The Maros MPP service begins with obtaining a queue number via WhatsApp. Documentation, such as permits, can also be checked via the WhatsApp number."

From the interview, a separate observation was conducted regarding integrated digital public services, which can be found on the website at <https://mpp.maroskab.go.id/>. The resulting website display is shown in the following image:

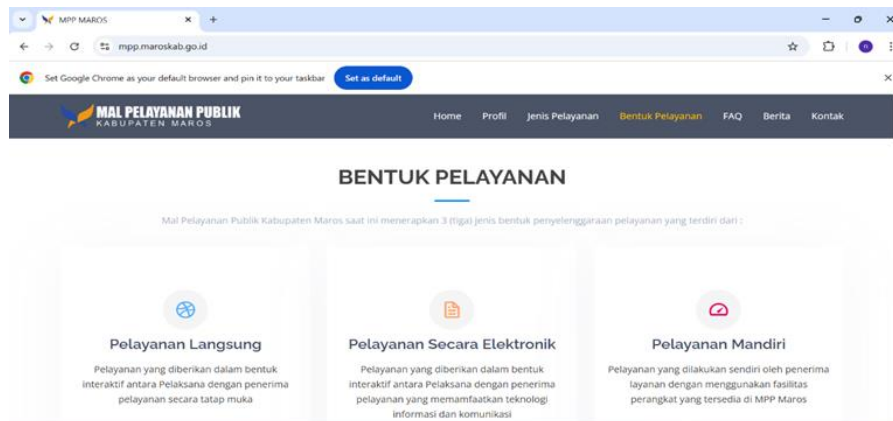


Figure 2. Maros Regency MPP public service information web display.

Source: <https://mpp.maroskab.go.id/>

The results of the Maros MPP public service information website demonstrate that digital information is already available, including the types of services and agencies available at the Maros Regency MPP. Furthermore, regarding information services, the requirements for this study have not been fully disclosed, so direct contact with the Maros Regency MPP's email address and WhatsApp messages is necessary.

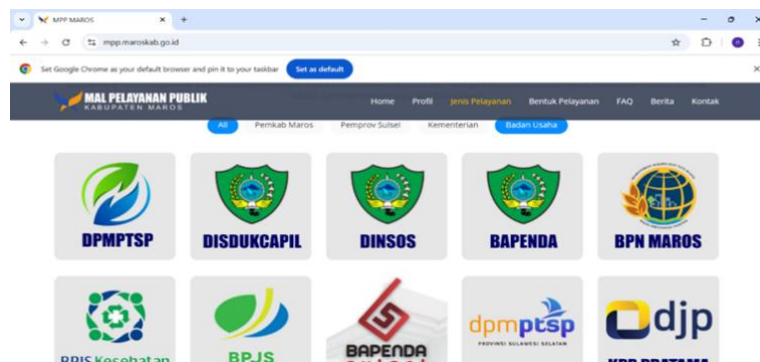


Figure 3. Email address and Whatsapp contact for MPP Maros

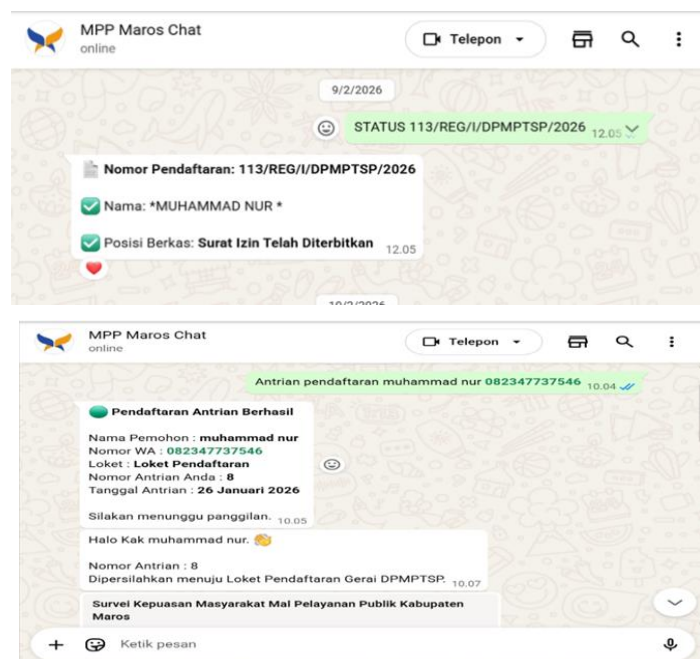


Figure 4. Screen Display for Queue Taking and File Checking via WhatsApp MPP Maros Regency

To confirm this information, researchers contacted the WhatsApp number and confirmed that residents can inquire directly via email and WhatsApp regarding available services. Furthermore, the WhatsApp number can be used to obtain queue numbers and check resident files without having to visit the Maros Regency MPP office. The following is evidence of queue numbering and file checking via the Maros MPP WhatsApp number.

However, for services at certain agencies within the Maros MPP, it is necessary to access their official websites. For example, detailed information regarding specific services, such as the DPMPTSP, the Health Office, the Immigration Office, PT Taspen, and others, is displayed on each agency's website, not on the Maros MPP website. The following is a list of the websites of the relevant agencies in question:

Table 3. Name of Agency, Type of Service and Website Address of Agency at the MPP of Maros Regency

No.	Agency / Institution	Type of Service	Website
1	DPMPTSPK Maros Regency	Business licensing (OSS), business and non-business permits	https://dpmpstsp.maroskab.go.id
2	Civil Registration Office (Dukcapil)	ID card, family card, birth and death certificates	https://dukcapil.kemendagri.go.id
3	Social Affairs Office	DTKS, PKH, social assistance programs	https://kemensos.go.id
4	Regional Revenue Agency (Bapenda)	Local taxes (property tax, etc.)	https://bapenda.sulselprov.go.id
5	Primary Tax Office (KPP Pratama Maros)	Tax ID (NPWP), EFIN, tax consultation	https://www.pajak.go.id
6	Police (Maros District Police)	Driver's license (SIM), police clearance (SKCK)	https://polri.go.id
7	District Court of Maros	Case services and legal administration	https://pn-maros.go.id
8	District Attorney's Office of Maros	Legal consultation and services	https://kejaksaan.go.id
9	Ombudsman Republik Indonesia	Public service complaints	https://ombudsman.go.id
10	Education Office	Educational operational permits and related services	—
11	SAMSAT Maros	Vehicle tax and registration (STNK)	https://bapenda.sulselprov.go.id
12	BPJS Kesehatan	Registration and participant data updates	https://www.bpjs-kesehatan.go.id
13	BPJS Ketenagakerjaan	Employment social security	https://www.bpjsketenagakerjaan.go.id
14	PT PLN (Persero)	Electricity installation, capacity upgrade, complaints	https://www.pln.co.id
15	PT Pos Indonesia	Postal and financial services	https://www.posindonesia.co.id

16	PT Taspen	Civil servant pension and claims	https://www.taspen.co.id
17	Bank Sulselbar	Banking and payment services	https://www.banksulselbar.co.id
18	PDAM Maros	Water connection and billing services	—
19	Public Service Mall (MPP) Maros Regency	Service integration and public information	https://mpp.maroskab.go.id
20	Ministry of Law and Human Rights	Intellectual property, apostille services	https://kemenkumham.go.id
21	Immigration Office	Passport issuance and immigration services	https://www.imigrasi.go.id
22	National Land Agency (BPN) Maros	Land information and consultation services	https://kab-maros.atrbpn.go.id/

Source: Author's Processed Results

For more detailed information regarding the types of services and service requirements, please visit the respective agency websites; they are not yet integrated across agencies. The researcher then tried accessing one of these services, the Maros Regency DPMPTSP website at <https://dpmptsp.maroskab.go.id>. It displays complete information about the types of services and the requirements needed for the permit issuance process without having to visit the Maros MPP office.

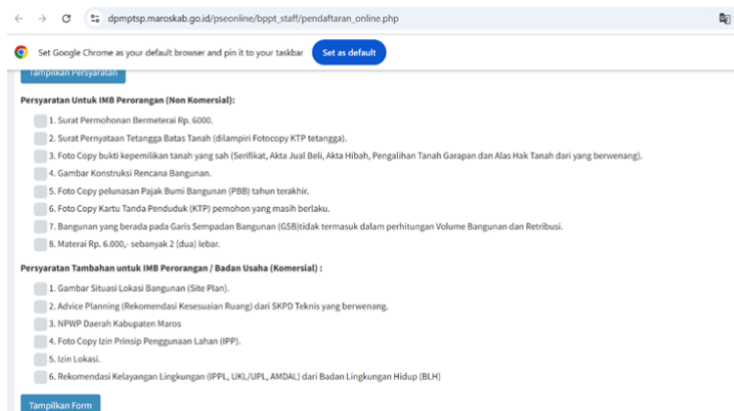


Figure 5. Display of the information type layer and service permit requirements at the DPMPTSP at the Maros Regency MPP Office.

The DPMPTS website provides a detailed explanation of the types of services available and the requirements for obtaining digital services from the DPMPTSP, which allows for permit issuance without having to visit the Maros Regency MPP Office. However, residents who wish to visit the MPP office in person are also permitted, as some residents still experience difficulties accessing digital services. To further clarify this, researchers directly contacted a resident at the MPP regarding the digital information website provided by the Maros Regency MPP.

This statement was confirmed by several residents at the Maros MPP who had previously visited the website. The following interview report states that

"I've tried visiting the Maros MPP website. It displays the types of services, the types of services, and also provides a WhatsApp contact number and email address for the MPP. It provides quite good information about the services available at the Maros MPP office. Some services can be handled more efficiently. However, for certain services, you have to go directly to the agency. The Maros MPP website doesn't provide detailed information regarding certain services, as the MPP provides many services at the Maros MPP."

This also aligns with an interview with a DPMPTSPK staff member who stated:

"The website has been created for MPP services, but it doesn't fully include all the detailed information due to the large number of services from various agencies and institutions that need to be processed. Therefore, not all of them are displayed. For specific services, you can inquire directly at the information counter, or via WhatsApp or an official message from an MPP officer, or you can go directly to the website of each agency within the Maros Regency MPP."

Based on interviews and observations, it is clear that the Maros Regency MPP has provided service information through digital media, including its website and WhatsApp, as communication channels with the public. Residents seeking detailed information can contact the email or WhatsApp contacts listed on the website. The available information covers the types of services and contact information, but does not yet include detailed administrative requirements or service documents that can be downloaded directly from the Maros MPP website. For details on public services provided by specific agencies, some agencies provide this information through their respective official websites. Therefore, for detailed information on Maros MPP digital services, residents are encouraged to visit their respective websites directly if they cannot find it on the Maros MPP website.

This data indicates that the agencies' digital service cataloging process has provided information on websites accessible to everyone.

Based on the interviews and observations above, it can be concluded that the agencies have provided public service information through digital media, including their official websites and WhatsApp. Through this platform, the public can obtain general information about the types of services available. However, the information presented on the Maros MPP website is not fully integrated and does not fully cover administrative requirements, procedural flows, completion times, and other technical provisions. Some information only provides a list of available agency services; for detailed digital services, each agency must visit its respective website. Thus, digital service information has been provided, although it is still limited to general information and has not been fully integrated.

Transactions

The Transaction stage, in Karen Layne & Lee's (2001) model, is the phase when e-government no longer merely provides information but also allows public services to be fully or partially online. The Transaction stage can be characterized by two-way communication between the public and the government. Users can submit service requests, fill out forms, and even make payments online. The system is beginning to replace manual processes with digital ones.

Researchers directly inquired about this digital transaction service with an employee at the Maros MPP. An interview with Mrs. Dian at the Health Office revealed that

"For digital services, residents prefer to come directly to the office or the MPP rather than digital services, perhaps due to lack of knowledge. However, there are health services that cannot be accessed online or digitally. They only provide initial information regarding requirements and types of services. Transactions related to digital forms are not yet available."

A similar statement was made by Mrs. Megawati, a member of the secretariat, on February 12, stating:

"In the filing process or fulfilling required documents, many agencies at the Public Service Agency (MPP) have not yet accommodated or provided applications that allow residents to complete application forms. This is because residents still prefer to come to the MPP and many are unaware of these digital services. However, some agencies have provided websites, such as the DPMPTSP (Directorate General of Taxes and Land and Buildings). However, not all

DPMPTSP services offer online services, only a few. Furthermore, some agencies also provide email and WhatsApp numbers, similar to the Ombudsman, to receive citizen complaints.

Furthermore, an interview with Mr. Romli, an employee at the Regional Revenue Agency (Bapenda), explained that "Many residents also come to the MPP because the MPP provides various services in one office. This allows residents to manage several services simultaneously. Some service processes are still manual, but specifically at Bapenda, tax checks and payments can also be done online without having to go to the Maros MPP."

Based on interviews with several employees working at the MPP, it is known that the implementation of digital services related to transactions allows residents to submit service files such as licensing services at the DPMPTSP and tax payments at Bapenda without having to go to the MPP office. Residents can obtain forms that must be filled out and uploaded to the website. The following is evidence of layer capture at one of the agencies in the Maros Regency MPP, namely the DPMPTSP.

Figure 6. Licensing service information form at the Maros Regency DPMPTSP.

The image shows that the Maros DPMPTSP MPP has provided digital services, including the form-filling process. However, many residents prefer to visit the MPP office in person to process documents manually. The following interview with a resident named Bu Rahmi, regarding Maros Regency MPP digital services, took place on February 12. She explained:

"I prefer to come directly to the Maros Regency MPP office rather than having to process documents online or digitally. Sometimes there are documents I don't understand, so I prefer to come and ask questions. Here, we are guided, especially for residents who are less tech-savvy like me. It's definitely better to go to the MPP office."

The interview indicates that laypeople who are unfamiliar with digital services are indeed facing challenges and prefer to come directly to the MPP office and ask questions if they encounter any issues. However, it can be emphasized that some digital services, such as filling out forms and submitting documents, are already provided by agencies, eliminating the need for residents to visit the MPP office, such as the DPMPTSP, Ombudsman, and Bapenda. However, many agencies still do not provide digital transaction services.

Based on the data above, it can be explained that in the digital transaction services at the Maros MPP, not all agencies provide online or digital forms for filling out and submitting documents. Furthermore, many government agencies in the Maros MPP still implement manual services in the filing process. Residents are required to come directly to the Maros MPP to complete the required documents. This is because many residents still prefer to come to the MPP office due to a lack of understanding and prefer to be guided by MPP staff.

Vertical Integration

The Vertical Integration stage in Karen Layne and Jungwoo Lee's e-government model is the phase when government service systems begin to connect across levels of government (from central to regional or vice versa). Vertical integration enables the merging and interconnection of information systems across different levels of government within a single hierarchy. This means that data and services no longer exist independently at each level (village, district, provincial, central), but are integrated and share data.

To understand the stages of vertical integration, it is important to understand the main characteristics of vertical integration in the implementation phase of e-government development: connectivity between levels of government, automatic data exchange, system standardization, where data formats and procedures are standardized, and data duplication is reduced, eliminating the need for repeated data input at each level. Therefore, researchers conducted interviews with employees of the Maros MPP to learn more about vertical integration in the e-government development of the Maros MPP.

Interview with an employee of the DPMPTSP working at the Maros MPP. The e-government implementation phase is vertical integration. It was explained that

"some data has been vertically integrated from the central government to the regional governments, such as population system data (KTP data) which is connected from the regional government to the central government, and regional tax data integrated with the national system. Furthermore, there is still a lot of data that is not vertically integrated."

The same interview results also explained by the Health Office that

"some data has been vertically integrated, but there is still a lot that is not, such as health data. There is still some data that is not synchronized between the Ministry of Social Affairs data and data on health service recipients, so many residents come to complain and request changes or synchronization of this data."

To confirm this, Researchers directly interviewed Social Services employees at the Maros MPP, and they explained that

"Many visitors to the Maros MPP come here to receive services at the Social Services. One of the most common is residents processing social assistance services. There are some data changes that are no longer appropriate due to data updates. As a result, many residents come to the MPP office in person with the necessary documents."

Researchers also observed the condition of Social Services services at the Maros MPP, where many residents come to the Social Services office manually to process services.

Interview with Mr. Roni, a Maros resident, explained that

"Many people come to the Maros MPP to process data changes. There are data requests, so we come with the requested documents. This is also my first time here. I enjoy registering at the MPP because there are many services here, and you can take care of anything." "As for online services, I don't know if they exist or not, but I prefer coming to the Maros MPP Office rather than using online services, because if there are any issues, I can be guided directly by the staff."

Based on the interview and observation data, it can be concluded that vertical data integration has not yet fully occurred in the e-government development process at the Maros Regency MPP Public Service Mall. There is still some overlapping data between several agencies, such as health data, social assistance data from the Ministry of Social Affairs, and regional licensing data. However, some data has been well synchronized, such as population data and tax data.

Horizontal Integration

The implementation of the Maros Regency Public Service Mall (MPP), using the e-government stage model proposed by Karen Layne and Jungwoo Lee (2001), particularly the horizontal integration stage, indicates that digital services or e-government are fully

implemented, starting from the catalog, transaction, vertical integration, and horizontal integration stages. However, field observations indicate that the integration of services between agencies within a single location or office of the Maros Regency MPP remains physical, with no comprehensive digital horizontal integration within a single service portal. This occurs in most MPP implementations throughout Indonesia. The implementation of horizontal integration in the e-government stages of this model is characterized by the electronic connection of systems and data between agencies, enabling the delivery of integrated public services within a single digital platform. However, based on observations by researchers, the implementation of the Maros Regency MPP does not yet fully demonstrate these characteristics.

Based on previous interviews with the Secretariat of the DPMPSTP, Maros Regency, Regarding vertical integration in Maros, it was explained that

"Vertical data integration between the central and regional governments has not yet fully occurred, let alone horizontal data integration. The SPBE instruction is expected to facilitate data integration, both vertical and horizontal, in the future."

This indicates that the horizontal integration stage of e-government implementation, as outlined by Layne and Lee (2001), has not yet occurred in the Maros MPP's integrated public service delivery. This is because horizontal integration will only be achieved if all previous stages, up to the vertical integration stage, run optimally without data overlap.

Empirically, the Maros Regency MPP has brought various service agencies together in a single location. This makes it easier for the public to access various types of services without having to visit different agency offices. However, the integration that occurs is still physical, or co-location of services, where each agency continues to operate independently according to its own systems and procedures. Thus, despite the ease of spatial access, integration has not yet occurred at the system level.

Furthermore, from an information technology perspective, there is no integrated system connecting all services between agencies within the Maros Regency MPP. Each agency still uses separate applications and databases, preventing automatic data exchange. As a result, the public still has to input data repeatedly when accessing different services. This situation demonstrates the lack of system interoperability and data integration, key characteristics of horizontal integration in e-government. The Maros MPP website at <https://mpp.maroskab.go.id/> is not fully integrated for all services between agencies. Each agency has its own website address, which is not integrated with the main website of the Maros Regency MPP.

Furthermore, the service flow implemented at the Maros Regency MPP still follows the sectoral mechanisms of each agency, except for a centralized information counter and a WhatsApp-based queue, which then directs users to each agency counter within the Maros Regency MPP. Despite being located in the same building, the public still has to move from one counter to another depending on the type of service they require. This indicates that the integration has not substantively eliminated bureaucratic barriers between agencies, but has only simplified physical access.

Based on the above description, it can be concluded that the Maros Regency MPP cannot yet be categorized as implementing the horizontal integration stage within the e-government framework according to Karen Layne and Jungwoo Lee. The integration that occurs is still limited to physical and administrative aspects, while electronic system and data integration has not yet been realized. Therefore, the position of e-government implementation in the Maros Regency MPP is more appropriately at the catalog stage towards the complete transaction stage or in an immature transition phase towards more comprehensive integration, both vertical and horizontal integration.

The implementation of e-government at the Maros Regency Public Service Mall (MPP) was analyzed using the e-government development stage model proposed by Karen Layne & Lee (2001), which divides e-government development into four stages: cataloging, transactions,

vertical integration, and horizontal integration. This model demonstrates that e-government maturity is determined by the extent to which information technology is used not only for information provision but also for the integration of services and data between agencies.

Cataloging Stage

The cataloging stage is the initial stage in e-government implementation, characterized by the provision of public service information online and still using one-way communication. Karen Layne & Lee (2001) state that this stage serves as the initial foundation for building the government's digital presence through electronic information publication. The results of the study indicate that the Maros Regency MPP has provided service information through its official website and communication platforms such as WhatsApp. The information provided includes the types of services and agencies involved, as well as communication channels for obtaining further information. This demonstrates that the government has digitized public service information.

However, the information presented is incomplete, particularly regarding service requirements, procedures, and downloadable documents (Kiberu et al., 2014; Walker et al., 2023; Wiesner & Pfeifer, 2014). This situation indicates that the information function is still limited to providing general information. Thus, this condition aligns with the characteristics of the catalog stage in the e-government model proposed by Karen Layne & Lee (2001), where the government only provides information online and communication remains one-way. At this stage, the website functions as a publication medium or digital storefront without integrated services or complex interactions. Therefore, the existence of the Maros MPP website, which only displays general information without technical details, indicates that e-government implementation is still in its early stages.

This finding is further supported by Moon's (2002) opinion, which states that the early stages of e-government are characterized by the provision of online information without significant interactivity. Furthermore, Darrell M. West (2004) suggests that many governments are in the "billboard stage," where they only display information digitally without providing integrated or interactive services. In this context, the Maros MPP website can be categorized as a digital information medium that does not yet fully support the community's comprehensive needs.

Analytical, this situation indicates that the Maros Regency MPP has met the basic indicators of the catalog stage, namely the availability of digital service information. However, the quality of the information provided is still limited, not standardized, and not yet integrated across agencies. Furthermore, the reliance on additional communication media such as WhatsApp for detailed information indicates that the available information system is not yet capable of standing alone as a comprehensive service source. This indicates that the catalog stage implementation remains at a basic level and has not yet progressed to a more mature stage.

This aligns with Heeks (2003) opinion, which states that in the early stages of e-government, many governments focused solely on providing online information without considering the completeness and quality of that information. Furthermore, West (2004) also emphasized that many government websites in the early stages functioned only as "digital bulletin boards" that were not yet interactive. Thus, it can be concluded that e-government implementation in the Maros Regency MPP at the catalog stage has been ongoing, but not yet optimal. The government has succeeded in providing digital access to information, but further development is still needed in terms of completeness of information, integration between agencies, and the provision of features that enable the public to obtain service information independently without having to rely on manual communication.

Transaction Stage

The transaction phase is the phase in which e-government begins to provide interactive services that enable citizens to conduct online transactions, such as filling out forms, submitting service requests, and making payments. From the perspective of Karen Layne & Lee (2001), the

transaction phase is characterized by two-way communication between the government and the public, as well as the system's ability to facilitate electronic service processes, such as filling out forms, submitting applications, and making online payments. Based on these indicators, the Maros Regency MPP can be said to have entered the transaction phase, but its implementation is still partial and not yet fully integrated across agencies.

This finding is supported by Jane E. Fountain's (2001) opinion, which states that the success of e-government implementation is determined not only by the availability of technology, but also by the level of public acceptance and ability to utilize that technology. Furthermore, Heeks (2003) proposed the concept of the design-reality gap, which is the gap between digitally designed systems and the actual conditions in society. In the context of the Maros MPP, this gap is evident in the existence of digital services that are already available, but not yet fully utilized due to limited public digital literacy and a preference for face-to-face services. Analytical, this situation indicates that the implementation of the transaction phase in the Maros Regency MPP still faces several obstacles, including uneven digitalization of services across agencies, a lack of integration of service systems, and low public adoption of digital services. The limited availability of digital services within specific agencies also indicates the absence of policies encouraging comprehensive standardization of digital services within the MPP. Furthermore, social factors such as community habits and technological literacy also influence the success of this phase.

Therefore, it can be concluded that the implementation of e-government in the transaction phase in the Maros Regency MPP has begun to develop, but is still in the transition phase from the catalog stage to full transactions. Although interactive digital services exist in several agencies, their implementation is uneven and not yet optimally utilized by the public. Therefore, efforts are needed to improve digital literacy, strengthen service integration policies, and develop more user-friendly systems so that the transaction phase can run effectively and equitably across all service agencies.

Vertical Integration Stage

Based on research findings, the implementation of e-government at the Maros Regency Public Service Mall (MPP) during the vertical integration stage indicates that the interconnectedness of systems and data between levels of government has not been fully realized optimally. Some types of data, such as population and taxation data, have been integrated between the central and regional governments, enabling more efficient service processes without the need for repeated data input. However, in other sectors, such as health and social assistance, data asymmetry remains between agencies and levels of government. This situation requires the public to visit the MPP office in person to manually update, verify, or synchronize data, ultimately reducing the effectiveness of the digital services developed.

From the perspective of Layne & Lee (2001), the vertical integration stage is characterized by the interconnectedness of information systems between levels of government within a single hierarchy, from the central to the regional levels, enabling automatic and standardized data exchange. The primary goal of this integration is to eliminate data duplication, increase service efficiency, and create information consistency between institutions (Maltese, 2018; Bhaskaran, 2019). However, the conditions found at the Maros Regency MPP indicate that this integration is still partial and does not fully meet the characteristics of ideal vertical integration.

These findings align with Nugroho & Purbokusumo, (2020) opinion, which states that the success of e-government integration depends heavily on data standardization and inter-agency system interoperability. Without uniform data formats and interconnected systems, integration will be difficult to achieve optimally. Furthermore, Heeks (2003) emphasized that one of the main obstacles to e-government implementation in developing countries is weak inter-agency coordination and the mismatch between designed systems and actual conditions on the ground. This is reflected in the persistent data asymmetry in several service sectors at the Maros MPP.

Analytical, this situation indicates that the implementation of vertical integration at the Maros Regency MPP is still in its early stages and immature. Although integration efforts have been made in several strategic sectors, such as population and taxation, this has not been followed by comprehensive integration across all public services available at the MPP. Furthermore, the suboptimal integration also indicates limitations in inter-agency coordination, technological infrastructure readiness, and integrated data management policies. Thus, it can be concluded that the implementation of e-government in the Maros Regency MPP at the vertical integration stage is still partial and not yet optimal. Data integration between government levels has not been fully realized, resulting in data duplication and the need for manual verification by the public. Therefore, strengthening system interoperability, data standardization, and inter-agency coordination is necessary to achieve comprehensive vertical integration and support improvements in the quality of public services.

Horizontal Integration Stage

Based on research findings, the implementation of e-government at the Maros Regency Public Service Mall (MPP) during the horizontal integration stage indicates that inter-agency integration has not yet been fully realized in the form of an integrated digital system. Although various service agencies have been placed in a single location through the Public Service Mall concept, the integration is still physical (co-location), not information technology-based system integration. Each agency still operates services independently using its own applications and databases, preventing automatic data exchange between agencies. Furthermore, the Maros Regency MPP website does not yet function as an integrated service portal capable of integrating all services into one system; instead, it serves only as an information medium directing the public to each agency's website.

This situation means that the public still has to move from one counter to another to manage different services, and repeatedly enter data at each agency. This indicates that despite easy physical access, the public service process has not been substantively integrated. In other words, bureaucratic barriers between agencies persist in service practices, even though they have been administratively unified within a single service building.

From the perspective of Karen Layne & Lee (2001), horizontal integration is the highest stage in e-government implementation, characterized by the electronic interconnection of systems and data between agencies, thus providing integrated public services within a single digital portal. At this stage, the public should be able to access various services from various agencies through a single portal without having to interact with multiple disparate systems. However, conditions at the Maros Regency MPP indicate that this characteristic has not been met.

This finding is reinforced by West (2004), who stated that horizontal integration is the most complex stage in e-government development because it requires structural changes and strong cross-agency coordination. Furthermore, Fountain (2001) emphasized that e-government integration is not solely related to the use of technology but also requires institutional transformation, including changes in bureaucratic work patterns and coordination mechanisms between government organizations. Without these changes, digital service integration will be difficult to achieve.

Analytically, this situation indicates that the implementation of horizontal integration at the Maros Regency MPP has not yet been achieved. Existing integration is still limited to physical and administrative aspects, while electronic system and data integration has not yet been realized. This also indicates that previous stages, particularly vertical integration, have not been implemented optimally, thus constraining horizontal integration. Furthermore, the lack of an interoperability system and integrated policies for inter-agency data management are key factors hindering the realization of comprehensive service integration.

Thus, it can be concluded that e-government implementation in the Maros Regency MPP has not yet reached the horizontal integration stage as proposed by Karen Layne & Lee (2001).

Service integration remains partial and limited to the unification of service locations, rather than the integration of digital systems. Therefore, strategic efforts are needed, including the development of an integrated service portal, increasing inter-agency system interoperability, and strengthening institutional coordination to effectively achieve horizontal integration in public service delivery.

Based on the research results and discussion above, the existing model for the stages of e-government development implementation in the Maros Regency MPP can be described as follows:

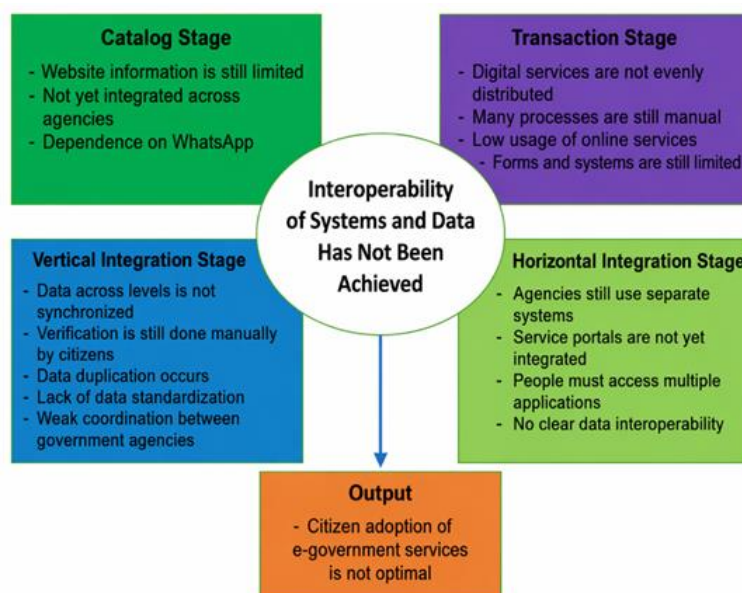


Figure 7. Existing Model of E-Government Development Implementation Stages in the Maros Regency MPP.

Source: Author's Processed Results

The figure above demonstrates weaknesses in each stage of e-government development, highlighting the lack of integration within the integrated public service delivery at the Maros Regency Public Service Mall (MPP). Layne and Lee's analysis of e-government stages demonstrates that e-government implementation at the Maros Regency Public Service Mall (MPP) is still in a gradual development phase and has not yet reached optimal integration. The cataloging stage has essentially been achieved, as evidenced by the availability of service information via the website, but this remains limited and not yet fully integrated across agencies. The transaction stage has also begun to be implemented, but it is not yet evenly distributed across all service types and remains partial, as some service processes remain manual. Furthermore, vertical integration has begun to emerge through efforts to connect between levels of government, but its implementation remains very limited and is not supported by adequate data synchronization. Meanwhile, horizontal integration between agencies within a single level of government has not yet been achieved, as evidenced by the continued separation of service systems and the absence of an integrated service portal.

This situation indicates that e-government implementation has not yet reached maturity, particularly in terms of system integration and inter-agency coordination, resulting in the suboptimal quality of digital-based public services. Therefore, this study adds an important stage to the organizational transformation process related to the implementation of e-government development, specifically at the MPP (Public Service Provider) in Maros Regency, as found in this study. The author formulated one dimension in the e-government implementation process: Integrated and Citizen-Based E-Government Implementation. This research finding indicates that the main problem in e-government implementation in Maros Regency's MPP services lies not only in the failure to achieve system integration, but also in the weak quality of data exchange, low

user readiness, and the continued dominance of manual processes. Therefore, data interoperability is positioned as a key element in this model. Interoperability is not simply understood as technical connectivity between systems, but as the system's ability to exchange and utilize data uniformly, both in terms of format and meaning. With interoperability, problems such as data duplication, information asynchronous, and the need for manual verification can be minimized, thereby making the achieved horizontal and vertical integration more meaningful and functional. The following is a recommended model based on the findings of this study:

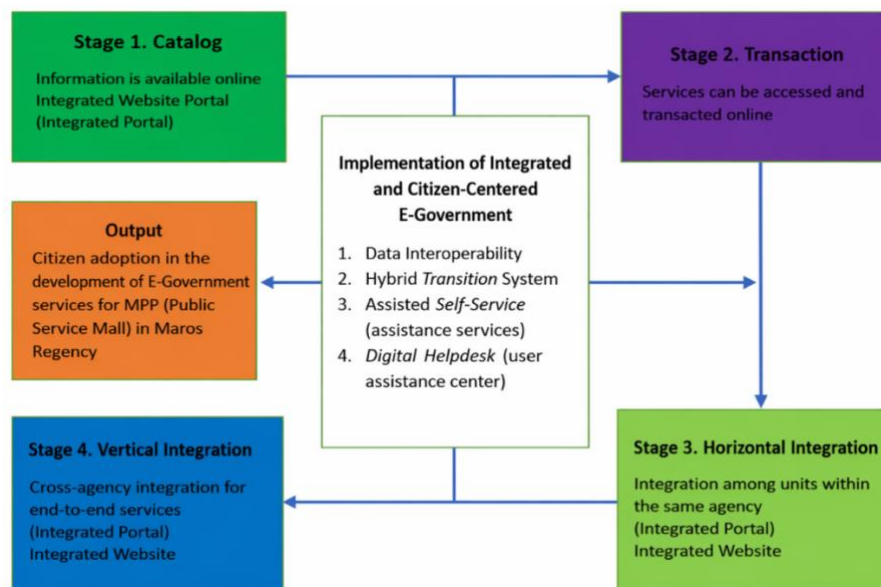


Figure 8. Model Recommendations for the Stages of E-Government Development Implementation in the Maros Regency MPP Public Services.

Source: Author's Processed Results

In addition to the system interoperability aspect, this model also emphasizes the importance of the user-oriented dimension of public services. This is in line with the findings of Carter & Bélanger (2005), which showed that e-government adoption is significantly influenced by perceived ease of use and trust in government services. This perspective is also reinforced by Davis (1989) through the Technology Acceptance Model (TAM), which emphasizes that perceived usefulness and perceived ease of use are the main factors in driving technology acceptance by users. Furthermore, Warkentin et al. (2002) also emphasized that public trust is a key determinant in the adoption of e-government services, particularly in the context of digital interactions between the government and the public. In this context, the presence of Assisted Self-Service and Digital Helpdesk is a form of strategic intervention to bridge the digital literacy gap among the public while increasing user trust in the system. Assisted Self-Service allows the public to continue accessing digital services with the support of officers, while the Digital Helpdesk functions as an integrated help center to address user issues. This approach also aligns with Fountain's (2001) citizen-centric e-government perspective, which emphasizes the importance of focusing on user needs and experience in public service design.

Furthermore, this model accommodates the realities of implementation through the concept of a hybrid transition system. This approach emphasizes that digital transformation does not occur instantly, but rather through a gradual process that combines manual and digital systems. This aligns with Heeks' (2003) view that e-government implementation failures often occur due to a gap between system design and actual conditions on the ground (design-reality gap). Furthermore, West (2004) emphasized that the success of government digitalization depends heavily on the government's ability to manage the transition process gradually and adaptively. Therefore, a hybrid system is a pragmatic solution for maintaining the continuity of

public services amidst limitations in infrastructure, organizational readiness, and community capacity.

This model emphasizes that the stages of e-government implementation, as described in the Layne and Lee e-government model, need to be strengthened through elements of data interoperability, support-based service mechanisms, and an adaptive transition system. The importance of interoperability is also emphasized by Janowski (2015), who stated that digital government integration requires technical, organizational, and semantic alignment in data exchange. Furthermore, Gil-Garcia (2012) emphasized that interoperability is a key prerequisite for realizing connected government. Thus, system integration without interoperability will not produce effective services, while digitalization without considering usefulness, convenience, trust, and support for users will not encourage public adoption. Therefore, the main contribution of this research lies in the development of an integrated e-government implementation model that focuses not only on system development but also on successful use by the public as a key indicator of digital government transformation.

CONCLUSION

Based on the analysis of e-government stages by Karen Layne & Lee (2001), it can be concluded that e-government implementation in the Maros Regency MPP is still in the gradual development stage. The cataloging stage has been achieved but is not yet optimal; the transaction stage has begun to be implemented but is uneven and partial; vertical integration has begun but is still very limited; and horizontal integration has not yet been achieved. This indicates that the Maros Regency MPP is still in the implementation phase, moving from cataloging to developing a mature transaction stage, leading to a more integrated e-government. Therefore, strengthening system integration, data interoperability, and increasing digital adoption by the community is necessary. To address these issues, this study produces an integrated, citizen-driven e-government implementation model that emphasizes strengthening data interoperability as the system foundation and developing assistance-based service mechanisms through assisted self-service and a digital helpdesk. The findings of this model serve as indicators of successful e-government implementation, which will impact citizen adoption of e-government services in the Maros Regency MPP.

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