



# When E-Government Meets Local Reality: Rethinking Public Service Transformation in Disadvantaged Regions of Papua

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ARTICLE INFORMATION	A B S T R A C T
<p>Received: February 24, 2025            Revised: March 12, 2026            Accepted: M 03, 2026            Available online: April 20, 2026</p>	<p>This study examines how e-government initiatives interact with local realities in shaping public service transformation in disadvantaged regions, focusing on Biak Numfor Regency, Papua. It aims to rethink dominant assumptions of digital governance by analyzing how cultural, institutional, and infrastructural constraints affect implementation outcomes. Employing a qualitative case study approach, the research draws on in-depth interviews, field observations, and policy document analysis, particularly in licensing services. The findings reveal four interrelated challenges. First, cultural factors limit citizens' adaptation to digital services, as many users remain unfamiliar with online applications and prefer face-to-face interactions. Second, limited human resource capacity—both in number and digital competence—constrains service responsiveness. Third, inadequate and costly infrastructure hampers the effective deployment of e-government systems. Fourth, uneven internet access creates significant disparities in service reach, particularly in remote island areas. These conditions demonstrate that digital transformation is not merely a technical process but deeply embedded in socio-cultural and territorial contexts. The study concludes that public service transformation in disadvantaged regions requires a shift from standardized digital reforms toward context-sensitive governance. It proposes a localized, hybrid approach that integrates cultural values, strengthens human resource capacity, and expands infrastructure through multi-sector collaboration. By foregrounding local realities, this research contributes to a more inclusive and grounded understanding of e-government implementation in the Global South.</p>
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## INTRODUCTION

The transformation of public services is an important agenda in an effort to realize governance that is effective, efficient, and responsive to the needs of the community. In the midst of a global push for bureaucratic modernization, Indonesia continues to strive to improve the quality of public services, including through the digitization of services and the implementation of good governance. However, the implementation of these transformation policies often faces serious challenges when implemented in disadvantaged, remote areas, and with different socio-cultural characteristics, such as in eastern Indonesia. Biak Numfor Regency is a concrete example of an area that faces this complexity. As an archipelago with limited infrastructure, human resources, and access to information, Biak Numfor Regency has its own challenges in carrying out the transformation of public services, especially in licensing services.

Public services carried out by the government today must pay attention to the public interest, not the other way around which only relies on a bureaucratic perspective. The services provided must be able to adjust to the expectations and needs of the public (Adnani, 2016). A bureaucracy that pays attention to the needs of the community is very much in line with the new public service principle where the principle prioritizes the interests of the community, acts democratically and acts in a servant attitude rather than directing (Doramia Lumbanraja, 2020).

The government is obliged to build public trust through the implementation of good public services in line with the expectations and guidance of the community included in the licensing service. The concept of public service has shifted from a product-based approach to a service-based approach (Aswar et al., 2020). Placing service users as the main factor in public services is a service-based approach (Musaad, 2020) Furthermore, to answer the challenges and demands that are

increasingly sophisticated and global, the government provides fast, precise, easy and safe services, thus a digital transformation process in public services is urgently needed (Kamil et al., 2024; Putra et al., 2020). Furthermore, activities carried out by the government using technology support in providing services to the community are a transformation of public services (A. Iriawan, 2018). This public service transformation aims to provide quality, fast, easy, and measurable services to the community (B. Iriawan & Hidayat, 2021).

Furthermore, the improvement in public services and being able to help the process of delivering information more effectively to the public is the hope of bureaucratic reform in Indonesia. In addition, the main role of bureaucracy is to help people meet their interests and needs, not to control or direct society in a new direction (Hadi et al., 2020). Furthermore, one of the main things about bureaucratic inpolicy is to position himself as the ruler who has the most understanding of what is really needed by his people, not as a public servant who is mandated by the people (Mustaming et al., 2024; Rusdan, 2017).

Public service is an activity carried out by the government to serve human needs and provide satisfaction to the community. Furthermore, service activities carried out by the government both at the central government level, provincial governments, and district and city governments are in accordance with their respective levels and types of services (Sholihah & Mulianingsih, 2023). Furthermore, the service mechanism carried out in stages by the government is considered a multilevel governance system in the provision of public services (Afifah, I., & Sopiany, 2017). In addition, public services are a series of public service providers in order to meet the needs of public services desired by the community, which is a function of the government and is one of the functions of the government, so that the community feels the benefits (Mulianingsih, 2022). Furthermore, innovation creates a

creativity for both city/district/provincial governments to improve services, with the aim of satisfaction from the community (Suluh et al., 2022). Furthermore, from the innovations carried out by the government, it is hoped that it can suppress the problems of corruption, collusion and nepotism (Junaidi, 2015). In a society and economy that is increasingly driven by technological innovation, bureaucracies in developing countries must deal with a new process of demands, namely; efficiency, productivity, people's access to information in the bureaucracy as well as the demand for certainty and a sense of security and comfort (Jayanegara & Soleh Suryadi, 2023). More in-depth in preparing the vision and mission of the information technology policy, the government looks more at the factors of making information technology to improve the quality of services for public use (Umi, 2020).

The problem until now, in the minds of the public is that licensing services are still quite complicated and tend to be convoluted. This makes people lazy and reluctant to take care of permits. In fact, the speed of serving and granting permits is an adaptive, productive, innovative, and competitive reform agenda. Furthermore, there are several complaints from the public during licensing processing, including service officers who are less friendly, less sympathetic, and people get unsatisfactory answers when asking questions (Puji & Agusman, 2021). In simple terms, transformation is a process of gradual change until it reaches the peak stage and the change is carried out by responding to the influence of internal and external elements. Furthermore, transformation is a change in a thing or situation, if a thing or situation that changes is culture, and that culture is the one that undergoes change (Musaad, 2020). In addition, the concept of transformation includes instrumental transformation and systematic transformation (Prakoso, 2020). In instrumental transformation, changes are easily seen in the public sector and are more centered on operational and management practices, with the intention of improving quality (O'Neill, 2009). Furthermore, in the field of services, the meaning of transformation is a change in the field of services, one of which is the use of information and communication technology in realizing transparency, participation and collaboration from the community in public services (Sholihah & Mulianingsih, 2023). Furthermore, to meet the public's need for openness to the values of humanism, tolerance, participation, tolerance, diversity, recognition of individual freedom, and social justice, the government seeks to create public services in a humanist, inclusive, transparent, and more modern manner through cutting-edge technology such as digital technology (Hadi et al., 2020).

The use of information and communication technology in realizing good governance, with the advancement of information technology, encourages transparency in the implementation of public services in an accountable manner (Kusnandar, 2019). Thus, in public services, digital transformation is an adjustment that must be accelerated in its application by the government (Parsaorantua et al., 2017). Furthermore, efforts in order to improve the bureaucracy, the bureaucratic system, the improvement of personnel and the culture that surrounds it, and the application of information technology in the bureaucracy are indeed important (Bovens & Hart, 2016). In this case, sooner or later Indonesia will pursue the efficiency and productivity of its public services in accordance with the needs of the surrounding community (B. Irawan, 2015). In other words, e-government

facilities at the central and provincial government levels in Indonesia do need to receive support (Umi, 2020).

Bureaucratic reform is usually carried out through an incremental approach, gradual changes, with the hope, among other things, that planned changes can be obtained. The transformation of modern government by using communication and information technology into the bureaucracy is not an easy thing (Prakoso, 2020). The concept of transformation in this context is a redesign of the genetic aspects of the bureaucracy that are the main drivers of an organization, in which there are 4 domains known as the 4 R's, namely renew, reframe, restructure, and revitalize. The four components of transformation must be carried out together as, the main condition for an organization to be successful and sustainable (Umi, 2020).

The use of information technology-based services must be able to increase citizen participation in providing information and complaints to the government, but there are problems related to the speed of bureaucratic response in responding to complaints and demands of citizens. Furthermore, in the implementation of e-government, there are factors that affect public services, including; support, organizational structure, organizational culture, and organizational system renewal (Hidayati, 2016). Furthermore, regulations on the implementation of e-government must be supported by strong regulations so that it will facilitate its implementation (Musfikar, 2018). This regulation is carried out in stages from the central to regional levels (Buffat, 2015). However, sometimes regulations alone are not enough, but it is important that there is innovation and commitment of authorized stakeholders so that it will support the implementation of e-government for public services (B. Irawan & Hidayat, 2021).

The organizational structure in local government in the implementation of e-government requires horizontal relationships between officials, the need for delegation of authority of top managers in the context of relations with citizens, in the sense that things that can be responded to quickly do not need a meeting, because this can be solved by electronic communication such as by SMS, BBM, WA or by telephone (Mahdanisa & Nurlim, 2018). The middle manager should not have to wait for the admin report, but can access it directly anywhere, then respond according to the annual program plan (Adnan et al., 2022). Furthermore, system reform must be carried out as an effort to improve and improve services to the community. Because the needs in the community will grow and there is efficiency and effectiveness of performance (B. Irawan, 2013). A system developed with novel content will accommodate the needs of the community related to public services (Viana, 2021). The low transformation of e-government-based bureaucracy, it is necessary to build a virtual bureaucracy, namely a new bureaucratic system in which there has been a change in mindset towards e-government, bureaucracy with cultural changes, and policy products that can drive and support e-government applications (Castelnovo & Sorrentino, 2018).

In modern government, the position of the bureaucracy as a public service is an important measure of the government's success in the eyes of the public. Furthermore, service is a very basic demand for modern government management (Rusdan, 2017). In addition, public services are the provision of services, either by the government, private parties on behalf of the government, or private parties to the wider community, not only government agencies but also private parties (Musaad, 2020). Public services carried out by government agencies are socio-



search process was carried out using several main keywords such as public service transformation, e-government, public service innovation, and governance. Furthermore, keyword co-occurrence mapping was carried out to identify the dominant research themes and see the trend of study development in the existing literature. The mapping results show that most of the research still emphasizes aspects of digital innovation and administrative reform in areas with relatively good infrastructure capacity, while studies on implementation challenges in resource-constrained areas are still relatively under-funded.

Based on these conditions, this study seeks to fill this gap by examining in more depth the governance challenges in the process of transforming public services in areas with limited resources. This research specifically focuses on Biak Numfor Regency, an area that has archipelago geographical characteristics and infrastructure limitations that can affect the transformation of public services.

This research makes two main contributions. First, this study enriches the literature on public service transformation by highlighting governance in areas with limited resources that are still relatively under-discussed in previous research. Second, this study provides empirical findings on how cultural factors, limited human resources, limited access to technology, and limited infrastructure affect the implementation of public service transformation. These findings are expected to provide practical implications for local governments in designing strategies to improve the quality of public services in areas with similar structural conditions. This research also refers to the perspective of the new public service, which places citizens at the center of public services and emphasizes the importance of community participation and government responsiveness. By integrating these three perspectives, this study seeks to understand how the transformation of public services is not only influenced by technological innovations, but also by the institutional capacity and social readiness of the community.

## METHOD

This study uses a qualitative approach with a case study method to deeply understand the challenges of public service transformation in Biak Numfor Regency. This approach was chosen because it is able to capture the social, cultural, and geographical complexities that affect the public service process in disadvantaged areas.

The data used in this study consisted of primary data and secondary data. Primary data was obtained through in-depth interviews and direct observation of the implementation of public services, especially licensing services. Informants were selected by purposive, including service providers and service users at the DPMPTSP of Biak Numfor Regency. The selection of these informants is based on their involvement in the service process and understanding the local reality of licensing services.

The secondary data collection is carried out through documentation studies, including licensing policies. These documents provide a normative foundation and strengthen understanding of the context of public service policies and practices in the 3 T region.

The data analysis technique used in this study is qualitative data analysis, through; data collection, data reduction, data presentation and conclusion drawn.

In this study, the data analysis process is carried out through several stages, namely;

1. Data coding, which is the process of identifying and coding information obtained from observations, interviews, and policy documents related to public services in Biak Numfor Regency.
2. Data categorization, which is the grouping of codes that have the same meaning into certain categories related to factors that affect the transformation of public services.
3. Theme development, which is the process of identifying patterns and relationships between categories so as to produce the main themes that are the basis for research analysis, such as cultural factors, limited human resources, limited infrastructure, and limited access.

Furthermore, to obtain truly valid data, the data is tested by triangulation. The triangulation technique used in this study is an examination technique that uses sources and methods. Triangulation is carried out practically through two main forms, namely;

1. Triangulation of sources, namely by comparing information obtained from various different informants, such as officials at the One-Stop Investment and Integrated Services Office (DPMPTSP), employees involved in licensing services, and the public as service users. This comparison is carried out to ensure the consistency of information related to e-government-based licensing services.

Triangulation method, which is by comparing data obtained through several data collection techniques, namely in-depth interviews, direct observation of the service process, and documentation studies of licensing service policies and documents. This process is done to ensure that research findings do not rely solely on one source or data collection method.

## RESULTS AND DISCUSSION

### Culture

Culture can be a challenge in the transformation of e-government-based public services. Cultures that still tend to be traditional and less adaptive to technological changes can present challenges in adopting and implementing information technology-based solutions such as e-government. In Biak Numfor Regency, a strong culture in the community can provide resistance to change, especially when it comes to the adoption of new technologies. People who are used to the conventional licensing process and direct interaction with service officers may feel uncomfortable or lack confidence in the changes towards the implementation of e-government. Cultural beliefs and practices that prioritize face-to-face interaction and direct communication can be an obstacle in understanding and receiving benefits from the use of information technology in licensing services.

In addition, trust in the new system and concerns about data security can also be a deterrent factor. A culture that reflects distrust of technology and software can cause inconvenience in providing personal data and important information through electronic platforms. In addition, in the environment of self-government, a culture related to a rigid bureaucratic structure and resistance to change can also be a challenge. The adoption of e-government in licensing services requires transformation in the work process, the role of service officers, and collaboration between work units. An overly formal, hierarchical, and slow

bureaucratic culture of decision-making can hinder the effective implementation of technology-based solutions.

The results of the observations conducted in this study show that most of the permit applicants have adopted the use of the e-government system to apply for permits. It was found that permit applicants use online platforms to access and fill out application forms, compared to traditional methods that involve filling out paper forms. Furthermore, observations also show an increase in efficiency and accessibility in the licensing process after the implementation of e-government. Permit applications can be submitted online, reducing the time and cost required to physically visit the Biak Numfor Regency DPMPSTP office. In addition, the researcher also saw that there were still people who took care of licensing who were not familiar with the information technology applied to the DPMPSTP of Biak Numfor Regency.

Furthermore, observations of employees of the Biak Numfor Regency Investment and One-Stop Integrated Services Office (DPMPSTP) show a change in their work culture after the implementation of e-government. They have adopted a more structured and efficient workflow in managing permit applications through online platforms. There has been an increase in collaboration and communication between employees, as well as the use of technology to manage and monitor the licensing process.

Based on the results of interviews with informants who use the service with the initials IS, it is stated that:

"..... I think the use of the e-government system in licensing services in the Biak Numfor Regency DPMPSTP is a positive step. This is the right step towards modernization and efficiency in the licensing process. I have used the online system to apply for a permit. My experience was very positive. I can fill out the application form online and attach the required documents easily. I can also monitor the status of my application in *real-time*. There are significant differences in the licensing process before and after the implementation of *e-government*. This online management is very helpful for the community, but we see that because our society is plural, there are still people who do not really understand using online applications, for example, such as my MSME foster, so I am the one who helps him to manage his licensing. I see that there are still many people who are not familiar with this online service, so I hope that the DPMPSTP will come down to carry out socialization and education about this online service". (Interview results on February 28, 2023).

The results of the interview with Mr. Heri Mulyana who is the head of the DPMPSTP of Biak Numfor district stated that:

".....In my opinion, the implementation of e-government in licensing services in the Biak Numfor Regency DPMPSTP has been very effective. So if the DPMPSTP sees that the cultural factor is relatively an obstacle to this online service, there are indeed some people who do not really understand online services because they have not received education from our side. But our side always tries to always socialize to the community, because inevitably the community has to adapt to technological developments, especially online services must be independent and no longer need to come to the office, the point is that as long as there is an internet connection, there is no need to come to the office. In addition, the existence of an automatic notification system also helps ensure that no application is missed. The technical obstacles we faced were mainly related to unstable internet connectivity in some regions. This can affect the accessibility and responsiveness of the *e-government system*. To overcome this, we are constantly communicating with internet

service providers and ensuring the availability of alternatives such as hotspots or backup equipment. (Interview results on March 6, 2023).

Based on the results of the interview, information was obtained that the implementation of e-government in licensing services has had a positive impact. According to the informant, the use of an online service system is considered the right step towards modernization and efficiency in the licensing process. In addition, the researcher obtained information that there are still people who are doing licensing management who do not understand the online submit system application (online service), this is because some service users have not been able to adapt to online service applications and do not understand the use of information technology. In addition, this study also indicates that there are challenges in changing mindset and work culture. Some staff are still reluctant or have difficulty adapting to the changes in working styles caused by the use of e-government systems. They still tend to rely on manual methods and traditional procedures.

The findings of this study show that the cultural dimension remains an important factor in the digital transformation process of public services. Although some people have started to use the online licensing system, the digital literacy gap is still visible in practice. This is reflected in the statement of one of the informants who said that there are still many people who are not familiar with online licensing services and hope for more intensive socialization and education from related agencies. The findings show that the obstacles in the transformation of public services are not solely technical, but also with the social readiness of the community to adapt to technological changes. Digital transformation is often assumed to directly improve the efficiency of public services, but this assumption does not take into account variations in people's digital capacities, especially in resource-constrained areas. In this context, the digital literacy gap reflects the inequality in people's ability to access and utilize government-provided digital services. The results of this study are in line with the digital divide framework which emphasizes that the availability of technology does not automatically guarantee equal access to digital services. As stated by Buffat (2015), digital transformation in the public sector often faces challenges in the form of inequality of access and ability to use technology among the public. Thus, the success of the digitalization of public services is not only determined by the provision of technological infrastructure, but also by the level of digital literacy and the ability of the community to adapt to the new service system.

Information technology that is increasingly advanced as part of globalization requires the government as a service provider to make changes in service patterns to be more effective, efficient, accountable and transparent. Therefore, the government must adapt to technological developments so that services run optimally (Yenny Nurhidayah, 2022). Furthermore, the ability or empowerment of the local government in realizing the "dream" of related *e-government* becomes a reality. Therefore, there are three minimum things that the government must have in relation to this element, namely: 1) Availability of sufficient resources to implement various e-government initiatives, especially those related to financial resources; 2) The availability of adequate information technology infrastructure because this facility is 50% of the key to the successful implementation of the e-government concept, and; 3) The availability of human resources who have the necessary competencies and expertise so that the implementation

of e-government can be in accordance with the expected benefits (Mia et al., 2018).

The readiness of the community to accept system changes is an important stage, because it has an impact on the effectiveness or failure of program implementation. Public attitudes in policies are an important study to see the understanding and also the tendency of people to be satisfied with the services provided by the government (Rafinzar & Kismartini, 2020). Furthermore, the application of an innovation or change must be able to adjust the characteristics of the community in the environment (Hidayati, 2016).

Cultural factors have an important role in influencing public acceptance of technology-based public service transformation. The findings of this study show that some people in Biak Numfor Regency are still accustomed to conventional service patterns that prioritize direct interaction with government officials. This condition causes the adaptation process to a digital-based service system to run gradually. These findings are in line with several previous studies that state that cultural factors and people's habits can influence the level of e-government adoption in public services, especially in areas with limited levels of digital literacy. The results of research by Irawan (2018) and Hidayati (2016) show that resistance to change and people's habits in using conventional services are often obstacles in the implementation of technology-based services in the public sector.

However, the study also shows differences with some studies conducted in urban areas or areas with better digital infrastructure. In these regions, people are more likely to quickly adapt to technology-based services because they are supported by a higher level of digital literacy and more adequate internet access. Thus, the findings of this study confirm that cultural factors are not only related to people's attitudes towards technology, but also related to the social and geographical context of the research area. Therefore, the transformation of public services in disadvantaged areas such as Biak Numfor Regency requires a more contextual approach by considering the cultural characteristics of the local community.

### Limited Human Resources

The factor of limited human resources in the transformation of online services in DPMPTSP Biak Numfor Regency can have a significant impact on the effectiveness and efficiency of the licensing service process in the area. One of the factors that limited human resources is the lack of knowledge and information technology skills needed to operate online-based systems. Based on the results of observations, it can be seen that the factors of limited human resources in the implementation of e-government in DPMPTSP Biak Numfor Regency are lack of knowledge and skills in information technology, limited number of human resources, and slow work culture.

Based on the results of interviews with AN informant regarding the limited human resources factor in the implementation of e-government in licensing services at the DPMPTSP of Biak Numfor Regency, it was stated that:

".....Indeed, we admit that there are still some employees here who do not understand the use of this online application. But employees placed in online application operators are employees who understand information technology and we still lack resources in application operators, employees at DPMPTSP should all understand information technology because now licensing at DPMPTSP is online-based and employees must be able to adapt". (Interview Results on March 1, 2023).

The results of interviews with IL informants regarding the limited human resources in the implementation of e-government in licensing services at the Biak Numfor Regency DPMPTSP, stated that:

"..... The number of officers who understand IT who serve in DPMPTSP is still limited, frankly we are civil servants with different scientific backgrounds, not all of them understand information technology. Although there is an e-government system, but with a limited number of officers, licensing services are still inefficient. It is better to have training for self-development (Interview Results on March 1, 2023).

The results of the interview with Mr. Heri Mulyana who is the head of the DPMPTSP of Biak Numfor district stated that:

".....The budget plays an important role in the development of the e-government system and human resource training. Without an adequate budget, it is difficult for us to develop. Frankly, we convey that the budget allocated for the operation of the DPMPTSP of Biak Numfor regency is only 1 billion and we consider it very small and limited, especially for this Papua region. But we were able to implement the first online licensing in the Papua region (March 2023 Interview Results).

Based on the results of interviews with informants, information was obtained that there are still employees at the Biak Numfor Regency DPMPTSP who do not understand the use of information technology applications related to online licensing.

Human resources are the main element in determining organizational performance, where technology will not be able to operate properly if it is not supported by the competence of its human resources (A. Irawan, 2018: 30). Furthermore, information technology is a new field. Human resources for the field of information technology are generally owned by the business/industrial environment. This will be worse if this lack of government ability is taken advantage of by business people by selling wrong and very expensive solutions (Nurhakim, 2014).

The existence of reliable human resources is very important, implementing the e-Government does not only use technology and network infrastructure, but human resources are the managers of the infrastructure and technology (Nainggolan, 2018). Furthermore, the existence of the resource factor has a role and capability in encouraging a management system to be able to perform optimally. The human resource factor occupies the most strategic role in carrying out an implementation of information technology adoption (Amrozi et al., 2022). Furthermore, in the implementation of E-Government (website), human resources who have the ability and expertise are needed to be able to manage and process information properly so that the implementation of E-Government is successful (Irawati, 2017).

The limitation of human resources, especially related to information technology skills and literacy, is one of the important factors. The results of the study show that not all apparatus within the DPMPTSP have adequate information technology competencies to operate a digital-based service system optimally. In addition, the number of employees who have technical skills in managing the online system is also still limited. This finding is in line with research conducted by Irawan (2018) and Nainggolan (2018) which states that the success of the implementation of e-government is greatly influenced by the capacity of human resources in managing information technology and the ability of apparatus to adapt to digital service systems. The research shows that the limited competence of the apparatus is often one of the

main obstacles in the transformation of public services in various regions. However, there is a difference in context between this study and some previous studies conducted in areas with more adequate human resource support. In areas that have stronger institutional capacity and a higher level of digital literacy of the apparatus, the e-government implementation process tends to run more optimally.

Thus, the findings of this study confirm that the transformation of digital-based public services does not only depend on the availability of technology, but is also greatly influenced by the readiness and capacity of human resources who manage the system. Therefore, strengthening the capacity of apparatus through training and improving competence in the field of information technology is one of the important steps in supporting the success of public service transformation in disadvantaged areas.

### Inadequate and expensive infrastructure

In the transformation of licensing services in Biak Numfor Regency related to the implementation of e-government in licensing services, one of the challenges is the lack of adequate infrastructure and high costs. Based on the results of observations, it was found that the availability of internet access in several areas in Biak Numfor Regency is still very limited. Internet access in rural or remote areas, especially in island areas, is often slow and unstable, making it very difficult for people to access the e-government system smoothly.

The results of the interview related to inadequate and expensive infrastructure factors in the implementation of e-government in licensing services at the Biak Numfor Regency DPMPTSP, AN informant stated that:

".....The problem of internet access is still an obstacle in several areas in Biak Numfor Regency. In some rural or remote areas, internet access is still limited and connections are often slow and unstable. This makes it difficult for the public and our officers to access the e-government system smoothly, especially when submitting documents and monitoring the status of applications." (Interview results on March 1, 2023).

Furthermore, the results of interviews with IL informants stated that:

".....Budget constraints limit our ability to allocate sufficient funds to improve and upgrade e-government infrastructure. We must prioritize the use of the budget for other needs, so that the e-government infrastructure cannot be optimally improved." (Interview results on March 1, 2023).

Based on the results of the interviews, information was obtained that the inadequate and expensive infrastructure factor in the implementation of e-government in licensing services was identified as a problem of limited internet access and slow connection. The informant explained that internet access in several rural and remote areas in Biak Numfor Regency is very slow and not stable.

Indonesia's telecommunication infrastructure is still not evenly distributed, even if there are facilities, the price is still relatively expensive (Nurhakim, 2014). Furthermore, the obstacle obtained in the e-government system is the absence of costs (funds). These funds are needed to create a better information system (Mahdanisa & Nurlim, 2018).

Currently, governments around the world recognize information and communication technology as a powerful tool to

increase public involvement in public policymaking and as a way to increase public trust in the government and place society in the information age (A. Irawan, 2018). In the implementation of *E-Government (website)*, the availability of adequate information technology infrastructure is needed because this facility is also one of the ways for the implementation of *E-Government* to be successful (Irawati, 2017).

The geographical condition of the archipelago and the limitations of telecommunication networks cause internet access in some areas to be unstable and difficult to reach by the public. These findings are in line with research conducted by Nurhakim (2014) and Mahdanisa & Nurlim (2018) which states that limited information technology infrastructure and high costs of developing digital systems are often the main obstacles in the implementation of e-government in various regions, especially in areas with limited access to telecommunication networks. This study emphasizes that the success of digital-based public service transformation is not only determined by government policies or the readiness of human resources, but is also greatly influenced by the availability and quality of information technology infrastructure that supports the implementation of these services.

### Limited Access Points

Limited access is one of the inhibiting factors in the implementation of e-government in Biak Numfor Regency. Online-based public services require adequate technological infrastructure, such as stable and fast internet connections, as well as adequate hardware and software. If access places are limited, such as the lack of a stable internet network in certain areas, this will hinder the transformation of public services.

Based on the results of observations, it was found that several areas in Biak Numfor Regency have obstacles in stable and fast internet access. Observations also show that the internet connection is disrupted or has a low speed. This is an obstacle to public access and DPMPTSP employees in using e-government services that require a good internet connection.

Based on the results of interviews with AN informants who are employees of the DPMPTSP of Biak Numfor district, it was stated that:

"..... The problem we are facing is that there are still areas in Biak Numfor district that cannot access the internet, such as in West Biak. So the solution for such is that people who want to take care of licensing must come to the DPMPTSP office. (Interview Results March 1, 2023).

Furthermore, the results of interviews with IL informants who are employees of the DPMPTSP of Biak Numfor district stated that:

"..... The internet connection is often interrupted or has a low speed. This affects the performance of the e-government system in DPMPTSP, so that people experience difficulties in accessing licensing services online. Sometimes people also come directly to the office because they don't know how to use the application or understand the online application process. (Interview Results on March 1, 2023).

Based on the results of interviews with informants, information was obtained that one of the problems faced was the lack of internet access in several areas of Biak Numfor Regency, such as West Biak. As a result, people who want to take care of licensing are forced to come directly to the DPMPTSP office. This

shows that online licensing services are still uneven throughout Biak Numfor Regency, and the existence of the internet is an obstacle in accessing these services.

E-government as a new mechanism in the interaction between the government and the community, in the use of information technology, especially the internet, must be able to improve services to the community (Shafira & Kurniasiwati, 2021). Furthermore, the criteria for regional lag show that the infrastructure in the development of *e-government* is inadequate, and has great challenges in developing public services through e-government. For this reason, local governments must be physically ready to face the next intangible challenge (Ibad & Lolita, 2020).

In this study, it was found that limited public access to digital-based services is still one of the obstacles in the implementation of public services. These limitations are not only related to access to the internet network, but also related to the availability of technological devices and the ability of the public to utilize digital technology to access available services. These findings are in line with research conducted by Pratama (2015) and Sari & Wibowo (2020) which stated that limited access to information and communication technology is still a major challenge in the implementation of digital-based public services in various regions. The research shows that although the government has provided various digital service platforms, not all people can make optimal use of it due to limited access and ability to use technology. Thus, the results of this study confirm that the success of the implementation of digital-based public services does not only depend on the availability of service systems, but is also greatly influenced by the level of people's accessibility to technology and their ability to utilize these services.

## CONCLUSION

This study demonstrates that the effectiveness of e-government in disadvantaged regions is fundamentally shaped by the interaction between digital policy design and local socio-cultural realities. The main finding reveals a structural mismatch: while e-government is designed as a standardized, technology-driven reform, its implementation in Biak Numfor is mediated by cultural adaptation gaps, limited bureaucratic capacity, infrastructural constraints, and unequal digital access. Among these, cultural factors and digital literacy emerge as decisive barriers, as many citizens continue to rely on face-to-face interactions, while limited human resource capacity weakens institutional responsiveness. At the same time, inadequate infrastructure and uneven internet connectivity reinforce spatial inequalities, resulting in fragmented and uneven service delivery.

These findings suggest that public service transformation cannot rely solely on technological deployment but must be grounded in context-sensitive governance. A key implication is the need to shift from uniform e-government models toward hybrid approaches that embed local cultural values, strengthen digital competencies of public officials, and expand infrastructure through collaborative arrangements between government and non-state actors. Such an approach enables more adaptive, inclusive, and sustainable service transformation in peripheral regions. This study is not without limitations. It focuses on a single case and relies primarily on qualitative data, which may limit generalizability across different regional contexts. Future research should adopt comparative and mixed-method approaches to examine variations across disadvantaged

regions and to measure the long-term impact of hybrid governance models on public service performance.

## REFERENCES

- Adnan, M., Ghazali, M., & Othman, N. Z. S. (2022). E-participation within the context of e-government initiatives: A comprehensive systematic review. *Telematics and Informatics Reports*, 8(October), 100015. <https://doi.org/10.1016/j.teler.2022.100015>.
- Adnani, A. (2016). Reformasi Administrasi Menuju Public Service dalam Sektor Pendidikan, Kesehatan, dan Ekonomi Masyarakat pada Pemerintah Daerah. *Ensiklopedia Social Review*, 3(3), 1–23. [https://www.menpan.go.id/site/emagz/jurnal/2012\\_Jurnal\\_Tahun\\_2012.pdf#page=36](https://www.menpan.go.id/site/emagz/jurnal/2012_Jurnal_Tahun_2012.pdf#page=36)
- Afifah, I., & Sopiany, H. M. (2017). Reformasi Birokrasi yang Terintegrasikan dalam New Public Service (NPS) guna Mewujudkan Pemerintahan Yang Kuat dan Bersih. *Reformasi*, 7(2), 149–200.
- Amrozi, Y., Devi, E. C., & Rosida, L. A. (2022). Implementasi E-government Pelayanan Publik Pada Aplikasi E-kios. *Jurnal Kebijakan Publik*, 13(3), 310–316. <http://dx.doi.org/10.31258/jkp.v13i3.8015>.
- Aswar, S. K., Engka, R., & Syamsiar, S. (2020). Pelayanan Publik berbasis New Public Services pada Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu Kabupaten Wajo. *Jurnal Ada Na Gau: Public Administration*, 1(1), 63–71. <http://ojs.lppmuniprima.org/index.php/jangpa/article/view/80>.
- Bovens, M., & Hart, P. (2016). Revisiting the study of policy failures. *Journal of European Public Policy*, 23(5), 653–666. <https://doi.org/10.1080/13501763.2015.1127273>.
- Buffat, A. (2015). Street-Level Bureaucracy and E-Government. *Public Management Review*, 17(1), 149–161. <https://doi.org/10.1080/14719037.2013.771699>.
- Castelnuovo, W., & Sorrentino, M. (2018). The digital government imperative: a context-aware perspective. *Public Management Review*, 20(5), 709–725. <https://doi.org/10.1080/14719037.2017.1305693>.
- Dorania Lumbanraja, A. (2020). Urgensi Transformasi Pelayanan Publik melalui E-Government Pada New Normal dan Reformasi Regulasi Birokrasi. *Administrative Law and Governance Journal*, 3(2), 220–231. <https://doi.org/10.14710/alj.v3i2.220-231>.
- Hadi, K., Asworo, L., & Taqwa, I. (2020). Inovasi Dialogis: Menuju Transformasi Pelayanan Publik Yang Partisipatif (Kajian Sistem Pelayanan Malang Online). *Journal of Government and Civil Society*, 4(1), 115. <https://doi.org/10.31000/jgcs.v4i1.2438>
- Hidayati, N. (2016). E-government Dalam Pelayanan Publik (Studi Kasus tentang Faktor-faktor Penghambat Inovasi Layanan e-Samsat Jatim di Kabupaten Gresik). *Kebijakan Dan Manajemen Publik*, 4(3), 1–8.
- Ibad, S., & Lolita, Y. W. (2020). Pengembangan Pelayanan Publik Melalui E-Government (Studi Pada Layanan Smartcity Kabupaten Situbondo). *Jurnal Administrasi Publik*, Vol.6(No.2), 1–27. <https://doi.org/10.26618/kjap.v6i2.3944>.
- Iong, K. Y., & Phillips, J. O. L. (2023). The transformation of government employees' behavioural intention towards the adoption of E-government services: An empirical study. *Social Sciences and Humanities Open*, 7(1), 1–8. <https://doi.org/10.1016/j.ssaho.2023.100485>
- Irawan, A. (2018). Sistem Pelayanan Publik Berbasis E-Government pada Pemerintah Daerah Kabupaten Merauke. *Societas: Jurnal Ilmu Administrasi Dan Sosial*, 7(1), 20–37. <http://ejournal.unmus.ac.id/index.php/societas>.
- Irawan, B. (2013). Studi Analisis Konsep E-Government: Sebuah Paradigma Baru dalam Pelayanan Publik Bambang. *Jurnal Paradigma*, 2(1), 174–201.

- <http://dx.doi.org/10.30872/jp.v2i1.351>.
- Irawan, B. (2015). E-Government Sebagai Bentuk Baru Dalam Pelayanan Publik: Sebuah Tinjauan Teoritik. *Jurnal Paradigma*, 4(3), 200–209. <http://e-journals.unmul.ac.id/index.php/JParadigma/article/download/419/379>. <http://dx.doi.org/10.30872/jp.v4i3.419>.
- Irawan, B., & Hidayat, M. N. (2021). *E-Government : Konsep, Esensi dan Studi Kasus*. Mulawarman University Press.
- Irawati. (2017). Implementasi E-Government Di Dinas Pendidikan Dan Kebudayaan Kota Tanjungpinang. *Journal of Public Policy and Management Review*, 6(4), 70–86.
- Jayanegara, B. A. U., & Soleh Suryadi, A. A. (2023). Implementation of the New Public Service in the Licensing Process. *Journal of Social and Personal Relationships*, 6(2), 62–84. <https://doi.org/10.31014/aior.1991.06.02.410>
- Junaidi. (2015). Implementasi Electronic Government Untuk Penyelenggaraan Pelayanan Administrasi Kependudukan. *Jurnal Reformasi*, 5(1), 169–182. <https://doi.org/10.33366/rfr.v5i1.74>.
- Kamil, M., Setyaningrum, A. F., & Astutik, J. (2024). Jurnal Public Policy Digitalization Strategy for MSME Development : Innovation , Partnership and Sustainable Solutions for Local Economy in Malang Regency. *Journal of Public Policy Public Pol*, 10(3). <https://doi.org/10.35308/jpp.v10i3.8011>.
- Kusnandar, I. (2019). New Public Service in a Democratic Government. *New Public Service in a Democratic Government Ishak*, 93, 110–112. <https://doi.org/10.2991/aicobpa-18.2019.26>
- Mahdanisa, D., & Nurlim. (2018). Analisis Penerapan E-Government Dalam Pencapaian Sistem Informasi Pada (Dinas Kominfo) Kabupaten Kutai Kartanegara. *Gerbang Etam*, 12(25), 50–60.
- Mia, A. A., Pariyati, P., & Irawan, A. (2018). Efektivitas Aparatur Sipil Negara Pada Bagian Umum dan Kepegawaian Rumah Sakit Umum Anutapura Kota Palu. *Jurnal Kolaboratif Sains*. <https://www.jurnal.unismuhpalu.ac.id/index.php/JKS/article/view/482>. <https://doi.org/10.56338/jks.v1i1.482>
- Mulianingsih, S. (2022). Transformasi Pelayanan Dinas Kependudukan Dan Pencatatan Sipil Kabupaten Subang Di Masa Pandemi Covid 19. *Media Birokrasi*, 4(1), 23–33. <https://doi.org/10.33701/jmb.v4i1.2338>.
- Musaad, Y. H. (2020). Analisis Kebijakan Penerapan E-government di Dinas Komunikasi dan Informatika Kabupaten Merauke. *Syntas Transformation*, 2(1), 1–12.
- Musfekar, R. (2018). Kendala Dalam Implementasi E-Government Pada Pemerintah Kabupaten Pidie. *Cyberspace: Jurnal Pendidikan Teknologi Informatika*, 2(1), 48–58. <https://doi.org/10.22373/cs.v2i1.2746>
- Mustaming, Ulfa, & Armin, R. A. (2024). Reinventing Government as Design Innovation on Palopo City Regional Government. *Journal of Public Policy*, 2(10). <https://doi.org/10.35308/jpp.v10i2.8678>.
- Nainggolan, D. P. (2018). Strategi Penerapan E-Government di Kota Pekanbaru. *JOM Fisip*, 63(2), 1–3.
- Nurhakim, M. R. S. (2014). Implementasi E-Government Dalam Mewujudkan Transparansi Dan Akuntabilitas Sistem Pemerintahan Modern. *Jurnal Ilmu Administrasi Media Pengembangan Dan Praktik Administrasi*, 9(3), 403–422. <https://doi.org/10.28932/jafta.v5i2.8595>
- O'Neill, R. (2009). The transformative impact of E-Government on public governance in New Zealand. *Public Management Review*, 11(6), 751–770. <https://doi.org/10.1080/14719030903318939>
- Parsaorantua, P. humisar, Pasoreh, Y., & Rondonuwu, S. A. (2017). Implementasi teknologi informasi dan komunikasi. *Acta Diurna*, VI(3), 1–14.
- Prakoso, C. T. (2020). Inovasi Layanan Publik Di Dinas Kependudukan Dan Catatan Sipil Kabupaten Kutai Kartanegara Dalam Perspektif Digital Government. *Jurnal Paradigma*, 9(2), 131–146. <http://dx.doi.org/10.30872/jp.v9i2.5486>.
- Puji, P., & Agusman, Y. (2021). Model Sistem Pelayanan Perizinan Berusaha Terintegrasi Secara Elektronik Online Single Submission (Oss) Kabupaten Kolaka. *Journal Publicuho*, 4(4), 1181–1191. <https://doi.org/10.35817/jpu.v4i4.22140>
- Putra, B. A. P., Purnomo, E. P., & Kasiwi, A. N. (2020). Transformasi E-Government Berbasis Teknologi Komunikasi dan Informasi Website Sebagai Perwujudan Smart Governance Kota Jogja. *Jurnal Pemerintahan Dan Politik*, 5(1), 24–29. <https://doi.org/10.36982/jpg.v5i1.1025>.
- Rafinzar, R., & Kismartini, K. (2020). Inovasi e-Government dalam Pelayanan Publik (Studi Pada Faktor Pendukung dan Penghambat Program e-Musrenbang di Kota Surabaya). *Jurnal Administrasi Publik*, 6(2), 227–250. <https://journal.unismuh.ac.id/index.php/kolaborasi/article/viewFile/3959/2783>. <https://doi.org/10.26618/kjap.v6i2.3959>.
- Rusdan. (2017). Upaya Transformasi Birokrasi Pemerintah Sebagai Unit Pelayanan Publik Oleh. *Sosialita*, 9(2), 18–28.
- Samuel, M., Doctor, G., Christian, P., & Baradi, M. (2020). Drivers and barriers to e-government adoption in Indian cities. *Journal of Urban Management*, 9(4), 408–417. <https://doi.org/10.1016/j.jum.2020.05.002>
- Shafira, A., & Kurniasiwati, A. (2021). Implementasi E-Government Dalam Upaya Peningkatan Pelayanan Berbasis Online Di Kabupaten Kulon Progo. *Jurnal Caraka Prabhu*, 5(1), 52–68. <https://doi.org/10.36859/jcp.v5i1.457>
- Shin, S. C. (2020). Digital Transformation through e-Government Innovation in Uzbekistan. In *International Conference on Advanced Communication Technology, ICACT* (Vol. 2020, pp. 632–639). <https://doi.org/10.23919/ICACT48636.2020.9061507>
- Sholihah, L., & Mulianingsih. (2023). Reformasi Birokrasi (Reposisi dan Penerapan E-Government). *JMB Media Birokrasi*, 5(1), 41–58.
- Suluh, D., Dewi, K., Yulianti, D. B., & Yusdiawan, I. A. (2022). Analisis Hambatan E-Government : Sebuah Kajian Teoritis An Analysis of Barriers to E-government : A Theoretical Study. *Nakhoda: Jurnal Ilmu Pemerintahan*, 21(01), 95–106. <https://doi.org/10.35967/njip.v21i1.336>
- Suripatty, P. I., & Edyanto. (2023). Institutionalizing local government accountability: a case of Nabire, Indonesia. *Otoritas: Jurnal Ilmu Pemerintahan*, 13(3), 440–453.
- Umi, A. (2020). Transformasi Birokrasi Melalui E-Government. *Cakrawala*, 4(2), 30–41. <https://doi.org/10.33507/cakrawala.v4i2.245>
- Viana, A. C. A. (2021). Digital transformation in public administration: From e-government to digital government. *Revista Eurolatinoamericana de Derecho Administrativo*, 8(1), 115–136. <https://doi.org/10.14409/REDOEDA.V8I1.10330>
- Yenny Nurhidayah, D. M. (2022). Penerapan Electronic Government Di Kantor Pengaduan Agama Kota Pekanbaru. *Cross-Border*, 5(2), 1–7.