

Transforming Local Governance through E-Government: Assessing the Effectiveness of Digital Sub-Districts Implementation

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Abstract. This study was conducted with the aim of analyzing the effectiveness of services through the implementation of digital sub-districts and identifying the support and obstacles encountered in the implementation of digital sub-district in Sungai Keledang Sub-district, Samarinda City. This study used a qualitative method with a case study approach. The focus of this study was based on the collaboration of e-government implementation success indicators by Harvard and Moon's theory. In this study, the key informants were the sub-district head and sub-district secretary, while the informants were service staff and community members who had and had not used the digital sub-district. The data collection techniques used were observation, interviews, and documentation. The data analysis used was an interactive analysis model developed by Miles, Huberman, and Saldana. The results of the study found that the implementation of digital sub-district administration in Sungai Keledang, Samarinda City, has increased the effectiveness of public services through the acceleration of administrative processes, work efficiency of the apparatus, and ease of access to services for the community. However, this implementation still faces various obstacles, such as a lack of socialization, low digital literacy, especially among the elderly, limited network infrastructure, and application designs that are not yet fully user-friendly. Nevertheless, government policy support, the readiness of officials, and increasing digital literacy among the younger generation are significant supporting factors. These findings confirm that the success of digital sub-district is highly dependent on the synergy between technological readiness, official support, community participation, and adaptation to local culture.

Keywords: E-Government; Public Service; Effectiveness; Digital

Received:06-11-2025 **Revised:**26-11-2025 **Accepted:**16-12-2025

INTRODUCTION

The development of information and communication technology (ICT) has driven fundamental transformations in government management, particularly in public services. The direction of e-government today shows a shift towards smart, adaptive, participatory, and artificial intelligence (AI)-based digital government (Saveli et al., 2025; Cediell et al., 2023; Weigl et al., 2024; Kaiser, 2024; Salmah et al., 2025). Responding to these dynamics, the Indonesian government issued Law No. 25 of 2009 on Public Services, which guarantees the right of every citizen to obtain effective, efficient, transparent, and accountable services (Mustanir, 2022). This national policy is reinforced by Presidential Regulation No. 95 of 2018 on the Electronic-Based Government System (SPBE), which requires public service providers to implement digital transformation. Various programs have been launched, including the creation of public service applications designed to make it easier for the public to access information and services quickly.

Digital-based public services are expected to create superior service quality and increase citizen engagement in the governance process, thereby promoting openness and accountability (Tsoraya et al., 2023).

Samarinda, the capital of East Kalimantan Province, plays a strategic role in promoting inclusive public services for all levels of society. The development of these digital services is closely related to Samarinda's preparations for the Fourth Industrial Revolution, in which technology is the main driver of economic and social progress. This transformation not only improves the quality of life of its citizens but also strengthens Samarinda's competitiveness amid the dynamics of globalization (Khaerani et al., 2025). In (Christover et al., 2022), one of the tangible forms of the Samarinda City Government's e-government transformation is the implementation of SANTER (One Integrated Application). This application is designed as a super-application that provides comprehensive solutions to various needs and challenges faced by citizens through an integrated platform, enabling efficient access to services. This initiative is in line with Mayor Regulation No. 9 of 2018 concerning the Implementation of an Electronic-Based Government System (SPBE) within the Samarinda City Government, which is the legal basis for the integration of digital technology in all aspects of government administration. As the lowest level of government, sub-districts play a crucial role in providing direct services to the public. However, many sub-districts still face various obstacles in providing these services, such as limited access and operational efficiency.

Based on interviews with the Application Services and E-Government Services Division of the Samarinda City Communication and Information Agency, the e-kelurahan program was first launched in September 2018 as part of the Samarinda Smart City project. Initially, this program used an e-kelurahan application that could only be accessed by sub-districts officials. Then, in 2022, the digital sub-districts began to be promoted through a trial implementation, but it has been actively implemented from August 2023 to the present. The Samarinda City Government developed this initiative by launching a digital sub-districts and districts program known as "Smart City Plus." Subsequently, in June 2025, access to the digital sub-districts, which was previously connected through the SANTER application, was upgraded to the SAMAGOV (Samarinda Government) website platform to expand access and ease of use.

In terms of vision, the digital sub-districts aims to realize fast, transparent, and inclusive public services by utilizing information technology. Its mission includes: improving the digital literacy of officials and the community, simplifying administrative bureaucracy, and strengthening public participation through digital services that are adaptive and responsive to the needs of

citizens. This program initially covers 10 sub-districts and one district as a pilot project, with plans to expand to 24 other sub-districts. The 10 sub-districts are Sungai Keledang, Loa Bakung, Sidodadi, Sempaja Selatan, Sidomulyo, Gunung Lingai, Sengkotek, Gunung Panjang, Handil Bakti, and Pelabuhan, while the sub-district that is the pilot project is Samarinda Seberang. This initiative is designed to improve the efficiency of public services through the integration of digital technology in various aspects of administration and community services. With the SAMAGOV website, residents can access various sub-district services online without having to come directly to the sub-district office. This is in line with the digital transformation efforts in local government to improve the effectiveness of services to meet community needs.

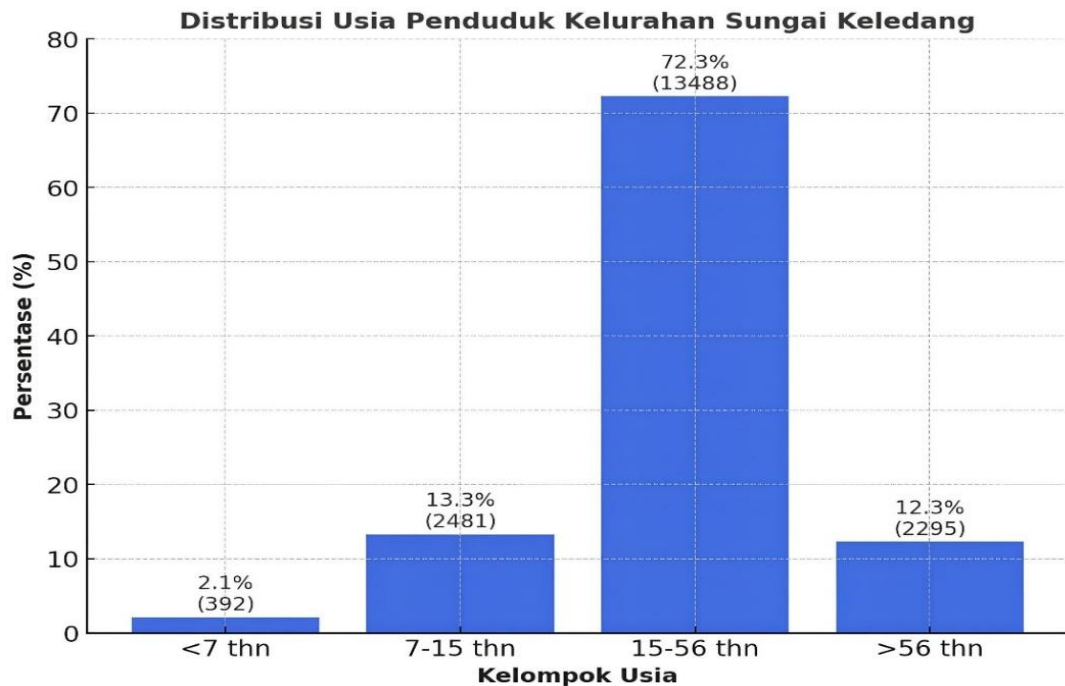
However, previous research by (Hidayatullah, 2024) found that the problems faced by 10 sub-district institutions and one sub-district in relation to the trial implementation of the service digitization program cannot be said to be effective, because not all officials assigned as digital application operators technically understand and comprehend how to operate the application. Therefore, to solve this problem, additional training is needed or officials with competence in their fields should be rotated. Another study by (Iskandar et al., 2023) also found that there are still shortcomings in the implementation of digital sub-district, ranging from policies, insufficient infrastructure support, lack of understanding and training provided, limited budget availability, and lack of socialization to the community, which hinders the process of public service to the community. The implementation of digital sub-districts administration should enhance the effectiveness of public services; however, numerous challenges persist in its application.

From these two studies, it appears that previous research has placed greater emphasis on technical and administrative aspects, while other factors such as political support, local culture, and community participation have not been studied in depth. Therefore, there is a research gap that can underline scientific novelty. Then, from a theoretical perspective, research related to e-government implementation still shows a number of limitations. Research (Dewi et al., 2020) only highlights service quality from a technical perspective, so it is not yet able to explain the influence of local culture and community preferences on face-to-face services. Meanwhile, (Suciati et al., 2022) uses a theoretical framework that focuses on organizational readiness but ignores the role of political support (political will) as an important element in the success of digital transformation. Research (Abi., 2020) emphasizes the aspect of apparatus competence, but does not elaborate on how user willingness plays a role in determining the success of digital service adoption. In addition, (Krishna et al., 2025) only highlights the technical and structural aspects of e-government, but does not include factors such as public willingness and local culture, so the

theory is not yet able to explain the low adoption of digital services. This theoretical gap indicates that a more comprehensive theoretical framework is needed, one that is capable of integrating structural, behavioral, and cultural factors in understanding the success of digital sub-district implementation. Therefore, this study uses Harvard's theory (support, capacity, value), which emphasizes structural aspects, as well as Moon's theory (willingness and local culture), which explains community behavior and culture as determining factors in the successful adoption of digital services. This study focuses on the effectiveness of the implementation of digital sub-districts in Sungai Keledang sub-district, Samarinda City, which is one of the first. This study focuses on the effectiveness of the implementation of digital sub-district in Sungai Keledang sub-district, to implement the digital. This study focuses on the effectiveness of the implementation of digital sub-districts in Sungai Keledang sub-district, program. According to the official website of (Sungai Keledang sub-district, 2025) this area covers 265.1 hectares with 36 neighborhood associations (RT) and relatively good network infrastructure. These demographic conditions reflect the density and complexity of public services at the. This study focuses on the effectiveness of the implementation of digital sub-districts in Sungai Keledang sub-district, level, making it relevant to examine the extent to which the implementation of digital. This study focuses on the effectiveness of the implementation of digital sub-districts in Sungai Keledang sub-district, can improve the effectiveness of services in a more efficient and transparent manner. In addition, this study uses a collaboration between the Harvard theoretical framework (support, capacity, value) and Moon's theory (willingness, local culture), which provides a comprehensive perspective on the success of e-government implementation.

Through an interview with the. This study focuses on the effectiveness of the implementation of digital sub-district in Sungai Keledang sub-district Secretary, Sungai Keledang. This study focuses on the effectiveness of the implementation of digital sub-districts in Sungai Keledang sub-district, began implementing a digital sub-district system on August 10, 2023, and it has now been running for 2 years and 1 month. With a total of 17 employees, this sub-district continues to strive to improve digital-based services.

Based on the data in table 1, the population of Sungai Keledang Sub-district is 18,656 thousand people with 6,559 households. The majority of the population, 72.3%, is of productive age, so the implementation of a digital sub-districts has the potential to increase the effectiveness of services. However, challenges remain, especially for the 12.3% of the population over the age of 56, who have difficulty accessing digital services. Therefore, the successful implementation of a digital sub-districts must consider aspects of inclusivity, such as digital literacy training.



Picture 1. Population data by age group in Sungai Keledang Sub-District, Samarinda City in 2025

Source: Sungai Keledang Sub-District, Samarinda City (2025)

According to the initial observation data obtained, only 813 residents aged 17-35 have accessed the service even though socialization has been carried out directly to the community with the help of RT. The age requirement to access this digital service is 17 years old or those who already have an Identity Card. Therefore, the level of community satisfaction with services in Sungai Keledang Sub-district is still very low because there are still many problems that should be addressed to improve the effectiveness of services through digital sub-districts. This is due to several factors, such as a lack of understanding among the community, who have not been able to adapt to technology, and problems with the application in accessing services and data that still occur.

Based on these issues and challenges, the people of Samarinda are still in a transitional phase towards a more mature digital society. Programs that focus on improving digital literacy, such as training and socialization carried out by the government, are very important. Thus, in today's rapidly developing digital era, improving digital-based public services in Samarinda is becoming increasingly urgent, and the city of Samarinda, as the capital of East Kalimantan Province, has a strategic role in advancing public services that are accessible to all levels of

society. Therefore, this study was conducted with the aim of analyzing and identifying the Implementation of Digital Sub-districts to Improve Service Effectiveness in Sungai Keledang Sub-district, Samarinda City, as well as the supporting and inhibiting factors that influence it.

METHODS

This study uses qualitative research with a case study approach, considering that the author will present a structured and in-depth description of the phenomena being studied, both individuals and groups, and the analysis will be based on data obtained from relevant sources (Harahap, 2020). This method was chosen by the author because it was considered the most appropriate for describing in detail various things that occur in the urban village environment. Through this method, the author was able to gain an in-depth understanding of the phenomenon under study, including the comprehensive views of the informants. Therefore, the focus of this study is the Application of Digital Sub-districts to Improve the Effectiveness of Services in the Sungai Keledang Sub-district, Samarinda City, based on the collaboration of the elements of successful e-government implementation proposed by Harvard and Moon, which consists of 5 elements, namely Support, Capacity, Values, Willingness, Local Culture, as well as supporting and inhibiting factors in the Implementation of Digital Sub-districts to Improve Service Effectiveness in the Sungai Keledang Sub-district, Samarinda City. The data sources in this study are based on data collection sources, namely primary data.

This data was collected from original sources, such as respondents or informants related to the research variables, in the form of observations or interviews (Sulung et al., 2024). Primary data includes information from key informants, namely the Head of Sungai Keledang Sub-district, Samarinda City, and the Secretary of Sungai Keledang Sub-District, Samarinda City, who were selected using purposive sampling techniques. Meanwhile, the informants in this study were the Administrative Service Staff of Sungai Keledang Sub-district, Samarinda City, and 5 people who had used digital sub-districts services and 5 people who had not used digital sub-districts services, who were met directly and selected using accidental sampling techniques, with a time frame of 2 weeks. Secondary data is research data obtained indirectly through intermediaries, in the form of Samarinda Mayor Regulation Number 9 of 2018 concerning the Implementation of an Electronic-Based Government System within the Samarinda City Government, Sungai Keledang Sub-District documents, books, scientific papers, or journals that are appropriate and relevant to the research conducted. The data collection techniques used by the researcher in this study were observation, interviews, and documentation. The interactive data analysis model proposed by Miles, Huberman, and Saldana (Miles et al., 2014) was used. In this interactive data analysis

model, there are three components used by the author, namely Data Condensation, Data Display, and Conclusion Drawing/Verification.

RESULTS AND DISCUSSION

In implementing digital sub-districts, it is very important to pay attention to indicators that can affect service effectiveness. In this study, the Implementation of Digital Sub-districts to Improve Service Effectiveness in Sungai Keledang Sub-district, Samarinda City will be reviewed based on the collaboration between Harvard and Moon's theories, which cover five E-Government element variables, as well as supporting and inhibiting factors.

Implementation of Digital Sub-districts to Improve Service Effectiveness in Sungai Keledang Sub-district, Samarinda City

a. Support

Support is the most important element that the government must have in implementing the concept of e-government. Support emphasizes the importance of the government's willingness and commitment. The main focus of the support element is the support of a leader (political will) in implementing the concept of e-government (Ramdani, 2022). The government issued Presidential Regulation No. 95 of 2018 concerning the Electronic-Based Government System (SPBE), which was supported by the Samarinda city government by delegating authority in accordance with Samarinda Mayor Regulation No. 9 of 2018 concerning the Implementation of the Electronic-Based Government System (SPBE) within the Samarinda City Government. With the issuance of this policy by the Mayor of Samarinda, regional apparatus and other agencies can coordinate with each other so that services to the community become more effective and efficient and save costs. The results of this policy can be seen in the development of an application by the Samarinda City Communication and Information Agency, namely SAMAGOV. The implementation of the digital sub-districts is in line with the regulations issued by the Mayor of Samarinda, and the application of the digital sub-districts in Sungai Keledang Sub-district itself has been implemented to help employees and the public carry out sub-district administrative processes more easily and quickly.

Based on the results of the research that has been conducted, the policy implementers in this case, namely the Sungai Keledang Sub-district Administration in Samarinda City, have made efforts to achieve the objectives of the policy, and these objectives are well understood by the sub-district officials and employees. The socialization of the digital sub-districts carried out by the Sungai Keledang Sub-district is still lacking, even though it has been directed through neighborhood associations (RT) and by being included in the programs that are being

implemented, as well as by the community who come directly to the sub-district for their needs. This has resulted in a lack of community awareness of the website that has been provided. Meanwhile, research by Shavira (2020) shows that the support element has been well fulfilled, so that the success of digital sub-districts implementation is also influenced by the support element.

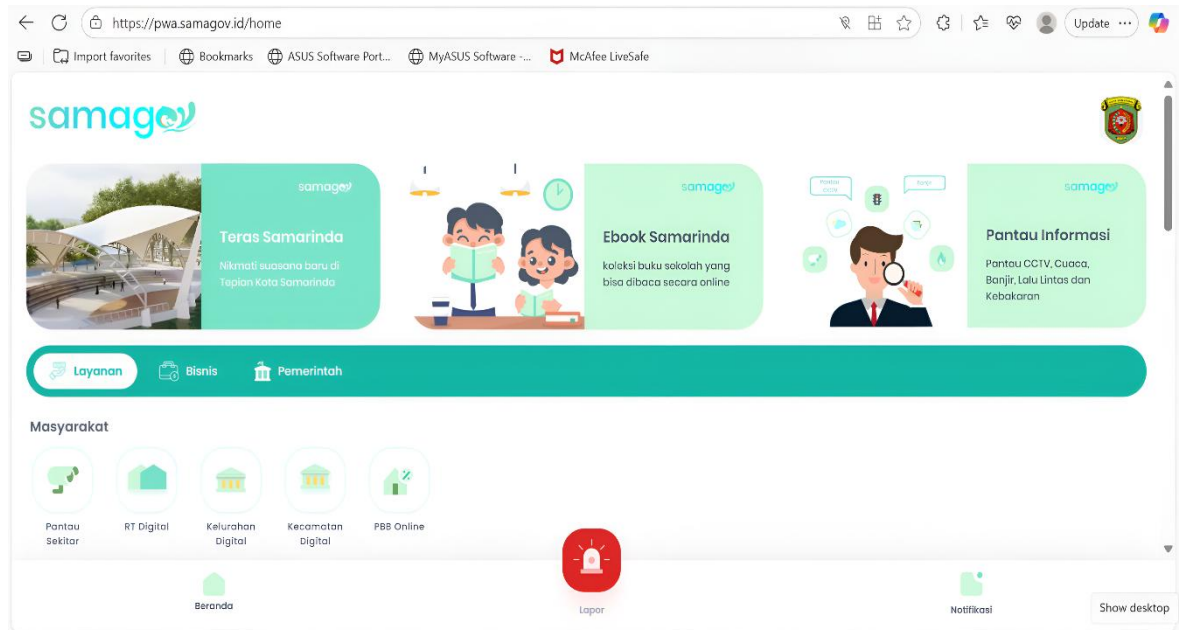
b. Capacity

Capacity is a resource required in the development and advancement of e-government so that the concepts that have been designed can be realized. There are three main resources that must be available, namely the availability of sufficient budget or financial resources to support various e-government initiatives, adequate facilities and information technology infrastructure, as this factor contributes 50% to the success of e-government implementation, and finally, the availability of human resources with the necessary competencies and expertise so that the implementation of e-government can run in accordance with the expected benefits (Arfah et al., 2019).

Based on the results of the research that has been conducted, in terms of the budget provided by the Samarinda city government, it is sufficient to meet the implementation of digital sub-districts. This can also be seen from the facilities and infrastructure provided, such as PCs, tablets, self-service computers for printing community documents, Wi-Fi, television displays for displaying sub-district service information, waiting chairs, air conditioners (AC), CCTV, and others. In terms of infrastructure, unlimited internet access and bandwidth capacity have been facilitated so that the internet network provided by the Samarinda City Communication and Information Agency can be used. However, even though this is sufficient, problems still occur, because in reality, system and network errors often occur, which hinder the digital service process. Then, in terms of human resource readiness, the service staff are ready because before the digital system was implemented, they had received technical guidance (Bimtek) or special training in running applications that support the implementation of this digital sub-districts. Thus, all employees already have a good understanding of the use of technology that implements an online system to accelerate performance and assist people who do not understand it. Additionally, the attitude of service officers is quite good and friendly, in line with public service principles and public service standards. This finding is in line with research by (Pratama, 2025) which states that suboptimal capacity, such as infrastructure and human resource capabilities, are factors that hinder the effective implementation of e-government, so that the element of capacity greatly influences the success of digital sub-districts implementation.

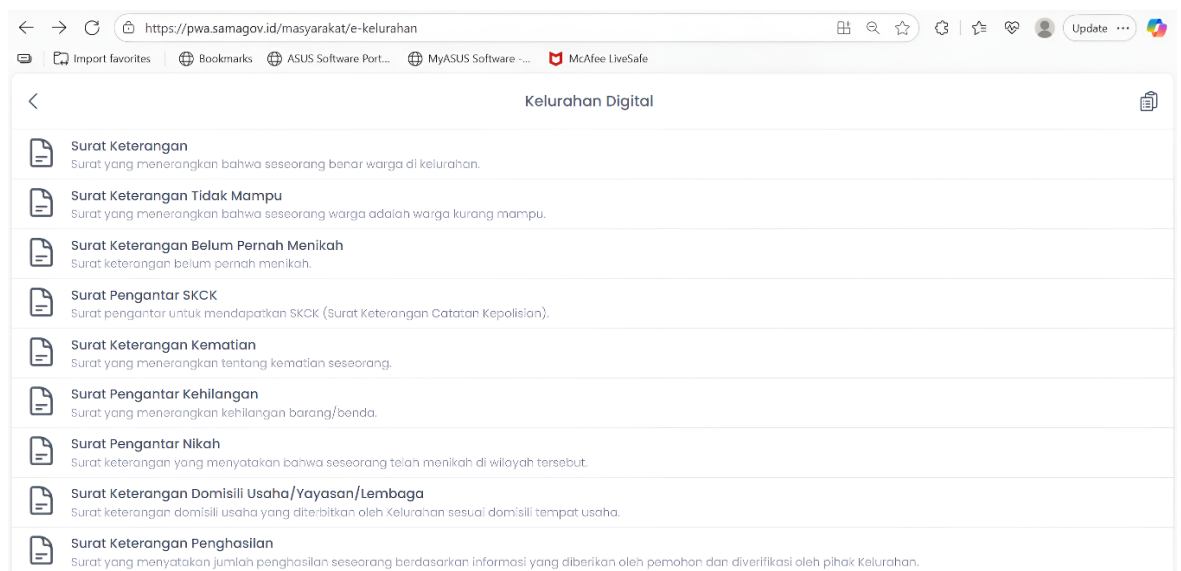
c. Value

The key to success in implementing e-government is the value or benefits of the innovative applications that are introduced. Value will not be achieved even if there are many policy initiatives and programs if no one feels the benefits (Dewi et al., 2020). In this case, the benefits of digital sub-districts are not only determined by the government, but depend more on the community and stakeholders (demand side) (Suherman, 2020). Previously, Sungai Keledang Sub-district provided manual or face-to-face services, but now it has switched to digitalization.



Picture 2. Samagov Website Homepage display

Source: <https://pwa.samagov.id/home>



Picture 3. Digital Sub-districts Administration Services Menu On The Samagov Website

Source: <https://pwa.samagov.id/masyarakat/e-kelurahan>

The two images (2 and 3) show the interface of the Samagov application, which is used as a digital sub-districts administration service in the city of Samarinda. This application offers various key features, such as sub-district administration services, including requests for certificates, certificates of poverty, and others. The simple and integrated interface makes it easy for the community to access services independently, while also helping officials to speed up the service process.

Based on the author's research, it was found that the benefits of digital sub-districts are very useful, especially for eliminating illegal levies. For employees, services provided to the community can be faster because letters do not have to be signed by leaders in person or at the office. The online digital signature system can be used anywhere, so even when leaders are working outside the office, documents can still be signed. This means that documents from the community do not have to wait for leaders to be in the office before they can be processed and obtained by the community. Meanwhile, for the public, obtaining services no longer requires queuing and waiting for documents to be signed by the supervisor, as they can be digitally signed via the supervisor's smartphone, which is integrated with the service application at the service operator's office. This makes the service easier and more efficient. This finding is in line with research by (Wulandari, 2024) which states that the value or benefits of implementing e-government are already very clearly felt by officials and the community, making value one of the important elements of implementing digital sub-districts.

d. Willingness

Willingness can be defined as a form of commitment to perform an action. The public's views or perceptions of Information and Communication Technology (ICT) will influence the extent to which they are willing to utilize ICT facilities. This willingness factor also has an impact on the level of e-readiness, which ultimately contributes to the successful implementation of e-government (Fahik et al., 2024). In this study, willingness is used for in-depth analysis by exploring whether the community and officials accept or are reluctant to accept digital sub-districts and why they reject them.

Based on the author's research on the element of willingness, it can be seen that in terms of the apparatus, there is a high level of willingness to use the digital sub-districts system. This willingness arose not only because of the obligations imposed by the city government, but also

because they directly felt the significant benefits in carrying out their duties. The apparatus considers that the digital system is capable of making the administrative service process more efficient, effective, and practical, especially in file processing and archiving. From the perspective of the community who already use the digital sub-districts administration, they plan to continue using it because it facilitates access anywhere without having to come to the sub-district office and is faster.

Meanwhile, in terms of communities that have not yet adopted digital sub-districts services, willingness remains very low, as evidenced by the fact that out of a population of 18,656, only 813 residents aged 17-35 have accessed these services. This is due to a lack of awareness, which needs to be improved in order to reach a wider audience, as well as limitations in terms of equipment/networks and a culture of face-to-face interaction. However, they do not reject digitalization; they simply require support, guidance, and simplified services. This indicates that willingness is conditional and can increase if the sub-district government implements appropriate educational and facilitation strategies. Meanwhile, research by (Kusumanissa, 2024) shows that officials and the community are willing to use e-government services in their daily lives, thus supporting the successful implementation of digital sub-districts.

d. Local Culture

The success of e-government implementation can be influenced by various factors, one of which is local culture. This culture plays an important role in supporting the success of e-government, particularly in terms of the community's ability to accept and use electronic transactions (Gana et al., 2020). In addition, the readiness of the community as users is also a crucial aspect, which includes their ability to utilize the various services provided through e-government. Thus, active community participation plays a significant role in determining the level of success of e-government implementation. In this study, local culture is used to analyze citizens' social norms that can trigger technological adoption inequality.

Based on the author's research on local culture elements, it was found that local culture or community customs in Sungai Keledang Sub-district are still strongly influenced by face-to-face interactions, reliance on manual documents, and dependence on officials. This culture hinders the adoption of digital services, even though some people (especially the younger generation) are beginning to see the benefits of applications. Therefore, digital transformation at the sub-district level requires a cultural approach, namely increasing socialization while gradually changing the mindset of the wider community, providing legal guarantees for digital documents, and combining manual and digital services during the transition period. This finding is in line with research by

(Ratnasari et al., 2022) which shows that local communities are still very accustomed to and believe in face-to-face services. This is also due to low digital literacy, so that this element of local culture is also one of the things that greatly influences the successful implementation of digital sub-districts.

Supporting Factors in the Implementation of Digital Sub-districts to Improve Service Effectiveness in the Sungai Keledang Sub-district of Samarinda City

a. Human Resource Support: Training and Commitment of Officials

One important factor supporting the implementation of Digital Sub-districts in Sungai Keledang Sub-district is the provision of training and technical guidance for service employees. These activities help officials better understand the functions and usage of digital applications, thereby minimizing technical errors and improving the smooth running of public services. In addition, the commitment of sub-district officials is also a key aspect, as they demonstrate their readiness and willingness to adapt to the new system despite initial limitations in understanding. This commitment is evident in the willingness of officials to learn, participate in training, and consistently use the application in their daily service processes. With a combination of continuous training support and strong commitment from officials, the implementation of digital sub-districts has a more solid foundation for improving the effectiveness and efficiency of public services.

b. Digital Literacy among the Productive Age Group is Increasing

Although access to technology in Sungai Keledang sub-district is still limited, especially in terms of network stability and device ownership, positive developments can be seen among the younger generation who are becoming accustomed to using smartphones and the internet. The higher level of digital literacy among this productive age group opens up opportunities for the accelerated adoption of digital sub-districts services, as they are not only able to operate applications independently, but can also act as intermediaries in helping other family members who are less familiar with technology. This phenomenon shows the potential for intergenerational collaboration, where young people can become a bridge of knowledge in introducing and guiding the use of digital applications to older or less tech-savvy groups. With increased access to devices and a community base that is relatively adaptive to digital developments, the opportunity for implementing digital sub-districts becomes stronger, provided it is supported by appropriate socialization and assistance policies.

Inhibiting Factors in the Implementation of Digital Sub-districts to Improve Service Effectiveness in the Sungai Keledang Sub-district of Samarinda City

a. Lack of Socialization and Education

One of the main obstacles is the lack of socialization regarding digital sub-districts. Most non-users only find out about the application when they visit the sub-district office, and some have never even heard of it before, because only a few neighborhood associations have socialized it. This situation shows that the public communication strategies of the city government and the sub-district office are not yet optimal, even though there are no advertisements on social media in the form of posters, so the community is not familiar with the available digital services. As a result, adoption of the application is slow because it is not accompanied by adequate understanding.

b. Low Digital Literacy among the Public

Most residents said they had not tried digital services because they did not understand how to use them. This factor was more pronounced among older people, who tended to be unfamiliar with technology and therefore preferred manual methods. Low digital literacy slows down the transition to application-based services. Although sub-district service staff have provided training when residents visit the sub-district office, many people still do not understand or find it difficult to learn. In addition, people feel hesitant and lack confidence in using new technology.

c. Face-to-face Culture and Reliance on Manual Documents

Internet connectivity issues, limited personal devices, and limited internet quotas are also significant obstacles. Informants revealed that network conditions are often unstable, while not all residents have adequate devices to access the application. Residents' suggestions regarding the provision of free Wi-Fi at strategic points in the neighborhood indicate that digital infrastructure in this area is not yet evenly distributed, thereby reducing the effectiveness of digital sub-districts implementation.

d. Application Design that is Not Yet User-Friendly

In addition to human and infrastructure factors, the application itself still needs improvement. Some people believe that the application needs to be simplified so that it can be used smoothly on devices with low specifications, such as Random Access Memory (RAM) or device storage space, and also after creating a letter, it is necessary to confirm with the service staff first so that they are aware of the service to be processed. This indicates that the application is not yet fully inclusive, thereby widening the digital divide between those who have adequate devices and those who do not. Furthermore, service staff need to improve incomplete data, for

example, in processing marriage certificates, where parents who are not in Samarinda are considered deceased. Therefore, it is necessary to resynchronize physical data at the Population and Civil Registration Office, which requires validation. Not only that, in line with the community's opinion about the need to confirm via the WhatsApp number of the service staff for those who have it or come directly to the sub-district office again after using the Samagov website, because there are no notifications that appear on the service staff's devices, it is necessary to improve the sorting between sub-districts so that notifications appear and there is no need to confirm again. This indicates that the digital sub-districts through the Samagov website needs to be simplified further to make it more user-friendly and eliminate barriers for both the public and officials who use it.

CONCLUSSION

This study shows that the implementation of digital sub-districts in Sungai Keledang, Samarinda City, has been able to improve the effectiveness of public services through accelerated administrative processes, efficient work by officials, and easy access to community services, despite still facing serious challenges. Policy support and civil servant readiness are adequate, but weak socialization, low digital literacy, especially among the elderly, and limited network infrastructure mean that the benefits of digital services are not yet evenly felt. In addition, the strong local culture of face-to-face interaction and manual documents also slows down the adoption of digitalization. Therefore, the success of digital sub-districts does not only depend on the availability of technology, but also on intensive socialization strategies, simplification of applications to make them more user-friendly, and inclusive digital literacy programs. With the support of productive communities as agents of change and the active role of the government in overcoming structural and cultural barriers, the transformation of digital-based public services has the potential to be more sustainable and provide tangible benefits for all levels of society.

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