Public Service Innovation Towards Smart Villages: Between Expectation and Realisation in Melikan Village

by Apmd Lumbung Desa

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[a] Andi Masrich; [b] Adji Suradji Muhammad; [c] Sucahyo Heriningsih; [d] Ahmad Mustanir; [e] Suharto; [f] Eka Suswaini;

[a] Public Policy Studies, Institusi Pemerintahan Dalam Negeri; [b] Sekolah Tinggi Pembangunan Masyarakat Desa "Apmd", Yogyakarta; [c] Faculty of Economics and Business, University Pembangunan Nasional "Veteran" Yogyakarta; [d] University Muhammadiyah Sidenreng Rappang, South Sulawesi; [e] Faculty Of Social Science And Political Science University Wahid Hashim, Semarang; [f] Faculty Of Engineering, University Maritim Raja Ali Haji, Tanjung Pinang City, Riau Islands;

ABSTRAK

Konsep desa pintar merupakan konsep yang luas yang terkait dengan fungsi masyarakat pedesaan secara keseluruhan di era digital, dan infrastruktur tekhnologi informasi merupakan salah satu pilar utamanya. Tujuan utama dari penelitian ini untuk membahas harapan masyarakat desa dan kesiapan pegawai desa dalam memanfaatkan kemajuan tekhnologi informasi sebagai upaya mewujudkan desa pintar. Metode penelitian yang digunakan adalah metode penelitian kualitatif. Penelitian ini dilakukan Desa Melikan, Kabupaten Klaten, Jawa Tengah. Penelitian menggunakan beberapa sumber data utama, yaitu pegawai desa dan masyarakat Desa Melikan. Teknik pengumpulan data yang digunakan adalah wawancara, observasi, dan FGD. Hasil penelitian menunjukan bahwa penggunaan teknologi informasi dan komunikasi menjadi kebutuhan vital bagi masyarakat Desa Melikan, namun Pemerintah Desa belum cukup siap untuk memenuhi harapan masyarakat. Pemerintah desa didorong untuk berkolaborasi dan berkreasi dengan pihak yang memiliki kapasitas untuk mengembangkan layanan digital. Pemberdayaan masyarakat secara teknis dapat dilakukan dengan menggunakan software aplikasi atau website untuk membuka kesempatan bagi penyaluran informasi dan mendukung pengembangan pedesaan secara keseluruhan. Namun, kesuksesan implementasi desa pintar sangat bergantung pada motivasi dari pemimpin desa, partisipasi aktif masyarakat, dan potensi sumberdaya desa. Implikasi dari penelitian ini adalah pemerintah Desa Melikan perlu segera mengatasi kendala-kendala yang menghambat adopsi inovasi dalam pelayanan pemerintahan menuju desa cerdas.

ABSTRACT

The idea of a smart village encompasses various aspects of rural life in the modern digital era, with a key focus on information technology infrastructure. The aim of this study is to explore the hopes and requirements of rural residents and assess the level of preparedness of village authorities to leverage technological advancements towards creating smart villages. The research method used is the qualitative research method. The research was conducted in Melikan Village, Klaten Regency, Central Java. The research used several main data sources: village officials and the Melikan Village community. The data collection techniques used were interviews, observation, and FGD. The results show that information and communication technology is vital for the Melikan Village community, but the village government is not yet sufficiently prepared to fulfil the community's expectations. The village government is encouraged to collaborate and be creative with parties that can develop digital services. Community empowerment can technically be done by using application software or websites to open up opportunities for information channelling and support overall rural development. However, the successful implementation of smart villages is highly dependent on the motivation of village leaders, active community participation, and potential village resources. The implication of this research is that the Melikan Village government needs to immediately overcome the obstacles that hinder the adoption of innovations in government services towards smart villages.

INTRODUCTION

Technological developments have penetrated all aspects, including village public services (Tacas et al., 2021). Technological advances have affected many sectors of life. Transactions can be carried out by utilising various applications installed on smartphone devices. For example, many applications have been used in education, such as Zoom Meeting, Google Classroom, Google Meet, MS Teams, and various other platforms (Dipayanti et al., 2021; Nurkhasanah, 2019). The use of technology has also finally penetrated public services as one of the service innovations to the community. Many government relations professionals have developed and used applications designed by the private sector. Even those managed by the private sector can be utilised by village governments, such as in Banyuwangi Regency (Sunaryo & Rosidi, 2020; Wicaksono, 2018). Jambi Province also utilises applications provided and developed by the private sector (Haswindy, 2020; Julika & P, 2016). This concept is often referred to as the "smart village" concept. Village government services that are responsive and adaptive to the needs of the community and the times are one of the principles of good governance. Changes in village services aim to realise good governance supported by a professional bureaucracy free from corruption, collusion, and nepotism (KKN) and improve services to the community. Public services are downstream from governance and bureaucracy. Thus, the orientation of bureaucratic reform is to provide excellent service to the community.

The study of smart villages is still relatively new in academia (Pělucha, 2019). Most discussions on smart cities and digital development centre on urban areas (Zhao et al., 2022). "smart" refers to digital intelligence and cohesion (Applis, 2019). Urban areas have a clear advantage in the development of Information and Communication Technology (ICT) because they have all the facilities needed, while rural areas do not have this advantage (Adesipo et al., 2020). In rural areas, particularly those located far from city centers or major transportation links, a "vicious circle" is formed due to various interrelated factors (Lin et al., 2022; Pělucha, 2019. This results in severe disadvantages for certain rural areas. Equitable development can be a solution to improve socio-economic stability, especially for small communities. However, innovative development, which encompasses best practices, innovation, and technological advancement, is a comprehensive concept (Faxon, 2022; Matheson, 2022). One of the sub-components of this theme is the availability of public services provided by rural governments and the availability of high-speed internet in rural areas, which will improve service delivery and economic upliftment as the area attracts during the digitalisation period (Jones et al., 2022; Smith et al., 2021).

Digital development and smart technology are mainly reflected in the service sector and have great potential for development. However, there are barriers to developing this concept in rural areas, such as the ability of village employees to train themselves for modernisation and the problem of digital skills of older village employees. The smart village concept itself is more complex and encompasses various sectors. It also utilises the potential of the digital economy and widely relevant public services. Previous researchers have examined the parameters of smart village development, which builds on the long-term trend of developing an information society, called Society 4.0 (e.g., Adesipo et al., 2020; Jones et al., 2022; McGinn & Solofa, 2020; Monjurul Alam et al., 2021; Shukla et al., 2017; Smith et al., 2021). In Indonesia, the trend of using technology for the benefit of village life is also carried out, such as using applications for sales and marketing purposes (e.g., Fitrianti et al., 2021; Erwan et al., 2021; Nurkhasanah, 2019; Prafitri et al., 2018; Scabra, Marzuki, et al., 2021; Waluyo et al., 2020), or the use of technology to develop the potential of tourism villages (e.g., Alamsyah et al., 2019; Hasmawati et al., 2018; Scabra, Abdurrahman, et al., 2021). Village services prioritising technology have been conducted (e.g., Sunaryo & Rosidi, 2020; Fitrianti et al., 2021; Marzuki, et al., 2021; Sunaryo & Rosidi, 2020). However, no research has examined the research location in Melikan Village. The previous

literature review shows gaps in research on public services in villages, especially in terms of the use of technology in Melikan Village, that has not been studied. Therefore, this study will fill this gap.

The aim of this study is to examine the changes occurring in the rural village of Melikan and their aspirations to leverage advancements in information technology for smart village development. The 1 billion per village funding program from the central government provides a significant opportunity for rural areas to enhance and modernize public services, particularly through the promotion of infrastructure for civic facilities and services, including information technology infrastructure. The smart village concept is a comprehensive framework for improving the overall functioning of rural communities in the digital age, with information technology infrastructure serving as a key component. This research hopes to offer recommendations to village governments for developing effective policies to improve public services in the digital era. By relying on research findings, government policies can be grounded in data and information, leading to better outcomes for rural communities.

Literature Review

Services are a diverse set of activities commonly known as the tertiary sector. The main characteristic of services is that the output is consumed during production, such as civil registration, education, health, and transport services. However, technological development and rapidly developing ICT infrastructure have fundamentally changed this element in rural areas (Adesipo et al., 2020; Jones et al., 2022). Nevertheless, some rural areas still experience problems in service delivery due to a lack of innovative residents and leaders and public funding to support such activities. The Covid-19 pandemic crisis has also exacerbated this public service situation in some areas (McGinn & Solofa, 2020). Nevertheless, a few rural communities have discovered innovative technological solutions to provide services effectively. Nonetheless, the success and adaptability of these approaches hinge on the unique circumstances of their local context, making it difficult to replicate them in other rural communities (Smith et al., 2021).

In a developing country, a literature review identified factors influencing the adoption of e-government services in Jordan. This study analyses the impact of e-government services on public service delivery in Jordan. The results show that adopting e-government services positively impacts improving the efficiency and quality of public services in Jordan (Adesipo et al., 2020). The results showed that factors such as perceived usefulness, perceived ease of use, perceived trust, and social factors significantly affect the intention to adopt e-government services. The study in India analysed the factors influencing the adoption of digital government services in India. The study showed that factors such as perceived usefulness, perceived ease of use, perceived security, and trust in government positively affect the intention to use digital government services (Monjurul Alam et al., 2021; Shukla et al., 2017). In addition, the Southeast Asian studies identified factors such as perceived usefulness, perceived ease of use, social factors, trust, and other contextual factors that influence the adoption of digital public services (e.g., Alamsyah et al., 2019; Hasmawati et al., 2018; Scabra, Abdurrahman, et al., 2021). In Indonesia, some factors influence the adoption of e-government services. The results show that perceived ease of use, perceived usefulness, perceived security, and social factors significantly affect the intention to adopt e-government services in Indonesia (e.g., Sunaryo & Rosidi, 2020; Fitrianti et al., 2021; Marzuki, et al., 2021; Sunaryo & Rosidi, 2020).

The appeal of rural areas is influenced by different factors such as the village's features, amenities, and scenic views. The provision of modern public services is another crucial factor that people prioritize in their daily lives. The availability of these services is crucial for making rural areas appealing, especially when relevant infrastructure is readily accessible (Monjurul Alam et al., 2021; Shukla et al., 2017; Smith et al., 2021). In reality, many rural areas suffer from limited or inadequate facilities; hence they are referred to as peri-urban areas and locations that tend to accumulate problems leading to decreased attractiveness for socio-economic development (Jones et al., 2022). Hence, it is crucial for governments to sustain some form of service provision in rural regions. At times, local administrations collaborate with neighboring municipalities to guarantee adequate services in such areas or to enhance and modernize their local economies by utilizing information and communication technology (ICT) infrastructure more extensively.

The availability of advanced ICT services and infrastructure is strongly associated with the increasing accessibility of high-speed internet in certain regions (McGinn & Solofa, 2020). This enables rural areas to gain better access to various types of public services, including e-government, e-health, e-energy, and e-transportation (Monjurul Alam et al., 2021). The development of the digital era is heavily influenced by this trend, which also opens up possibilities for other virtual economy areas. However, inadequate ICT infrastructure in remote and peripheral regions exacerbates the challenges faced by areas with low population density, limited business opportunities, and inadequate services and job opportunities. Therefore, while continuing to enhance digital connectivity in rural regions, providing a certain degree of accessibility to offline services is important.

This study examines the concept of Smart Villages in rural areas, which involves using digital technologies and innovative solutions to enhance economic, social, and environmental conditions. The concept has gained prominence in rural studies, particularly regarding the digitalisation of rural areas. Smart Villages refer to rural communities that leverage their local strengths and opportunities through the use of digital technologies and participatory approaches to develop and execute their strategies (Smith et al., 2021). The programme aims to establish an infrastructure of innovative rural services and activities while also improving ICT infrastructure and digital technologies. The experiences of Malikan Village are used as an example to evaluate these issues in this paper.

RESEARCH METHOD

This study used qualitative methods to understand the phenomenon of the smart village concept plan developed in Mlikan Village. This phenomenon becomes a complex holistic picture, formed with words, reporting informants' views in detail, and conducted in a natural setting. Thus, qualitative research was used in this study because it presents a detailed description of the research objectives and is interpreted by considering the social context (Creswell & Creswell, 2018). The location of this research is Melikan Village, Wedi Sub-district, Klaten Regency, Central Java Province. Melikan Village was chosen as the research location because it has supportive transport access and adequate infrastructure facilities. In addition, Melikan Village has the potential to make a significant contribution in the context of economic development with technology because Melikan Village is one of the main pottery craftsmen in Indonesia. The research time occurred in 2022 in collaboration with several parties. This research used several main data sources: village officials and the Melikan Village community. To collect data the data collection techniques used were interview, observation, and document review methods (Adams

et al., 2005). The data was then verified by Focus Group Discussion (FGD). FGDs were chosen to clarify and verify directly from all parties. Meanwhile, secondary data were collected through observations and literature found during the research, including the Village Medium-Term Development Plan (RPJMD), Village Government Work Plan (RKP), Village Regulations and other relevant documents in accordance with the research theme (Denzin & Lincoln, 2018). Thus, data collection was conducted comprehensively and diversely to ensure the accuracy and validity of the data generated in this study. The following is a flowchart of data collection to conclusion drawing:

Figure 1.
Flow of Data Collection to Inference
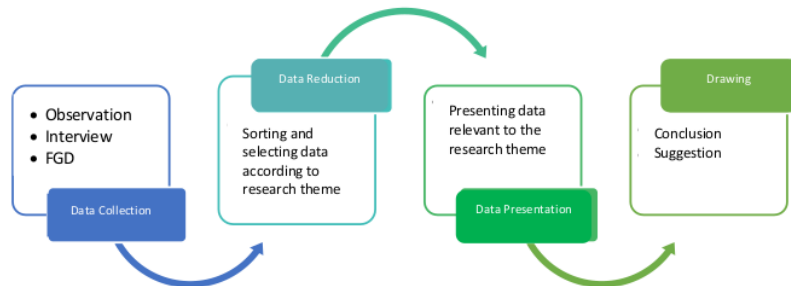
Source: self-processed (2023)

Based on Figure 1, it can be explained that data collection through observation, interviews and document analysis, the data is then reduced. Data reduction is sorting or selecting data relevant to the research theme. Furthermore, the research presents the data and concludes the data. This analysis process was carried out using the analysis technique from Miles et al. (2014), which consists of data reduction, data presentation, and conclusion drawing. Data reduction is the initial stage where the data that has been collected will be selected, focused, and abstracted so that it can become more organised and easy to understand. After that, data presentation is done so that all the information collected is well arranged and structured so that it is possible to draw conclusions and make the right decisions. Finally, the conclusion-drawing stage is a process in which the analysis results are verified and evaluated continuously throughout the research process to ensure that the conclusions are accurate and reliable. This process ensures the research results can be interpreted correctly and validly (Miles et al., 2014).

RESULTS AND DISCUSSIONS

Developing Public Service Innovation

Melikan Village is one of the villages in Wedi District, Klaten Regency, Central Java. One of the potentials in this village is religious and natural tourism, as well as a handicraft centre for tilt-turn pottery that is famous for its export quality worldwide. In 2019, the village planned an internet-based Smart Village concept supported by planning outlined in the Melikan Village Medium-Term Development Plan (RPJM) 2019-2025. Governments at all levels have responsibilities for physical, mental and spiritual development. The vision brought by the head of Melikan Village is "From the community, by the community, for the community" based on thoughts, ideas, and ideas from the community to advance development, human resources and economic improvement for the realisation of the community welfare. The high level of trust of the community towards the village head can be seen during the FGD at the Melikan Village Hall

Office, where the community has full trust in the Village Government. However, during the FGDs, many obstacles were experienced by the community, such as the Melikan Village government administration services are still carried out conventionally.One of the community members said:

> *"The services campaigned for since 2019 have not been implemented until now (read: 2022), and administrative services and the like are still manual; I come to the village office and follow the steps conventionally".*

The village office is meant to be conventional as people come to fulfil a number of requirements to conduct government administration. The village government apparatus then prepares and provides the administrative service to the applicant. In some cases, administrative services cannot be completed at the same time as the delivery, either due to the absence of authorised officials, lack of requirements, or other technical problems, such as power outages.

This constraint in public service delivery and the need to transform services at the village level was also voiced by the Head of Karang Taruna:

> *"Well, with the system, of course we can minimise human error. Regarding government administration, maybe later the Secretary Pak Carik will be pleased to respond, for example there are residents who need assistance or administrative services".*

The transformation of government administration services with the principle of simplification and the use of technology is believed to improve public services. Governments must be forced rapidly into the digital future and utilise opportunities to advance knowledge and innovation ecosystems with technology, collaboration and cooperation (Alamsyah et al., 2019; Budi, 2019). Village governments are encouraged to digitally transform to improve services to the community (Ingranti et al., 2018). The government is encouraged to collaborate and create with stakeholders who can develop digital services. The use of technology in providing government administration services is not new in Indonesia. Thus, the community can be empowered to provide more autonomy or freedom to each individual in an organisation or freedom to access services. Community empowerment can technically be done in various ways. One of them is by using application software or websites. However, the findings in the field explain that Melikan Village has not yet implemented the smart village concept in accordance with the 2019-2025 RPJM, although the campaign by the village government has been carried out since 2019 by inviting various parties to conduct socialisation, in reality, it has not yet been elaborated.

In other research, many government agencies provide website-based government administration services and service applications. For example, licensing services by Online Single Submission or OSS. OSS is a system that implements Risk-Based Business Licensing through the Online Single Submission (OSS) System. OSS is an implementation of UU Nomor 11 Tahun 2020 on Job Creation (Lukman et al., 2017; Prafitri et al., 2018). In the situation faced in Melikan Village, it is expected that there will be pressure to find new forms of cooperation between village officials, find creative solutions to village problems and development challenges in the era of the industrial revolution 4.0, and find effective ways to involve village communities in the relationship between urban and rural areas and improve the efficiency of public service provision in the region. In Melikan Village, this concept is not yet visible, this was conveyed by Head of Karang Taruna:

"Since the change of leaders, the community is rarely included in the deliberations. We really need changes in services. We want to participate in every policy, so that the resulting policy can be felt by the village community. Especially after the Pandemic condition, it should be used as a momentum for change."

Community empowerment can also be done in various ways, one of which is through partnerships with parties with the capacity. Participation will grow and develop if supported by openness. An open (transparent) government will be able to become a magnet for increasing community participation (Erwan et al., 2021; Razak et al., 2022). Community involvement will grow if given the opportunity, so people will channel their aspirations related to development if given the opportunity by the government. Conversely, community participation will be low or minimal if the village government provides limited information (Aziiza & Susanto, 2020). Openness from the government is needed to encourage the growth and development of community participation in running the wheels of government. The form of openness in the administration of the Melikan Village Government has not been optimal even though there are Whatsapp Groups (Group WA) starting from the RT, RW, and Hamlet levels. However, there is no WA Group at the village level, as stated by the Village Secretary,

"We do not have a public service application at the village level, even though the development of information and communication technology is very important to improve public services and accelerate development in the village. Moreover, since the COVID-19 pandemic, our budget has been diverted to other things, so we have not realised the 2019-2025 RPJM. Furthermore, the support from our human resources is inadequate due to several factors..

This can be seen from the fact that the capabilities of village employees are still limited to a handful of people. Most village employees are elderly and lack knowledge of operating technology. This needs to be a special concern for the village government to improve towards a smart village. In other words, the limited ability of village officials is considered an obstacle to developing smart villages, especially in operating technology. With the rapid development of information and communication technology, knowledge and understanding of technology is crucial for village officials. The ability to operate technology will assist them in performing administrative tasks, communicating with the community, and accessing relevant information (Adesipo et al., 2020; Jones et al., 2022). The limited ability of village officials to operate technology may impact the efficiency and effectiveness of public services at the village level. This suggests the need for strategies and programmes from village governments to improve village employees' digital literacy and technological knowledge.

Expectation and Realisasion for Smart Villages The development of information and communication technology for smart villages can significantly impact rural communities, such as increasing access to information and improving public services. However, various challenges must be overcome to realise a successful smart village, such as the lack of infrastructure and internet access in rural areas and the low level of technological literacy among rural communities. Village officials conveyed the steps that should be taken to overcome these obstacles,

"The steps that need to be taken to overcome these obstacles include improving infrastructure and internet access in Melikan Village, as well as obtaining adequate funding and human resources. In addition, co-operation between agencies is also very important in developing a smart village."

Melikan Villages can also benefit from building a village based on information and communication technology. Building a village based on information and communication technology can be realised, and the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (Kemendesa PDTT) have provided several applications and information systems to monitor the progress of village development. One is the Village Information System Application, Digital Village Map 1:5000, and WebGIS, which village officials can access with a stable internet network (Fahan & Ishrat, 2019; Prafitri et al., 2018). Co-operation between the Ministry of Villages and the Ministry of Communication and Information has also been conducted to provide internet access in villages by procuring towers and internet services (Erwan et al., 2021; Razak et al., 2022). Desa Online and Potential Village are two information systems that can be used to publish information and village information centres, as well as expand information on superior potentials in the village. In addition, a BUMDes management system is also available to control organisational information and BUMDes activities. While these systems are very helpful in village development and support the implementation of smart villages, evaluating the network availability of all villages in Indonesia is necessary.

Melikan Villages can benefit from the development of applications that aid in the village's administrative processes, validate population data, and improve productivity and the local economy (Yuniar & Hasanah, 2021). Information and communication technology-based programmes such as developing village databases, improving village website features, training village administration application services, and creating applications for village farmers can be carried out to support the development of Smart Village (Alhari & Fajrillah, 2022; Mazya et al., 2023). The purpose of introducing the field of information and communication technology to the community is to open up opportunities for channelling information to rural communities and support the development of rural areas as a whole. By utilizing these technological advancements, Melikan Villages can improve access to information, enhance administrative efficiency, empower local farmers, and contribute to the overall growth and development of the village.

The Village Information System (SID) is a system required by local governments and consists of hardware, software, networks, and human resources. This system includes village data, village development, rural areas, and other information related to Village Development and rural areas (Ashifa, 2020; Kusumah et al., 2022). SID is a computer-based data and information processing system that village governments and communities can manage. SID consists of two types of systems, namely offline and online systems. In the offline system, the application is installed on a server computer in the village office and can only be accessed within the local network. This offline system is suitable for daily SID applications, and the database can be uploaded periodically to the online system. SID is a village website divided into front and back sections in the online system. The public can access the front part, and system administrators can only access the inner part. In its development, the SID can be linked to information systems at the city/regency or provincial level to provide wider benefits. The main objective of SID is to accelerate the process of village administration services (Adesipo et al., 2020; Shukla et al., 2017).

To realise Melikan Village as a smart village, several steps can be taken to overcome the challenges. Firstly, improving infrastructure and internet access in Melikan Village is necessary. This can be done by obtaining adequate funding and human resources to build the necessary infrastructure and ensure the availability of stable internet access. In addition, cooperation between agencies is also very important in developing smart villages. The Ministry of Villages, Development of Disadvantaged Regions and Transmigration (Kemendesa PDTT) can collaborate with the Ministry of Communication and Informatics to provide internet access in villages, such

as by procuring towers and internet services. In this case, Melikan Village can utilise applications and information systems provided by the Ministry, such as the Village Information System Application, Digital Village Map 1:5000, and WebGIS. These applications and systems can assist village officials in monitoring the progress of village development, managing village data, and providing important information to the community. In addition, Melikan Village can also use Desa Online and Potential Village as information systems to publish information and village information centres. The BUMDes management system can also control organisational information and BUMDes activities. However, it should be noted that an evaluation of network availability in all villages in Indonesia still needs to be conducted. In order to develop smart villages, it is important to ensure the availability of adequate network infrastructure in Melikan Village and other villages in Indonesia. By taking these steps, Melikan Village can utilise the potential of information and communication technology to build a smart village, improve access to information, enhance public services, and support sustainable development at the village level.

CONCLUSION

From the results of the previous research and discussion, it can be concluded that the Melikan Village community expects innovation in village government services, but these expectations have not been met because they still use conventional methods. Community expectations are not met because the village government still uses conventional methods to provide community services, even though the smart village concept has been planned since 2019. In addition, the number of personnel operating the application is also very small, making the condition of the village government even worse. The problem is further complicated by the fact that the village's internet network is unstable and evenly distributed. Although not all elements in the concept of digitalisation can be applied in all corners of the village, it is necessary to look at the conditions, potential, and problems of each. There are limitations in the application of technology and information, so it needs to be orientated more towards increasing the capacity of village officials and communities in terms of village management and innovation in economic and social activities. However, information and communication technology are also needed to develop Smart Villages. This research implies that the Melikan village government needs to immediately overcome the obstacles that hinder the adoption of innovations in village government services. This includes expanding information and communication technology, increasing the number of personnel skilled in operating applications, and improving infrastructure and internet access in the village. In addition, village governments need to pay attention to each village's conditions, potentials, and problems to develop a more suitable Smart Village concept. The importance of increasing the capacity of village officials and communities in village management and innovating economic and social activities must also be considered. Therefore, the Melikan village government needs to take further steps in formulating appropriate policies and obtaining clear guidelines to properly implement Smart Villages.

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