

# DIGITAL INNOVATION IN BUILDING DISADVANTAGED VILLAGES IN BANTEN PROVINCE CASE STUDY OF LEBAK REGENCY BORDER AREA

ADE HADIONO <sup>1</sup>, RUSITO <sup>2</sup>, SARIPAN <sup>3</sup> and JUMANAH <sup>4</sup>

<sup>1,2,3,4</sup> Sekolah Tinggi Ilmu Administrasi Banten.

Email: <sup>1</sup>bah.ade67@gmail.com, <sup>2</sup>rusito.tamireja@stiabanten.ac.id, <sup>3</sup>ipanbeckham@gmail.com,

<sup>4</sup>Jumanah1011@gmail.com

## Abstract

Village digitalization is very important to reduce the gap and lag between urban and rural areas, as well as increase village community access to public services, the economy, and others, therefore the development of villages into digital villages still needs to be encouraged. Village digitalization in Banten Province has become the focus of attention in recent years, one of which is the implementation of village digitalization, namely the Digdaya Village application, Village E-commerce, and Village Information System. In this study, a qualitative descriptive method was used to determine digitalization innovations in disadvantaged villages in Banten Province, especially in Lebak Regency. The main focus of this research is to understand how digital technology is used in disadvantaged villages and how it impacts improving the quality of life of the people in those villages. Data was collected by conducting interviews, observations and literature studies, namely by reviewing journals related to digitalization innovations in building disadvantaged villages. The results of the study show that the determining factors for the success of the implementation of digitalization in the village are; (1) Strong Technology Infrastructure, (2) Budget Support, (3) Support for Competent Human Resources, (4) Digital Education and Education, (5) Collaboration and Coordination, (6) Policy Support. The results of the study show that digitalization can help disadvantaged villages in improving access to information, administrative efficiency, and community economic empowerment. However, in the field, there are obstacles such as limited infrastructure, human resources, budget support, and digital literacy are still the main obstacles to implementing digitalization comprehensively.

**Keywords:** Digital Innovation, Building Villages, Disadvantaged Villages.

## A. INTRODUCTION

Currently, we have been required to be able to adapt to the social environment, especially in the development of technology globally (Bagus et al., 2023). The use of digital technology in Indonesia has currently had an important influence on various sectors, such as the industrial, trade, health, education, transportation, and government sectors (Herlambang & Fathoni, 2023). The state of Indonesia must start paying attention, anticipating and preparing effective solutions, as well as preparing efficient and effective solutions (Idat, 2019) so that the government is required to innovate digital technology to support performance improvement and welfare, save costs and to be more effective and active with its citizens (Nurrahman et al., 2021); Bhagat et al., 2022;(Khakwani et al., 2024).

The digitization of information and communication technologies not only restructures the way we understand the concept of government in a classical way, but also changes the way government and public administration operate and function. The Internet is considered one of the main achievements of the information revolution in optimization, efficiency, productivity,

accountability, and transparency (Ogurlu, 214). Digitalization is the process of turning something in the form of non-digital into digital. Digitalization allows data storage, processing, and exchange to be more efficient and fast, opening up opportunities for the creation of new and innovative services that make human life easier (Heiskala et al., 2016 in Greekngsih et al., 2021). Thus, the application of the digitalization concept brings various benefits, including increased productivity, cost reduction, and improved service quality (Deandlles Christover et al., 2023); (Bagus et al., 2023).



Figure 1: Number of Internet Users

Source: weareasocialdanhootsuite, 2024

This data reveals several interesting things related to the development of the digital world, including data about Indonesia, there are 175.4 million internet users in Indonesia. Compared to the previous year, there was an increase of 17% or 25 million internet users in this country. Based on the total population of Indonesia which amounted to 272.1 million people, it means that 64% and half of the Indonesian population has felt access to cyberspace. The percentage of internet users aged 16 to 64 years who own each type of device, including mobile phones (96%), smartphones (94%), non-smartphone mobile phones (21%), laptops or desktop computers (66%), tables (23%), game consoles (16%), and virtual reality devices (5.1%). With this, it can be concluded that digitalization in Indonesia has developed very rapidly (Cetulean et al., 2023; Idris, 2023)

Based on the above, the Indonesia government has set a target to realize Indonesia as a digital country by 2030 through efforts to accelerate the development of digital technology and services in Indonesia (Yuliawati & Irwansyah, 2023). Digital improves and encourages the creation of effective, efficient, and transparent public services, with the aim of providing appropriate information services to stakeholders and realizing a better governance system

(Deandlles Christover et al., 2023). Local governments are given the opportunity to develop their areas, including in terms of development. Villages as the smallest unit of government certainly cannot be separated from the development aspect. However, there are many challenges that must be overcome in realizing Indonesia as a digital country that is still very large, especially in remote or underdeveloped areas.

The village is the lowest government unit under the sub-district with territorial boundaries and has the authority to regulate and take care of the interests of the local community. The village is led by a village head who is directly elected by the villagers (Zulvia & Harahap, 2023). However, due to limited facilities and funds to support development, local residents rarely take advantage of these resources (Nasution & Hasibuan, 2023). This is in line with the large number of villages in Indonesia in 2022 as many as 83,794 villages/sub-districts from 34 provinces that are currently (Central Statistics Agency, 2022). With the number of villages/sub-districts, assistance from the government often has uneven assistance and attention, as well as other obstacle factors that cause villages to be far from prosperous and do not meet the needs of every citizen. President Joko Widodo's Nawacita concept, which prioritizes development from the periphery, gives high priority to village development. However, there are several factors that cause slow development at the village level, namely the gap in terms of technology, information, and communication between villages and cities (Sari et al., 2022). This condition is a challenge for villages to actively participate in the current era of digitalization. Therefore, efforts are needed to reform the implementation of village government through innovation in governance. There are several types/types of villages, which are as follows:

1. Pre-Village, Independent Village (traditional village).
2. Self-Employed Village or Developing Village (transition village).
3. Self-sufficiency village (developed village),
4. Disadvantaged Villages (Nasution & Hasibuan, 2023).

Disadvantaged villages are areas whose development is not / not optimal, including physical and non-physical development, and have obstacles and obstacles, such as lack of infrastructure, regional finance, community economy, and low quality of human resources. Geographically, disadvantaged villages are relatively difficult to reach because they are located far inland, hills/mountains, islands, coasts, and remote islands or because of other geomorphological factors that make it difficult to reach by networks both transportation and communication media and in terms of natural resources, disadvantaged villages also do not have potential or have a lot of natural resources, but the surrounding environment is protected and cannot be exploited (Nasution & Hasibuan, 2023).

Based on data from the Developing Village Index (IDM) from the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (Kemendes PDTT), the number of villages with developed and independent status in Indonesia has been increasing in the last five years (Annur, n.d.).

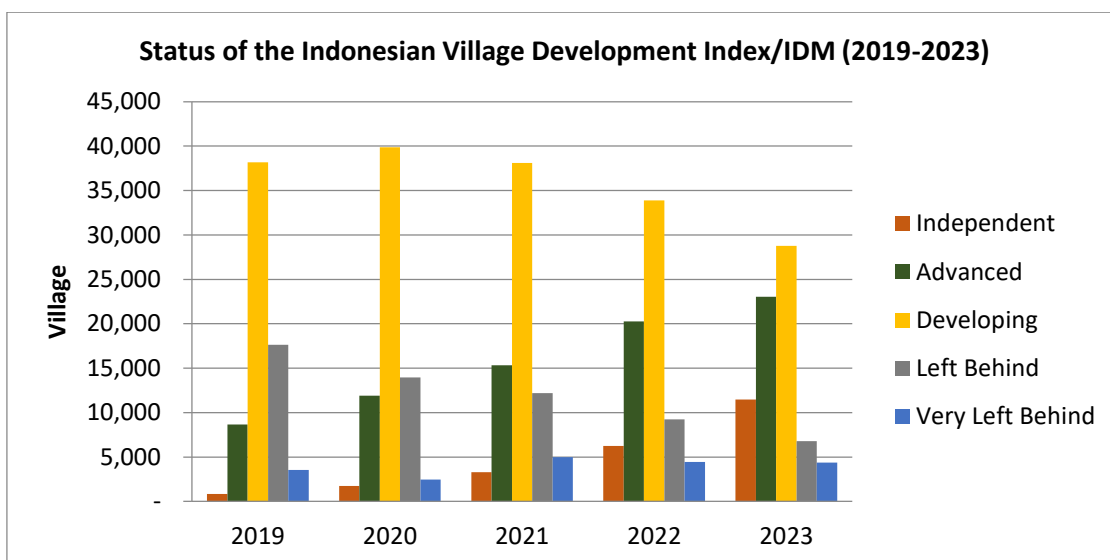


Figure 2: Status of the Indonesian Village Development Index/IDM (2019-2023)

Table 1: Status of the Indonesian Village Development Index/IDM (2019-2023)

No.	Data Name	Independent	Advanced	Developing	Left Behind	Very Left Behind
1	2019	840	8647	38185	17626	3536
2	2020	1741	11899	39866	13961	2466
3	2021	3278	15324	38086	12177	4985
4	2022	6238	20248	33892	9234	4438
5	2023	11456	23030	28752	6803	4382

Source: Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (Kemendes PDTT)

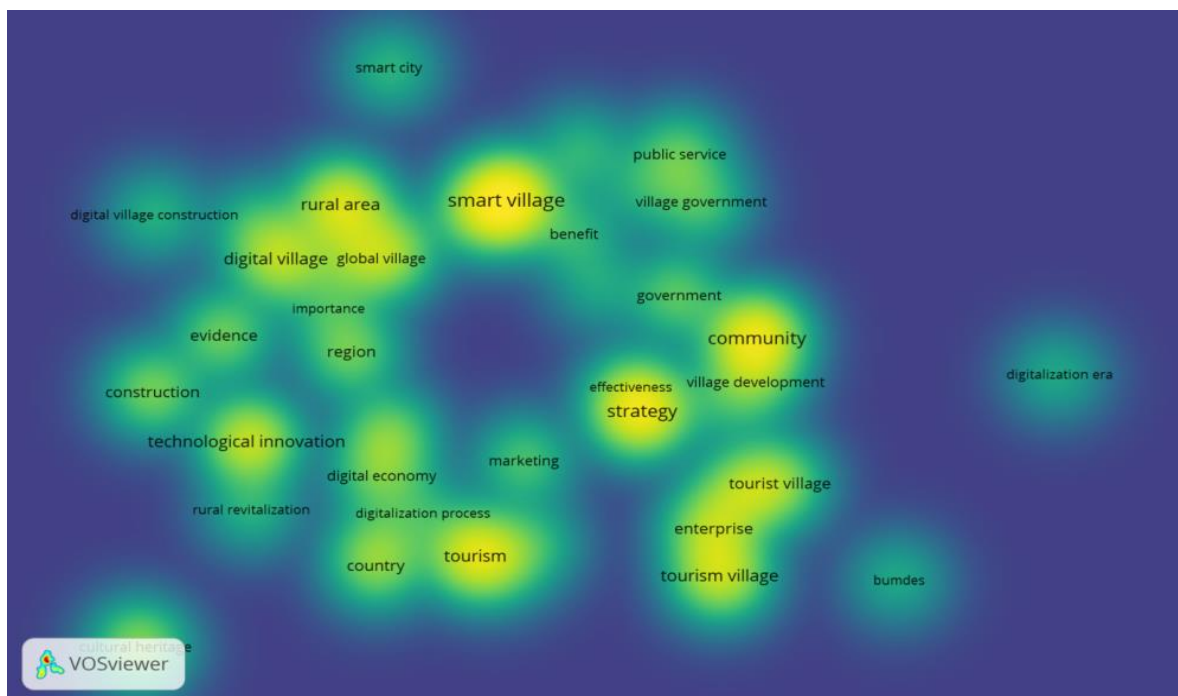
Based on the data above, the number of villages with the status of disadvantaged villages is still quite large. However, there was a decrease in the number of disadvantaged villages from 9,234 to 6,803, while the number of developing, advanced, and independent villages is increasing. This means that the community has begun to be aware of the condition of their village in this industry 4.0 era.

The development of villages into digital villages still needs to be encouraged. In order to realize the development of digitalization in disadvantaged villages, the government must pay serious attention to disadvantaged villages and provide adequate infrastructure, such as fast and stable internet networks, access to the necessary software and hardware, and provide training to the community on information and communication technology.

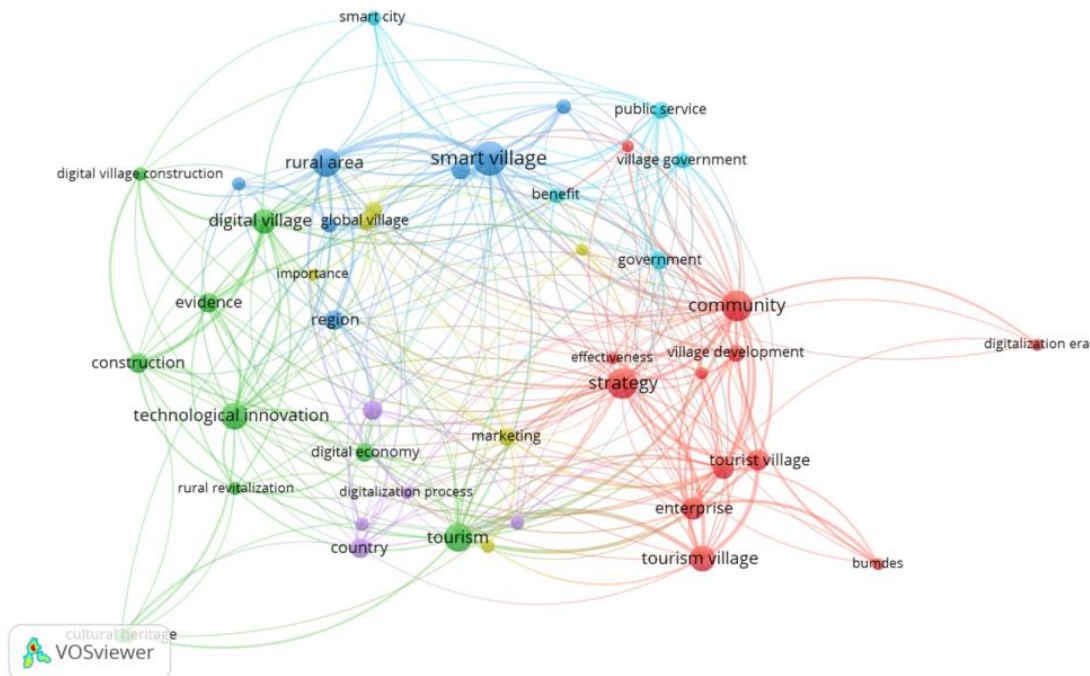
In addition, the government must establish regulations and policies that support the development of digitalization in villages. There are several obstacles that prevent the government from developing the potential of digitalization in disadvantaged villages, such as lack of funds, low quality of community resources, and digitalization and networks (Yulianita & Pradana, 2021).

Lebak Regency is part of Banten Province which has its capital in Rangkasbitung. Lebak Regency has 28 sub-districts, 340 villages and 5 sub-districts. Lebak Regency has been a working area for the development of the Village and Regional Information System implementation model since 2014 through the mentoring process of the Indonesia Young Foresters (RMI). Leaving various problems including: first, the people of Lebak Regency are not fully literate about the existence of technology that can help facilitate activities. Second, there is an imbalance in services due to a very large area. Third, there are several villages, especially on the border, that are lagging behind in the use of technology and information. Fourth, almost most of them in Lebak Regency do not have a Village website. Fifth, there are still many village officials and the community who do not know about the use of websites used for public services. Sixth, the villages that already have a Village website are constrained by access such as the absence of the latest population data updates, incoming and outgoing mail reports. However, it is possible that innovations in the implementation of village administration are potential, including; First, the application of digital government in the implementation of administration to realize good governance. Second, village information services through the website, aim as one of the roles of the village government in providing information related to the performance of village apparatus and public services for the village community quickly and easily. Third, through this website there are benefits received by the community, because this website displays various information related to the village ranging from village history, geography and village demographics to village population information.

The study on village digitalization can be seen in the following figure:







**Figure 1: Network Visualization**

Source: Researcher Analysis using Vos Viewer, 2024

Based on the bibliometric mapping carried out by the author on the VOSViewer application, the results of 44 documents were obtained which were divided into 6 clusters. Based on the text data format, data input and analysis with VOSViewer, the development of research results on *Village Digitalization Innovation* has not been researched much, nor has there been any research that raises the topic of Digital Innovation in disadvantaged villages. Therefore, the author is interested in researching the development of digitalization in disadvantaged villages with the title "Digital Innovation in Building Disadvantaged Villages".

## B. RESEARCH METHODS

This study uses a descriptive qualitative approach method, where the method focuses on research by explaining the phenomena that occur. Qualitative methods are used to obtain in-depth data, a data that contains meaning (Creswell, 2014; Matthew B Miles, Michael Huberman, 2014; Patton, 2002; Sarantoks, 1993; Steven J. Taylor, Robert Bogdan, 2016; Yin, 2003). Data was collected with primary data, namely interviews with several village governments, and local governments, and secondary data, namely conducting literature studies by examining journals related to digitalization innovations in developing disadvantaged villages. The results of these various literature will be used to identify innovations regarding digitalization in developing disadvantaged villages.

## C. DISCUSSION

### 1. Digital Innovation Concept

Government Regulation of the Republic of Indonesia Number 38 of 2017 concerning Regional Innovation defines innovation as any type of change in local government operations that aims to improve its performance. In classical economic theory, innovation is considered a new combination of new elements that were not seen in the previous economic system (Schumpeter in Onitsuka, 2019). In addition, digitalization is a synonym of the term "digital". Digitization is the process of transforming something in the form of non-digital into digital (Heiskala et al., 2016 in Greekningsih et al., 2021). Digitalization is also known as digital transition, when digital technology is introduced as part of a service or product used to modify existing business processes and transform digitally (Patricio et al., 2022). However, the term digitalization refers to the use of digital data and technology to create a digital culture and increase revenue and business (Crawford et al., 2020 in Greekningsih et al., 2021).

Based on the explanation above, the digitalization innovations intended in this study are all types of changes that occur in the implementation of local government. These changes are made by improving business processes by using digital data and technology to improve the performance of local government administration. There are three types of digital transformation in the implementation of local government: digital transformation in public services, digital transformation in governance, and digital transformation in other forms (Walo, 2022). Digitalization can increase efficiency. In this case, the improvement of digital infrastructure can improve the efficiency of market prices in different areas of internet technology expanding the geography and space where goods are exchanged, reducing and increasing efficiency (Huang & Lau, 2024).

According to Zerrer and Sept (2020), rural digitalization is the implementation of digital, social, and innovation. Digital social innovation is a type of social innovation and collaboration from rural communities that uses digital technology to jointly create knowledge-based products or services as solutions to the needs of rural communities (Zerrer & Sept, 2020). Thus, rural digitalization can be said to be an effort from village communities to empower the potentials that exist in rural ;p, both natural resources, human resources, production factors, and knowledge through digital technology to overcome the limitations found in rural areas (Nugroho, 2021).

Digital technology innovation is different from digital transformation. The first focuses on new breakthroughs and changes in digital technology itself, while the second focuses on the application of digital technology, i.e. the application of digital technology to create new products, improve production processes, and change the shape of organizations (Zhu, 2024). the term Digital innovation refers to the use of information and communication technology (ICT) to produce new processes, products, and services that are more effective, efficient, and integrated with digital technology (Risconsulting, n.d.). Digital technology can help businesses improve productivity, efficiency, quality, and competitive advantage. It can also accelerate business growth and open up new opportunities for better product and service development.

Globally, the digital revolution has a significant impact, although the rate of change fluctuates relative to geographical and industrial locations (Akileswaran & Hutchinson, 2019). Innovation in technology is changing organizational behavior, leading to an increase in economic prospects that require innovative skills (Nyagadza et al., 2022).

## 2. Village Concept

A village is a legal community unit that has an original structure based on a special right of origin (Nuraflah, 2020). In Law of the Republic of Indonesia Number 6 of 2014 concerning Villages, a village is a group of legal communities that have territorial boundaries and have the authority to regulate and manage the interests of the local community, based on local origins and customs that are recognized and respected in the system of government of the Unitary State of the Republic of Indonesia. According to Paul. H. Ladnis in (Nasution & Hasibuan, 2023), a village has a population of less than 2,500 inhabitants with the following characteristics:

- a. Having a life association that knows each other between thousands of people.
- b. There is a similar affinity for liking habits.
- c. The way of trying (economists) is the most common or mostly agrarian
- d. Influenced by nature such as: climate, natural conditions, natural wealth, while non-agricultural work is part-time.

A village is a settlement with unique cultural characteristics or to describe a settlement located in a remote area. Villages are places to live for a group of people who live side by side, and their livelihoods often depend on natural resources and local agriculture (Faa'izah, 2023). There are a wide variety of villages around the world that thrive according to their environment, culture, and history. Each village must reach its own level in the development process to advance the village. Because of this, villages are classified based on their development. The development of the village can be seen from the condition of the people who live in the village. The condition and level of development of a village can also be described by the development of facilities and infrastructure as well as the economic level of the community. To advance it, the village needs support from internal and external. Therefore, the village must be able to cooperate with the community and other parties to make good use of each facility. If the village is able to make good use of every facility, the village will definitely develop rapidly. Villages are classified based on their development into three, namely (pagerdawang, 2022):

### 1. Self-Help Village (underdeveloped village)

Self-help villages are villages that can be categorized as underdeveloped villages. tend to still be primitive and isolated from the region. The people of this village still follow the customs of their ancestors, such as carrying out traditions or customs, and only work to meet primary needs. Villages like this are usually inhabited by a group of people for a long time. Self-help village communities have not been able to develop because of the style of thinking that follows their ancestors. Independent villages have the following characteristics: the area is isolated or closed, the population is small, the livelihood is homogeneous which is agrarian in nature, the community adheres to customs or traditions, the relationship between individuals is very



strong, the available facilities and infrastructure are still lacking and the existing technology is still low or even non-existent.

## 2. Self-Employed Village (Developing village/transition village)

Villages in this classification are one level more advanced than independent villages. Society began to change with the flow of the times and think more openly, people's customs began to change in accordance with the social changes of their society. With more jobs, people's livelihoods are increasingly diverse. Village development also develops by building village infrastructure and facilities. Swakarya Village has several characteristics, such as: Not fully bound by customs, not closed to influences from outside the region, has educational, health, economic, and other supporting facilities, technology has begun to be used by the community, access outside the region has become easier.

## 3. Self-sufficiency village (developed village or developing village)

Self-sufficiency villages are usually called developed or developing villages. Existing resources can be used for village development. Compared to other villages, this community has a more advanced level of education and economy, and they are already able to develop their ideas. want to participate and think in a more contemporary way. Self-sufficiency villages have several characteristics, such as: the location is near a city or sub-district, the population is dense, not bound by customs, has adequate and advanced facilities, the community is more creative and critical, and they are actively involved in development.

Based on the definition above, disadvantaged villages are places where development is not optimal, both physical and non-physical development, and has obstacles and obstacles. This is seen from the infrastructure facilities, regional finances, the community's economy, and the low quality of human resources. Geographically, disadvantaged villages are relatively difficult to reach because they are located far inland, hills and mountains, islands, coasts, and remote island islands or because of other geomorphological factors that make them difficult to reach by networks, transportation and communication. In terms of natural resources, disadvantaged villages do not have potential or have many natural resources, but the surrounding environment is protected and cannot be exploited. Meanwhile, in terms of human resources, generally village communities are left behind, their level of education, knowledge and skills is still low, and customary institutions are not yet developed (Rasyid & Prasetyo, 2023).

In disadvantaged villages, there are limitations in transportation and communication facilities, clean water, irrigation, health, education, and other services that cause difficulties in carrying out economic and social activities. Disadvantaged villages also often experience natural disasters and social conflicts, which disrupt development activities such as social and economic development. A village is said to be a disadvantaged village because of wrong policies, such as not taking sides in the development of disadvantaged areas, wrong development priorities, and the absence of indigenous peoples' institutions in planning and development (Bappenas, 2006, quoted by Rasyid & Prasetyo, 2023) The lagging behind of a village can cause the village to be less competitive with other villages that have developed or even developed. The village is also categorized as an inactive village for various reasons, such as increasing poverty, declining life

expectancy, or even the worst possibility. Therefore, there needs to be an increase in public and government awareness to reduce or even eliminate the status of disadvantaged villages in Indonesia.

### 3. The Urgency of Village Digitalization

Village digitalization is the process of incorporating technology into various aspects of village life with the aim of improving the quality of life and economic progress of rural residents. The goal is to increase access to information, increase public insight, accelerate economic development and welfare, improve the quality of public services, and increase efficiency in the smart agriculture sector (Smart Farming), tourism, and other villages (Zahriman, 2024).

The digitalization of Indonesia's villages is currently undergoing significant development. To encourage the digitalization of villages, the Indonesia government has launched various programs, such as providing internet access in villages, providing technology training to villagers, and developing public service applications that allow villagers to gain access to education, health services, and government administration. In addition, the private sector can also help with village digitalization by providing the necessary investment and technology. The goal of the program is to improve the quality of life of rural communities, improve access to services and information, and boost the local economy (Zahriman, 2024). Village digitalization is essential to reduce the gap between urban and rural areas, as well as improve village people's access to public, economic, and technological services. Here are some of the urgency of village digitalization:

1. **Transparency and Access to Information:** Digital villages enable transparency in government and public services, and make it easier to obtain information and gain access to public services (Kusnadi, 2021).
2. **Improvement of Public Services:** Village digitalization helps in the development of more effective and efficient public services, including health, education, and government administration (Zahriman, 2024).
3. **Marketing and Economy:** Digital villages can be a catalyst for improving village economic performance by promoting village products and potentials through social media, e-commerce, and applications that are in accordance with the character of the village (K. Desa, 2020).
4. **Community Empowerment:** Digitalization helps improve the digital literacy of village communities, allowing them to be more empowered in implementing technology in their daily lives (Kusnadi, 2021) (Zahriman, 2024).
5. **Community Welfare:** Digitalization can help reduce the economic gap between urban and rural areas by expanding economic opportunities for rural communities (Zahriman, 2024).
6. **Technological Advancements:** Village digitalization allows the application of smart agricultural technology, IoT sensors, and data analysis, which can increase farmers' productivity and reduce economic disparities (Zahriman, 2024).

7. Synergy between Government and Community: Digitalization requires good synergy between the village government and the community to achieve empowerment at the national level.

With village digitalization, it is supported by various laws and regulations, such as Law of the Republic of Indonesia Number 6 of 2014 concerning Villages, and Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 20 of 2018 concerning Village Financial Management. With the digitalization of villages, it is hoped that the gap between urban and rural areas can be reduced, and rural communities can feel the real benefits of technological advancements. Village digitalization is important to ensure that technological development is evenly distributed to remote villages, so that rural communities can access and integrate information technology to improve efficiency and services (Zahriman, 2024) (Administrator, 2023). Village digitalization in Banten Province has become the focus of attention in recent years. These efforts aim to improve public services, accelerate village development, and encourage local economic growth. Banten Province has great potential in village digitalization (Fitriana, 2024). With a large population and diverse natural resource potential, digitalization can be a catalyst to improve people's welfare. In addition, the support of the local government and various related parties is also a driving factor in implementing digitalization in villages and there are challenges that must be faced such as limited infrastructure, where uneven internet access, especially in remote areas, is the main obstacle. Human Resources, the lack of human resource capabilities and competencies in the field of information technology, as well as public awareness, The level of public awareness of the importance of digitalization still needs to be increased (K. Desa, 2023).

To increase village digitalization, the Banten Provincial government has made several efforts, namely holding training, regional governments and various institutions have held various trainings to increase the capacity of village officials in utilizing information technology. Application Development, several applications have been developed to support village government management, such as applications for administrative services, village financial management, to the marketing of MSME products des. Carrying out cooperation with various parties, such as technology companies, non-governmental organizations, and universities, is carried out to accelerate the village digitalization process (A. Desa, 2023). Examples of the implementation of village digitalization in Banten Province:

- (1) Digdaya Village Application: This application was developed to facilitate village management, ranging from village information systems, village portals, population data, citizen services, to MSME Market.
- (2) Village E-commerce: Several villages in Banten have developed e-commerce to market their local products.
- (3) Village Information System: Many villages have implemented village information systems to manage village data digitally

There are several digital villages in Banten Province, namely those managed by Bank bjb KCK Banten by making six pilot villages digital villages. This digital village is used to manage

village financial governance through digital, for this reason there are six villages that are pilots. The six villages that are pilots include Sidamukti Village, Baros District, Domas Village, Pontang District, Situ Teratai Village, Cikande District, Tenjo Ayu Village, Tanara District, Cijeruk Village, Kibin District, and Sindangheula Village, Pabuaran District, the purpose of implementing a digital village is to facilitate related finances in the village, both loans, tax payments, electricity payments, digital villages will be managed directly by village officials (Arif Soleh, 2022).

#### **4. Determining Factors for the Success of Village Innovation in Lebak Regency**

The need for development of disadvantaged villages considers 3 aspects. First, the need for development of disadvantaged villages based on laws and regulations. Second, the development needs of disadvantaged villages based on IDM (Building Village Index) include 3 components, namely:

- (1) Social Resilience Index (IKS);
- (2) Economic Resilience Index (IKE); and
- (3) Environmental Resilience Index (IKL).

Third, the need for village development considers the potential and constraints of the village (Suroso, 2020). The determinants of the success of village digitalization include several important aspects, namely:

##### **1. Strong Technology Infrastructure**

Building adequate technological infrastructure, including fast and affordable internet access, as well as providing information technology in villages (Zahrinan, 2024). Some of the information technology infrastructure needs that need to be considered include: Fast and affordable internet access, Good communication networks, Digital devices and stable electricity infrastructure (Zahrinan, 2024) (Akbar, 2023a) (Deandlles Christover et al., 2023).

##### **2. Education or Digital Education**

One way to understand digital knowledge and skills is through the concept of digital capital (Ragnedda, 2018). Digital capital is a useful idea because it implies the possibility of exponential expansion. Like other types of capital, the more capital a person or group has (e.g. social, cultural, political capital), the more likely they are to have the opportunity to obtain more capital (Istanti, 2021). In other words, people who have more digital capital are more likely to interact with digital technology in a way that can increase their digital capital. As a result, investments in digital capital creation can generate profits that far exceed the initial assistance provided. As a simple example, a municipality can work with elderly residents to teach them how to use *e-Government* services. The acquired abilities in turn allow for further digitization, offering an increase in one's digital talents as well as creating other indirect benefits, for example reducing social isolation (Lam et al., 2020).

### 3. Development of Public Service Applications

Developing digital applications and platforms to facilitate village communities' access to public services such as health, education, and government administration (Deandlles Christover et al., 2023) (Zahrیمان, 2024). Law Number 25 of 2009 concerning Public Services, which regulates the provision of good and fair public services for all levels of society, as well as various regulations that regulate personal data protection, information security, and information technology, are the legal basis for the development of public service applications in Indonesia (Zahrیمان, 2024).

### 4. Regulation

Village digitalization in Indonesia is an important step to improve the quality of public services, the efficiency of village government, and the welfare of the community. Policies that support the use of digital technology in various aspects of public services. Legal products that can be interpreted in the context of the development and implementation of the Digital Village program are (Tirayoh & Waworundeng, 2023):

1. Law of the Republic of Indonesia Number 6 of 2014 concerning Villages. Article 73 paragraph (2) states that local governments are obliged to provide technical support and infrastructure facilities to improve the quality of public services in villages.
2. Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management. Article 3 paragraph (2) states that the government is obliged to provide technical support and infrastructure facilities to improve the quality of the environment in the village.
3. Law Number 25 of 2009 concerning Public Services Article 1 states that the government is obliged to provide quality, efficient, and effective public services, including in villages.
4. Law of the Republic of Indonesia Number 11 of 2008, concerning Information and Electronic Transactions. Article 1 states that the government is obliged to provide technical support and infrastructure facilities to improve the quality of public services in villages.
5. Regulation of the Minister of Villages, Development of Disadvantaged Villages, and Transmigration of the Republic Number 11 of 2018 concerning Guidelines for the Preparation of Village Development Decisions (RPD).

So far, the ministry has provided regulatory support regarding the priority use of village funds to accelerate stunting reduction in villages and various intervention activities. The Ministry of Rural Development and Tourism is included as one of the institutions that are members of the stunting convergence action (Maulana et al., 2023). In addition to regulations, technological innovation also plays an important role in the digital transformation of villages. For example, the digides program ensures that village administration services are more efficient through information technology (Akbar, 2023c).



## 5. Human Resources

The success of digital innovation in villages is highly dependent on human resources (HR). To produce effective and efficient innovations, qualified and competent human resources are needed (Purba et al., 2023) Trained and qualified human resources are very important in carrying out the concept of digitalization (Deandlles Christover et al., 2023). One of the important factors for the success of digital innovation in the village is the quality of human resources. Qualified human resources have adequate knowledge and ability to manage and develop digital technology. The success of digital innovation in the village depends on the technical skills of employees. Employees with good technical skills can maximize the use of digital technology to improve the efficiency and effectiveness of village management.

To improve the quality of human resources in the management of digital innovation in villages, it is very important to provide training and development of human resource skills. If human resources do not have the necessary knowledge and skills, it will be difficult to manage the village information system effectively. Therefore, efforts to improve the quality of human resources through training and skill development, for example, in the implementation of village information systems, can increase effectiveness and efficiency (Panda, 2023).

## 6. Budget

One of the important elements in managing village finances effectively and efficiently is spending on digitalization innovation. The budget aims to accelerate village communities' access to information and communication technology (ICT), according to the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (Kemendes PDTT). The budget includes the procurement of ICT infrastructure such as internet networks and hardware, as well as providing training to village communities on how to optimize the use of these technologies (Akbar, 2023c).

The budget is also used for training and development of human resources. Training of village employees helps them understand and manage new digital technologies. For example, the budget is used to provide training to village employees so that they can manage information systems properly, showing that the budget is not only used to buy technology devices (Unisba, 2024). In addition, the budget is used to accelerate economic growth and community welfare. With the right budget, villages can build digital-based markets or shopping platforms that accommodate many small and medium enterprises (MSMEs) in the village and provide new opportunities for their communities (Solusi, 2023).

## 7. Collaboration and Coordination

Collaboration and coordination between the government, the private sector, and the community in the digitalization innovation of disadvantaged villages is essential for the progress and inclusion of villages. Effective cooperation allows villages to optimize the resources they have and overcome problems that arise during the digitization process (Akbar, 2023d)(Digides, 2023)(RI, 2023)(Akbar, n.d.)(Fajar, 2022).

Here is a further explanation of how this collaboration and coordination can help in the digitalization innovation of disadvantaged villages.

1. **Government-Private Collaboration:** To develop village digitalization innovations, collaboration between the government and private companies is essential. The private sector can provide the necessary technology and innovation, while the government can provide support and facilities. This shows that cooperation between companies and the government can greatly benefit disadvantaged villages (Akbar, 2023b).
2. **Community Inclusion:** In the process of village digitalization, the community must be involved. With adequate education and training, the community must be involved in the development and use of digital technology. For example, training village employees helps them understand and run information systems well. This shows that digitalization involving the community can increase the efficiency and effectiveness of village management (Akbar, 2024).
3. **Coordination and Socialization:** In the process of village digitalization, coordination and socialization are also very important. Communities, governments, and private companies must work together to spread the benefits and importance of digital technology. For example, research on Digital Villages found that villages with good socialization are more inclusive and advanced. This shows that good coordination and socialization can help overcome problems and advance underdeveloped villages (Fajar, 2022).

There are many benefits that can be obtained from the existence of a village website, namely improving the image of the village, improving the quality of village human resources, increasing village excellence, and conveying and disseminating information in the village (Anwar et al., 2020).

## **5. Existing Village Digitalization in Banten Province**

With village digitalization, it is supported by various laws and regulations, such as Law of the Republic of Indonesia Number 6 of 2014 concerning Villages, and Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 20 of 2018 concerning Village Financial Management. With the digitalization of villages, it is hoped that the gap between urban and rural areas can be reduced, and rural communities can feel the real benefits of technological advancements. Village digitalization is important to ensure that technological development is evenly distributed to remote villages, so that rural communities can access and integrate information technology to improve efficiency and services (Zahrinan, 2024) (Administrator, 2023).

Village digitalization in Banten Province has become the focus of attention in recent years. These efforts aim to improve public services, accelerate village development, and encourage local economic growth. Banten Province has great potential in village digitalization (Fitriana, 2024). With a large population and diverse natural resource potential, digitalization can be a catalyst to improve people's welfare. In addition, the support of the local government and various related parties is also a driving factor in implementing digitalization in villages and

there are challenges that must be faced such as limited infrastructure, where uneven internet access, especially in remote areas, is the main obstacle. Human Resources, the lack of human resource capabilities and competencies in the field of information technology, as well as public awareness, The level of public awareness of the importance of digitalization still needs to be increased (K. Desa, 2023).

To increase village digitalization, the Banten Provincial government has made several efforts, namely holding training, regional governments and various institutions have held various trainings to increase the capacity of village officials in utilizing information technology. Application Development, several applications have been developed to support village government management, such as applications for administrative services, village financial management, and marketing of MSME products. Carrying out cooperation with various parties, such as technology companies, non-governmental organizations, and universities, is carried out to accelerate the village digitalization process (A. Desa, 2023). Examples of village digitalization in Banten Province:

1. Digdaya Village Application: This application was developed to facilitate village management, ranging from village information systems, village portals, population data, citizen services, to MSME Market.
2. Village E-commerce: Several villages in Banten have developed e-commerce to market their local products.
3. Village Information System: Many villages have implemented village information systems to manage village data digitally

#### **D. CONCLUSION**

This research aims to explore the role of digital innovation in the development of disadvantaged villages in Banten Province, especially in the border area of Lebak Regency. Based on the findings and data analysis, the conclusions of this study are as follows:

1. Improving Access and Quality of Public Services: Digital innovation has significantly increased village communities' access to various public services. The use of digital applications for administration and public services simplifies the process and reduces bureaucracy, thereby increasing efficiency and transparency in village management.
2. Local Economic Empowerment: The implementation of digital technologies in economic sectors, such as e-commerce platforms and digital payment systems, has helped local farmers and entrepreneurs to market their products more widely and more efficiently. This contributes to an increase in the income and welfare of the village community.
3. Education and Skills Enhancement: Digital-based training and education programs provide opportunities for village communities to access new knowledge and skills. This includes training on the use of information technology, which supports the capacity building of individuals and communities.

4. **Strengthening Communication and Coordination Networks:** Digital innovation facilitates better communication between local governments, communities, and non-governmental organizations. Digital communication platforms allow for more effective coordination in the implementation of development programs and responses to local issues.
5. **Infrastructure Challenges and the Digital Divide:** Despite significant progress, the main challenges faced are the limited infrastructure and the digital divide between more developed areas and disadvantaged villages. Limited internet access and adequate technological devices are still an obstacle to optimizing the use of digital innovation.

Overall, digital innovation has great potential to drive development in disadvantaged villages, with positive impacts that include improved access to services, economic empowerment, and skills development.

## **E. SUGGESTION**

Here are some suggestions for Digital Innovation in Building Disadvantaged Villages in Banten Province Case Study of the Border Areas of Lebak Regency:

1. **Improvement of Digital Infrastructure,** prioritizing the development of basic infrastructure such as high-speed internet networks and technological devices. This can be done by working with internet and telecommunications service providers to build the necessary infrastructure, including communication towers and public Wi-Fi in strategic locations.
2. **Digital Training and Literacy Program,** organizes training programs to improve the digital skills of local communities. This can be done in collaboration with educational institutions and non-governmental organizations to provide training in basic digital skills such as the use of computers, the internet, and digital applications that are relevant to local needs.
3. **Digitalization of Micro, Small, and Medium Enterprises (MSMEs),** supports local MSMEs in adopting digital technology for marketing, management, and transactions.
4. **Development of Special Applications for Local Needs,** developing digital applications that suit local needs and potentials, such as agricultural, health, and education applications.
5. **Development of a Community Participation Platform,** creating a digital platform that allows the community to be involved in the decision-making process and development planning. Using an app or website for public consultation, problem reporting, and conveying community aspirations. Make sure that this platform is easily accessible and used by all walks of life.
6. **Community Empowerment through Social Media and Digital Content,** using social media and digital platforms to raise awareness, share information, and promote local culture. Train locals in the use of social media to promote local products, activities, and culture. Create digital content that is engaging and relevant to the community.

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