JURNAL BINA PRAJA
Journal of Home Affairs Governance

ARTICLE

Digital Village

The Importance of Strengthening Rural Resilience in the Digital Age

Worry Mambusy Manoby [1], **Afriyanni** [2], **Suci Emilia Fitri** [3], **Melati Ayuning Pranasari** [4], **Eny Setyaningsih** [5], **Rosidah** [6], **Herie Saksono** [7] ✉

[1, 3, 4, 5, 6, 7]Research and Development Agency, Ministry of Home Affairs, Republic of Indonesia, Jalan Kramat Raya No. 132, Senen, Jakarta Pusat, Indonesia, [2]Research and Development Agency of Riau Province

✉ herie.saksono26@gmail.com

Citation: Manoby, W. M., Afriyanni, Fitri, S. E., Pranasari, M. A., Setyaningsih, E., & Rosidah. (2021). Digital Village: The Importance of Strengthening Rural Resilience in the Digital Age. Jurnal Bina Praja, 13(1), 53–63. https://doi.org/10.21787/jbp.13.2021.53-63

Received: February 1, 2021

Accepted: April 5, 2021

Published: April 30, 2021

Abstract: The village is the lowest government level located in the administrative area of districts/cities municipalities throughout Indonesia. The rapid advancement of digital technology has brought global changes that require villages to carry out transformation and adaptation. In responding to this, what should be done for the sustainability of the values of life, preserving traditions, culture, and local wisdom, and building human capital to improve the welfare of its citizens? This study aims to find an extraordinary strategy to realize rural resilience through a digital village. The study used a qualitative method with case studies in two villages: i) Cijengkol Village and ii) Sepakung Village. This study finds the importance of digitalization starting from the village. The apparatus and community of Cijengkol Village are increasingly enjoying the benefits of digitization to complete various daily affairs.

Meanwhile, Sepakung Village has published its natural wealth and tourism digitally. The digital village is one of the ideal solutions for rural resilience in the digital era. Human capital is the main factor. Advances in digital technology and digitalization of villages help manage village government, including the development of social life in the community in the village. Second, the village has a global presence, where digitalization has helped change the village's image and the lives of its people. It is hoped that the government will be able to initiate a participatory digital village that is responsive to the dynamics of digitalization, inclusive development, the anticipation of disasters, and digital-based environmental sustainability.

Keywords: digital village; village resilience; Cijengkol village; Sepakung village

1. Introduction

The Industrial Revolution 4.0, which was echoed in the World Economic Forum (WEF), has been implemented in Indonesia. Schwab (2016, p. 12) stated that, age of the digital revolution marked by more ubiquitous and the mobile internet, more efficient, artificial intelligence, and machine learning. This digital dynamic has become the basis for the 4.0 Industrial Revolution, which is increasingly spreading and reaching remote villages and rural areas in Indonesia. When referring to the territorial construction of government, ideally, rural areas are the starting point for the start of the 4.0 industrial revolution for the sake of building rural resilience - relying on digital power and prioritizing digitalization, which analyzes the territorial resilience of the Andalusian countryside in Spain, exposing the different aspects of economic, social, human, and natural capital driving the resilient territorial dynamics of rural Andalusia.

The village is the lowest government level in the district/city government's administrative area in Indonesia. In the five years since the enactment of Law Number 6 of 2014 concerning Villages passed and promulgated on the same day, Wednesday, January 15, 2014, the developing village is very dynamic. When referring to the Regulation of the Minister of Home Affairs Number 18 of 2013 concerning Code and Data for Government Administration Areas, the number of villages is only around 72,944, with the largest number in Central Java Province, approximately 8,577 villages (11.76%). In 2019, the number reached 74,957 villages. This means that there were other 2013 new villages (2.76%). This number is based on the Attachment to the Minister of Home Affairs Regulation Number 137 of 2017 concerning Code and Data for Government Administration Areas, where there are 416 Regencies, 98 Cities, 7,201 Districts, 8,490 wards, and 74,957 villages in the total area of Indonesia which reaches 1,916,862.20 Km2 with population 261,142,385 inhabitants.

This study uses the village's definition, which is defined as village government, village officials, and residents in the village who lives, manage their potential, live and work, or carry out their daily activities in the village. Based on the provisions of Article 1 Number 1 of Law Number 6 of 2014, a village is a village. A customary village, or what is referred to by another name, is a legal community unit that has territorial boundaries that are authorized to regulate and administer government affairs, local origin's interest, or traditional rights that are recognized and respected in the government system of Indonesia. Furthermore, Article 1 Number 2 states the Village Government as and the administration of affairs of the interests of the local community in the government system of the Unitary State of the Republic of Indonesia. At the same time, the Village Government is the Village Head or referred to by any other name assisted by the Village apparatus as an element of Village Government administrators (Article 1 Number 3).

Specifically, in rural residents, the village population will be abandoned because they prefer to work and live in urban areas. Indonesian Population Projection 2015-2045 Results of The Intercensal Population Surveys (SUPAS) 2015 (BPS-Statistics Indonesia, 2018, p. 39) informs that the percentage of the urban population in 2025 is estimated at 60.0%. Furthermore, in 2035 it is around 66.6%, and by 2045 it is estimated that 72.9% of the population will live in urban areas. If the number of villages is assumed to increase, there will also be population migration from urban villages with a significant increase. It is predicted that in 2045 only 27.1% of the population will live in rural areas. This means that there is a transfer of human capital from the village to the city. Urban areas are seen as being able to become a means of shaping thought patterns, action patterns, attitude patterns, business patterns, and planned lifestyles with imagination based on natural wealth, culture, and regional excellence and even giving freedom to everyone to increase individual capacity and develop their pre-professionalism by the dynamics of development and technological progress (Saksono, 2012, p. 97).

Rural resilience is related to the number, distribution, situation, condition, and state of Indonesia's villages. An area's resilience is the accumulation of various natural

resource potentials, regional characteristics, social and cultural life, human capital, and productivity. The existence of human capital determines the potential governance of the village to produce goods/services. In the study by Saksono (2019, p. 110), Human capital becomes a set of knowledge, expertise, skills, attitudes, capabilities, and integrity possessed by human resources. It is applied professionally to create values in the global economic system and social assets multiplied and developed to increase productivity, satisfaction, and performance organization. It can be interpreted that productivity in an area is highly determined and depends on the capacity of human capital (human capital), level of literacy, creativity, and innovation. This study is strengthened through the results by Anwar (2017) in Java, which concludes that human capital has a positive and significant contribution to regional economic growth. De la Fuente (2011) in Sari & Farah (2014, p. 23) emphasized that the theoretical model that explains the relationship between human capital and economic growth is built on the hypothesis that the knowledge and skills in humans will directly increase their productivity and increase the ability of an economy to develop and adopt new technologies.

Currently, in the digital era, villages and their communities are faced with rapid technological advances and waves of digitalization. This global change requires villages to transform and adapt. Fahmi & Sari (2020, p. 1) identified that the transformation and digitalization of rural areas have led to increased life satisfaction and happiness, especially for those directly involved in the production, who have the opportunity to take advantage of developments in knowledge and technology, and use their skills for livelihood strategies in the village. According to the Wikipedia page of the Free Encyclopedia, it is explained that digital terminology comes from the word Digitus, which in Greek means the fingers. If we count the fingers of an adult, it will add up to ten. The value often consists of 2 radices, namely: 1 and 0. Therefore Digital is a depiction of a number state consisting of 0 and 1 or off and on (binary numbers). All computer systems use digital systems as their database. It can also be referred to as Bit (Binary Digits) https://id.wikipedia.org/wiki/Digital. Besides, Aji (2016, p. 44) also emphasized that digital technology is a technology that no longer uses human or manual labor but tends to be an automatic operating system with a computerized system or a format that a computer can read. The phrase digital village is in the study is a village that organizes village government affairs and the interests of the village community to manage the performance and social life of the community based on digital processions, digitization, and/or digitalization.

According to Mitchell & OECD (2013, p. 4) stated that Resilience: The ability of households, communities, and nations to absorb and recover from shocks while positively adapting and transforming their structures and means for living in the face of long-term stresses, change, and uncertainty. When the concept of resilience is linked to the village, Heijman et al. (2007, p. 383) defines rural resilience as the capacity of rural areas to adapt to external circumstances that change in such a way that a satisfactory standard of living is maintained, where the rural resilience perspective refers to on the ability of villages to cope with the economic, ecological, and cultural vulnerabilities of their communities.

Is it true that villages need digital technology? Roberts et al. (2017, p. 358) revealed that rural communities had embraced digital technology when it is made available to villages. It means that digitization is urgent for villages, village governments, and rural communities to pay attention to the geographical conditions and topographical contours of the village. Mora-Rivera & García-Mora (2021, pp. 14–15) It also supports the importance of internet access for rural communities because it helps reduce poverty. Internet access is determined by human capital features, where the possibility of accessing the internet is more limited for people with a higher level of vulnerability, especially in rural areas. Internet access impacts poverty alleviation, where universal access to internet services contributes to improving the welfare of the population of a country. The benefits of having access to the Internet are

shown to be more significant for rural areas with poverty indicators showing higher vulnerability (extreme poverty, both in income and multi-dimensional).

The digitization of villages and villages further underpins the sustainability of remote rural home businesses and digital inequality (Philip & Williams, 2019, p. 306). This can be interpreted that the digital village is still a need and hope in a digitally underserved community. Young (2019, p. 66) undertake an exploration of rural digital geography associated with new landscapes of social resilience. As a result, the limited framing of rural ICT use reinforces the normalization of a highly technocratic approach to rural development. People use digital technology to build alternative social and economic practices that rely on digital platforms to build village resilience. In the 4.0 industrial revolution, attention and application of technology should be given to villages and other suburbs. This is because technological developments and the dynamics of digitalization will fundamentally and comprehensively overhaul the pattern of people's lives. The benefits and impacts of digital technology advances are important for both urban and rural areas, so they require wise thinking. According to Cowie et al. (2020, p. 169), Smart villages that apply digital technology must be prepared by discussing physical and cultural barriers in rural areas so that they are not left behind during the 4.0 industrial revolution. Even Haenssgen (2018, p. 358) has proven the importance of digitization and the advantages of digital technology diffusion as it eases the reach of health services in rural India, where villagers are adapting through increased use of cell phones to access health care in rural areas.

The research questions are: how do digital villages strengthen village resilience? To what extent are the benefits of a digital village? This study seeks to dissect it by exploring two (2) digital villages, comparing and analyzing them to obtain solid arguments regarding the importance of a digital village that can strengthen villages in the digital era and prosper villages characterized by the archipelago.

2. Methods

This research uses a qualitative approach through case studies. Case studies are selected to obtain data/information that is more focused, in-depth, and comprehensive. According to Rahardjo (2017, p. 3) stated that case study is a series of scientific activities carried out intensively, in detail, and in-depth about a program, event, and activity, whether at the level of an individual, group of people, institution, or organization in-depth knowledge of the event. Usually, the selected events, which are referred to as cases, are real-life events, which are taking place, not something that has passed.

Primary data collection was carried out through interviews with the village head, village secretary, village officials, and stakeholders in each village. This study is an expression of personal curiosity, which was carried out independently in early 2019. Secondary data were obtained through institutions authorized to publish data/information and various previous studies.

The scope of the study covers two (2) villages in two (2) sub-districts in two (2) districts in two (2) provinces. These villages are i) Cijengkol Village in Caringin District, Sukabumi Regency, West Java Province; and ii) Sepakung Village in Banyumanik District, Semarang Regency, Central Java Province. The determination of Cijengkol Village's locus was based on information from electronic mass media and because of its relatively easy-to-reach existence. Sepakung Village's election was based on considerations of efficiency and effectiveness, which were carried out simultaneously while assisting research and development activities in Central Java Province. Based on the village typology, both are mountainous villages, but they are located in the hinterland. If viewed spatially, the village's existence is centered on one mainland area (not an island/archipelago). In contrast, in terms of their economic potential, both villages have rice fields, fields, plantations, and livestock, along with village forests. Especially for Sepakung Village, which is at an altitude and on the slopes of

Mt.Telomoyo, has tourism potential with a village development level with the status of a self-sufficient village.

3. Results and Discussion

3.1. Towards a Digital Village

Digitalization has transformed the governance of Cijengkol and Sepakung Villages and has even affected people's lives. Digitalization is increasingly meaningful when juxtaposed with various interests, especially the fulfillment of life necessities connected across time and space boundaries and can be carried out quickly, cheaply, and able to reach remote rural areas. Sepakung Village, which relies on the marketing of its tourism potential, is increasingly convinced and requires digitalization. According to Reichstein & Härting (2018, p. 1484), which signals the importance of digitalization is an implication of customers' changing demands in the digital world in the context of tourism. Potential changing customer needs identified include digital services, digital marketing, data mining, and online travel communities. In essence, both Cijengkol and Sepakung Villages require specific resilience to provide a livelihood for the community according to the village area's characteristics. This is where the importance of reshaping the role and function of rural areas as a place that is supported by the capacity of their strong communities.

Towards a digital village, this study looks at the existence of villages according to their typology. The typology of villages is guided by classification (Suparmini & Wijayanti, 2015, pp. 40–62), as shown in Table 1.

Table 1. Typology of Villages

No	Basic Aspects of Typology	Typology of Villages	Description
1.	Physical environment	1.1. Mountain Village 1.2. Hill Village 1.3. Plain Village 1.4. Coastal/Beach Village 1.5. Small Islands Village	
2.	Geographical to Growth Centers	2.1. Urban Village 2.2. Suburb Village 2.3. Intercity Corridor Village 2.4. Rural Village 2.5. Isolated Village from the Development Center	
3.	Spatial	3.1. Village along the coast 3.2. Village Center 3.3. Linear Village in the Lowlands 3.4. Villages Surrounding Certain Facilities	
4.	Village Settlement Patterns Based on Spatial Distribution	4.1. Scattered Farmstead Community 4.2. Cluster Village 4.3. Linear Village	4.3.1. Linear Patterns Following the Path 4.3.2. Linear Pattern Following the River and Linear Pattern Along the Coast
5.	Economic Potential	5.1. Rice Field Village 5.2. Village Farming 5.3. Plantation Village 5.4. Animal Husbandry Village 5.5. Fishing Village 5.6. Village in the Forest and on the Edge of the Forest 5.7. Mining Village 5.8. Craft and Industry Village 5.9. Medium and Large Industrial Villages 5.10. Tourism Village 5.11. Service and Trade Village	
6.	Level of Development	6.1. Self-Help Village 6.2. Swakarsa Village 6.3. Self-sufficient Village	
7.	Village Arrangement System	7.1. Traditional Village 7.2. Autonomous Village 7.3. Administrative Village	

Source: Suparmini & Wijayanti (2015), Processed Data. 2019

Cijengkol and Sepakung Villages are geographically located in mountainous areas. The location is relatively far from the district capital, so the village seems remote. Its existence has triggered the Cijengkol Village government's curiosity and the Sepakung Village government and the community to manage village resilience and introduce and popularize it is potential worldwide. In Cijengkol Village, which is based on agriculture, the application of digitization has had multiple impacts, especially for the development and management of agricultural and livestock potential, promotion of tourism, and marketing of various superior rural food products. Lajoie-O'Malley et al. (2020, p. 1) ensure that digital agricultural technology can influence the delivery of future food ecosystem services that are taken into account in science, technology development, and policymaking with the priority of maximizing food yields that lead to increased food security.

Identification produces data on reinforcing aspects as a precondition in managing village resilience through digital villages. Fourteen reinforcing aspects are expected to maintain village resilience against various shocks and pressures from outside the village, as presented in Table 2.

Table 2. Aspects of Digital Village Reinforcement to Increase Village Resilience

Aspects of Reinforcement	Name of Digital Village	
	Cijengkol Village	Sepakung Village
Territoriality	Area: 287,252 Ha. Population: 6,334 people Location: 600-1200 masl. Hamlet: 5 Kedusunan RW: 11 Regions RT: 30 Wilayah Family Card: 1,918 families Orbitation to sub-District: 3 km Orbitation to District: 46 km Postal Code: 43154 Typology: Developing Village / Self-Help Village	Area: 1,052 Ha. Population: 4,519 people Location: 1,600 masl. Hamlet: 12 Kedusunan RW: 17 Regions RT: 40 Regions Family Card: 1,357 KK Orbitation to sub-District: 10 km Orbitation to District: 35 km Postal Code: 50664 Typology: Developing Village / Self-Help Village
Initiator (Digital Village)	Ferry Sanjaya, Chairman of the Community Information Group (KIM) and Cijengkol Bersatu (CIBERS)in Sukabumi Regency supported by Haer Suhermansyah, Head of Cijengkol Village	Ahmat Nuri, Head of Sepakung Village; and Sa'dullah, Secretary of Sepakung Village
Background of Development	Innovations to Break Through Underdevelopment and Change the Status of Underdeveloped Villages	Efforts to Develop Tourism Potential and fulfill the Needs of Village Communities
Year of Initiation / Development	Early Initiation - 2017 Inauguration & Publication - 2018	Early Initiation - 2017 Inauguration & Publication - 2018
Process	Development through self-help KIM Cibers & supported by DKIP Sukabumi District through server facilitation Smart Village Socialization by Cijengkol Village Officials	Sepakung Village Government; The BTS tower is managed by the Jaya Sepakung Village Owned Enterprise
Budget (Initiation Process)	Contribution of KIM Cibers Rp. 4,700,000.00 Rp. 20,000,000.00 (Smart Village Socialization)	Village Owned Enterprise Rp. 120.000.000,00
Product	1. The Smart Desa application (available on the Play Store) includes 8 (eight) Features: TV Cibers, Village News, Check Bills (PBB), Online Mail, Online Village Development Plan Deliberation (Submission Form), Village Chat Group, Quick Response 24 Hours (Contact), Ambulance Emergency Calls, & Market Place; 2. The e-Voting application (RT / RW); 3. Ambulance Driver Application 4. Delivery of letters to residents' homes (home delivery).	1. Government Services Applications
Home Village / Village Government	https://pemdescijengkol.com • Jl. CaringinCijengkolSukabumi • info@pemdescijengkol.com • +62 857 2000 4991 on WhatsApp	1. https://gosepakung.com 2. https://sepakung.id e-mail: sadullah.sepakung@gmail.com +62 857-4535-7090 on WhatsApp
Public Participation	1. Involvement of KIM Cibers Members 2. Journalist Community 3. Guava Farmer Group 4. Market Place Group 5. Home Industry	1. Collaboration with 7 (seven) Universities: (Diponegoro University, Satya Wacana University, Sebelas Maret University, Semarang University, Walisongo State Islamic University, Ngudi Waluyo University, Semarang PGRI University) 2. Youth Organization 3. Youth Group of Sepakung Village 4. Telomoyo Valley Tourism Awareness Group

Aspects of Reinforcement	Name of Digital Village	
	Cijengkol Village	Sepakung Village
Advantages	1. Efficiency and Effectiveness in Election of Head of RT and Head of Hamlet 2. Realization of Rural Information Media (e.g., Reducing Hoax News) 3. Education and Digital Literacy 4. Acceleration and Accuracy of Community Empowerment Program Transformation 5. Optimization of Market Place 6. Local Product Marketing 7. Collaboration intensity among stakeholders 8. The Intensive Social Action of Village Road Development 9. Changes in the Status of Underdeveloped Villages Self-Help Village	1. Public Service Becomes Easier, Cheaper, and Faster 2. Shorten the Village Administration Process Time 3. Service Budget Efficiency (Saves Operational Expenditures) 4. Accelerating the development of the village of tourism destinations
Accessibility	1. Limited road access along with poor road quality to/from Cijengkol Village 2. The scarcity of transportation mode connectivity to/from Cijengkol Village 3. Lack of telecommunication accessibility	1. Access to/from the Sepakung village is available with good quality roads 2. The lack of transportation mode connectivity to/from the Sepakung village
Problems/Obstacles	1. Limited existence of Telecommunication Towers or Transmitting Station Towers (BTS Tower *) 2. There has been no collaboration with Telkomsel 3. Not all RT areas are covered by telecommunication signals	• Access road to/from the Sepakung Village is relatively narrow; the curve is very steep and dangerous
Local Government Development and Support	• Department of Communication, Informatics, and Encryption (DKIP), Sukabumi District, West Java Province	1. Governor of Central Java (Inauguration of the Digital Sepakung Village) 2. Regent of Semarang
Expectation	1. More intensive coaching by the (Central) Government, the Regional Government of West Java Province, and the Local Government of Sukabumi District 2. Cijengkol Village is connected with market access to market various local products 3. Construction of Signal Amplifier Tower (BTS) 4. Widening and improving road/bridge access to/from Cijengkol Village 5. Implementation of Digital Literacy and Public Education	1. The Regional Government of Semarang District has widened the road to/from the village of Sepakung to 5—6m 2. Support from the Central Java Provincial Government to improve facilities, infrastructure, and marketing of tourism potential 3. Development of the Ministry of Tourism for the development of Digital Tourism in the village of Sepakung 4. Awareness and solidity of the people of Sepakung Village in maintaining traditions, customs, and culture 5. Support of village officials to educate and cultivate Digital Literacy 6. Digital Village has a dual economic impact 7. Improve the quality of community education

Source: Interview Results. 2019. Processed Data. 2019.
**) The Head of Cijengkol Village calls it "BTS Tower."*

Table 2 reflects the triggers for implementing a digital village government to make it easier to manage village resilience, both in Cijengkol and Sepakung Villages. Both the Cijengkol Village Head and the Sepakung Village Head believe that the most practical, effective, economical, and efficient way to manage village resilience is to become a "Digital Village." Often rural tourism is lagging, so that literacy, creativity, and innovation must be presented. The development of rural tourism requires internet access and digitization, which is specially packaged for tourism. The digitization of tourism activities will accelerate the progress of tourism in the village. Zhou (2014, p. 11) describes the importance of identifying the image attributes of online destinations associated with the imagination of tourism and rural areas. This means that through a digital village, benefits will be obtained in education to optimize the village's potential. However, the village government is also required to carry out digital literacy so that digital influences can occur to promote village excellence.

This dynamic has inspired them to digitize the administrative processes, public services, and governance in both villages digitally. Based on digital technology, the digitization process and digitization have been carried out on several village administration activities. The village head, supported by the community, initiated branding for his village with the term "Digital Village." The courage to create a Digital Village is a form of leadership innovation. The goal is to introduce and disseminate the potential and existence of Cijengkol and Sepakung Villages. If we look geographically, mountain villages' presence certainly has various main obstacles, including the lack of accessibility, difficulty in reaching all corners of the village, and limited connectivity to

connect rural communities with the outside world. Likewise, with the idea of a young community in Cijengkol Village that seeks to start an e-commerce-based cooperative. This situation reflects the existence of a digital village increasingly accelerating economic growth in the village, even though the results cannot be felt directly in accordance Cristobal-Fransi et al. (2020, p. 1), where all the cooperatives still have a long way to go in terms of facilitating effective communication and interaction with their target publics. Therefore, the Internet's existence and the maturity level of e-commerce of food agribusiness cooperatives are a necessity in the digital era.

The initial pioneers of digitizing village governance began with governance and administration of public service administration. Digitalization eases the workload of village officials and accelerates the settlement of service affairs for villagers. In this context, the Cijengkol Village Government is innovating by making breakthroughs, namely: between documents to residents' homes. All forms that have been completed are administratively processed through a digital application, delivered directly by the village apparatus to the residents' homes. The village office management has also been digital-based and has become a solution to build rural resilience. This is to prove that the village government is present and meets the service needs of its citizens. On the other hand, a digital village is a means of village existence, publication of superior village potential (PUD), promotion of rural natural wealth, socio-culture, the friendliness of its inhabitants, and marketing media for various superior products.

3.1.1.Advantages of Digital Village and Rural Resilience

Efforts to use digital technology and digitalization in the implementation of village governance resulted in nine categories of benefits, especially for the community as beneficiaries. Here are advantages of a digital village, such as:

(1) village governance becomes faster, more transparent, and accountable;

(2) higher-quality public service administration;

(3) increasing productivity and income per capita;

(4) developing the capacity of individual villagers;

(5) increaseing employment and employment opportunities;

(6) digital literacy culture develops as a public need;

(7) development is based more on meeting the main needs of the village population.

(8) Accessibility-connectivity between villages and between residents is getting better and smoother; and

(9) increasing the ability of the population to manage the potential of the village into superior rural products and high-value commodities.

A digital village is a new form of adaptation for the village innovation framework. The benefits of digital villages are increasingly felt when all villagers have an equal perception and even contribute to advancing the digitalization of village governance. Digital villages are more able to mitigate disaster risk quickly, are more open to change and consequences, and are consistent in making improvements. The benefits of this digital village have direct implications for increasing village resilience. Initially, village potential was challenging to manage, market, and commercialize. Now the village's potential has become a mainstay commodity that is sought after and dominates the digital marketplace. The development of a digital village is intertwined with rural resilience in the digital era. This has been confirmed by Roberts, Anderson, et al. (2017, p. 382) that the village resilience framework reflects more critically on the relationship between digital connectivity, capacity building, and community participation.

In the socio-economic context, digital villages motivate residents to become more aware of digital technology and increase their digital literacy. Villagers can use digital technology to become new job opportunities that increase income through new jobs.

This then gave rise to social dynamics, which have triggered productivity and changes in rural communities' lifestyles. Villagers become actors in the rural economy who interact with world markets. This condition makes rural economic growth stronger, more quality, and more stable. If this situation continues, it will create rural economic resilience that can reduce disparities between villages and villages. Digitalization is the main driver for accelerated change and road arrangement towards a more harmonious, hygienic, and humane public service. The village's digitization will impact a spectrum of life, new ways of thinking and acting, communication, and social interactions. Likewise, with the application of a government system that ideally rests on ideas, inspiration, imagination, and innovation that generate added value, improve performance, and benefit humans (Saksono, 2020).

Rural resilience in the perspective of village digitization can be seen from eight aspects, namely: 1) the capacity of village government officials and the level of understanding of digital and digitalized villages; 2) digital literacy of society; 3) the use of a digital application system for village governance and public services; 4) ease of marketing of agricultural products and acceleration of the economy; 5) increasingly dynamic rural social life due to turbulence in receiving and/or sending data/ information and documentation as well as delivery of other news; 6) benefits that are felt directly by the community for the presence of village digitization; 7) digital inclusion; and 8) digital connectivity as recommended by Salemink et al. (2017) that rural development in the digital era demands the development of better digital connectivity to compensate for the remoteness of villages.

Digital literacy also grows along with demands for answers to villagers' curiosity to increase their insight and knowledge, especially in exploring village potential, managing, developing, and optimizing commercialization opportunities. The village government and villagers increasingly believe that digital technology in the village will further facilitate administrative management, village administration, improve service quality, develop the village, and capture village potential marketing opportunities. Later, this transformation will also impact citizens' growing awareness in maintaining, managing, and professionally preserving their rural environment. A digital village is an arena for collaboration between the village government, village residents, and village stakeholders. Each party is interested in jointly protecting and managing the village, which has various potentials, diversity of people, and natural conditions that are still natural and sustainable. Indirectly, the digital village has become a rural internal force capable of creating dynamic sustainability to increase villages' resilience towards independent villages.

4. Conclusion

The digital village is a solution for strengthening village resilience. A digital village will form the ability to mitigate, anticipate, adapt, absorb, adapt and accelerate global changes across countries. This is because, through digitalization, village accessibility will become more open, connected to the world, and even without access restrictions. This situation allows the transfer of knowledge and technology, social interaction, and communication between citizens of the world both through cyberspace and in actual reality. The digital village forms human capital and makes it the main determining factor in creating village resilience. The availability of adequate and evenly distributed human capital in the village is a pull factor for economic resilience, the creation of quality growth, human resource development, and increased income, which will reduce income inequality among villagers.

It is recommended to the Ministry of Home Affairs and the Ministry of Villages, Development of Disadvantaged Areas, and Transmigration (DPD-TT) to collaboratively schedule a Digital Village, which requires district/city governments to implement a minimum of ten Digital Villages in their respective regions. This stipulation should also be regulated explicitly in the 2020-2024 National Medium-Term Development Plan (RPJMN) document. Through this policy, the Government has initiated a participatory-

responsive digital village to the dynamics of digitalization and digitalization to accelerate inclusive development, strengthen rural economies, anticipate disasters, and preserve a digital-based environment. Likewise for the Provincial Government, to facilitate the implementation of increasing the capacity of human resources (HR), which is focused on strengthening digital literacy both for provincial, district/city, and village apparatus. Meanwhile, the district/city Government should organize education, training and assist in the implementation of the digital village and village digitalization.

Digitalization is increasingly accelerated when the Cijengkol and Sepakung Village Governments introduce the importance of digitalization in village governance to other villages. Likewise, the Cijengkol Village Government and the Sepakung Village Government can build synergies and collaborate to improve rural digital literacy, which is beneficial for the village's prosperity. Towards the business world, especially state-owned enterprises (BUMN), regionally owned enterprises (BUMD), and industrial operating in rural areas to help stimulate, encourage and accelerate digital literacy as well as the process of digitizing Government and village development, including the preparation of electrification infrastructure, telecommunications, and transportation connectivity and road networks between villages. Finally, efforts to measure the benefits and impacts of digital villages need to be carried out through new, more in-depth research by looking at sociological, ecological, human capital, managerial governance, digital literacy, digital inclusion, geographical constraints, economic growth, and the welfare of rural communities.

Acknowledgment

The author would like to express his appreciation for the kindness and participation of the resources in this study, especially to Mr. Haer Suhermansyah (Head of Cijengkol Village, Caringin sub-District, Sukabumi District, West Java Province), Mr. Ferry Sanjaya (Chair of the Community Information Group (KIM) Cijengkol Bersatu (Cibers) Cijengkol Village and Cijengkol Village Officials, Head of Services and officials of the Communication, Informatics and Encryption Service (DKIP) in Sukabumi District, as well as to Mr. Ahmat Nuri (Head of Sepakung Village) and Mr. Sa'dullah (Secretary of Sepakung Village) in Banyubiru sub-District, Semarang District, Central Java Province.

References

Aji, R. (2016). Digitalisasi, Era Tantangan Media (Analisis Kritis Kesiapan Fakultas Dakwah dan Komunikasi Menyongsong Era Digital). *Islamic Communication Journal, 1*(1), 43–54. https://doi.org/10.21580/icj.2016.1.1.1245

Anwar, A. (2017). Peran Modal Manusia terhadap Pertumbuhan Ekonomi Regional di Jawa. *Jurnal Economia, 13*(1), 79–94. https://doi.org/10.21831/economia.v13i1.13323

BPS-Statistics Indonesia. (2018). *Proyeksi Penduduk Indonesia 2015-2045 Hasil SUPAS 2015* (Revised). BPS-Statistics Indonesia.

Cowie, P., Townsend, L., & Salemink, K. (2020). Smart rural futures: Will rural areas be left behind in the 4th industrial revolution? *Journal of Rural Studies, 79*, 169–176. https://doi.org/10.1016/j.jrurstud.2020.08.042

Cristobal-Fransi, E., Montegut-Salla, Y., Ferrer-Rosell, B., & Daries, N. (2020). Rural cooperatives in the digital age: An analysis of the Internet presence and degree of maturity of agri-food cooperatives' e-commerce. *Journal of Rural Studies, 74*, 55–66. https://doi.org/10.1016/j.jrurstud.2019.11.011

Fahmi, F. Z., & Sari, I. D. (2020). Rural transformation, digitalisation and subjective wellbeing: A case study from Indonesia. *Habitat International, 98*, 102150. https://doi.org/10.1016/j.habitatint.2020.102150

Haenssgen, M. J. (2018). The struggle for digital inclusion: Phones, healthcare, and marginalisation in rural India. *World Development, 104*, 358–374. https://doi.org/10.1016/j.worlddev.2017.12.023

Heijman, W., Hagelaar, G., & Van Der Heide, M. (2007). *Rural Resilience as a New Development Concept*. 383–396. https://doi.org/10.22004/AG.ECON.162359

Lajoie-O'Malley, A., Bronson, K., van der Burg, S., & Klerkx, L. (2020). The future(s) of digital agriculture and sustainable food systems: An analysis of high-level policy documents. *Ecosystem Services, 45*, 101183. https://doi.org/10.1016/j.ecoser.2020.101183

Mitchell, A. & OECD. (2013). *Risk and Resilience: From Good Idea to Good Practice* (OECD Development Co-Operation Working Papers No. 13; OECD Development Co-Operation Working Papers, Vol. 13). https://doi.org/10.1787/5k3ttg4cxcbp-en

Mora-Rivera, J., & García-Mora, F. (2021). Internet access and poverty reduction: Evidence from rural and urban Mexico. *Telecommunications Policy, 45*(2), 102076. https://doi.org/10.1016/j.telpol.2020.102076

Philip, L., & Williams, F. (2019). Remote rural home based businesses and digital inequalities: Understanding needs and expectations in a digitally underserved community. *Journal of Rural Studies, 68*, 306–318. https://doi.org/10.1016/j.jrurstud.2018.09.011

Rahardjo, M. (2017). *Studi Kasus dalam Penelitian Kualitatif: Konsep dan Prosedurnya* [Teaching Resources]. http://repository.uin-malang.ac.id/1104/

Reichstein, C., & Härting, R.-C. (2018). Potentials of changing customer needs in a digital world – a conceptual model and recommendations for action in tourism. *Procedia Computer Science, 126*, 1484–1494. https://doi.org/10.1016/j.procs.2018.08.120

Roberts, E., Anderson, B. A., Skerratt, S., & Farrington, J. (2017). A review of the rural-digital policy agenda from a community resilience perspective. *Journal of Rural Studies, 54*, 372–385. https://doi.org/10.1016/j.jrurstud.2016.03.001

Roberts, E., Beel, D., Philip, L., & Townsend, L. (2017). Rural resilience in a digital society: Editorial. *Journal of Rural Studies, 54*, 355–359. https://doi.org/10.1016/j.jrurstud.2017.06.010

Saksono, H. (2012). Ekonomi Kreatif: Talenta Baru Pemicu Daya Saing Daerah. *Jurnal Bina Praja, 04*(02), 93–104. https://doi.org/10.21787/JBP.04.2012.93-104

Saksono, H. (2019). Manajemen Perencanaan Pembangunan Daerah Berbasis Penelitian & Pengembangan dan Desain & Inovasi. *Jurnal Kebijakan Pembangunan, 14*(2), 213–226. http://jkpjournal.kalselprov.go.id/index.php/menu/article/view/36

Saksono, H. (2020). Innovation Hub: Media Kolaborasi Menuju Pemerintahan Daerah Inovatif. *Nakhoda: Jurnal Ilmu Pemerintahan, 19*(1), 1–16. https://doi.org/10.35967/jipn.v19i1.7854

Salemink, K., Strijker, D., & Bosworth, G. (2017). Rural development in the digital age: A systematic literature review on unequal ICT availability, adoption, and use in rural areas. *Journal of Rural Studies, 54*, 360–371. https://doi.org/10.1016/j.jrurstud.2015.09.001

Sari, E. P., & Farah, A. (2014). Modal Manusia dan Produktivitas. *JEJAK: Jurnal Ekonomi Dan Kebijakan, 7*(1), 22–28. https://doi.org/10.15294/jejak.v7i1.3840

Schwab, K. (2016). *The Fourth Industrial Revolution*. World Economic Forum.

Suparmini, & Wijayanti, A. T. (2015). *Buku Ajar Masyarakat Desa dan Kota (Tinjauan Geografis, Sosiologis dan Historis)*. Fakultas Ilmu Sosial Universitas Negeri Yogaykarta.

Young, J. C. (2019). Rural digital geographies and new landscapes of social resilience. *Journal of Rural Studies, 70*, 66–74. https://doi.org/10.1016/j.jrurstud.2019.07.001

Zhou, L. (2014). Online rural destination images: Tourism and rurality. *Journal of Destination Marketing & Management, 3*(4), 227–240. https://doi.org/10.1016/j.jdmm.2014.03.002