SMART VILLAGE DEVELOPMENT STRATEGY IN SUKAPURA VILLAGE, INDONESIA

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ABSTRACT. *Smart villages are deemed capable of addressing fundamental issues in rural areas; however, scientific publications on smart village development strategies remain scarce. This study aims to scrutinize the smart village development strategy in Sukapura Village, Indonesia. This research method is qualitative, using SOAR analysis and litmus tests. The results showed that there were 13 strategic issues that had been analyzed through SOAR analysis and then after the litmus test, the 7 most strategic issues were obtained. The research concludes that the Smart Village Development Strategy in Sukapura Village, Indonesia, can be effectively pursued through a 4-pronged approach: 1) regulation measures, 2) facilitation, 3) collaboration, and 4) socialization. Overall, these strategies involve drafting regulations, providing facilitation and training, collaborating with academics and other stakeholders, and utilizing social media for community involvement.*

Keywords: Smart Village, Smart Village Strategy, Smart Village Development Strategy

STRATEGI PENGEMBANGAN *SMART VILLAGE* DI DESA SUKAPURA, INDONESIA

ABSTRAK. Desa pintar dinilai mampu mengatasi masalah mendasar di daerah pedesaan. Namun, masih ada kelangkaan publikasi ilmiah yang berkaitan dengan strategi pengembangan desa pintar. Tujuan dari penelitian ini adalah untuk merumuskan strategi pengembangan desa pintar di Desa Sukapura, Indonesia. Metode penelitian bersifat kualitatif menggunakan analisis SOAR dan uji litmus. Hasil penelitian menunjukkan bahwa terdapat 13 isu strategis yang telah dianalisis melalui analisis SOAR dan kemudian setelah uji litmus, diperoleh 7 isu paling strategis. Kesimpulan dari penelitian menunjukkan bahwa strategi pengembangan desa pintar di Desa Sukapura, Indonesia dapat diupayakan secara efektif melalui pendekatan 4 si-: 1) regulasi, 2) fasilitasi, 3) kolaborasi, dan 4) sosialisasi. Strategi tersebut melibatkan penyusunan peraturan, memberikan fasilitasi dan pelatihan, berkolaborasi dengan akademisi dan pemangku kepentingan lainnya, dan memanfaatkan media sosial untuk keterlibatan masyarakat.

Kata kunci: Desa Pintar; Strategi Pengembangan Desa Pintar; Strategi Pembangunan

INTRODUCTION

The smart village concept has become important in efforts to utilize technology and information in rural areas. Smart villages strive to improve the quality of life of rural communities through effective and efficient integration and technological innovations. The presence of smart villages has shifted the current paradigm of conventional services. Almost all village government functions are expected to be digitally implemented in smart villages. Therefore, the readiness of the village apparatus and community is a need that cannot be ignored. The village apparatus must be able to adapt quickly, especially concerning the use of technology. Meanwhile, villagers must receive education and be willing to actively participate in implementing village government functions, especially those who have adopted the smart village concept. Smart villages focus on implementing village development functions that combine conventional services and digital technological innovation (Budziewic and Guzlecka 2019). This concept reflects the Internet of Things (IoT), encouraging economic growth, increasing the agricultural sector, and improving education and health services (Degada, Thapliyal, and Mohanty 2021). However, in implementation, smart villages also open up concerns and challenges regarding data privacy (Shuldiner 2020), limited internet access, and human resource development needs (Tumiwa et al. 2022).

A smart village is a solution to every village problem, including poverty, a low level of education, and limited access to technology (Aziiza and Susanto 2020). The smart village concept in China is applied to development in disadvantaged rural areas (Zhang and Zhang 2020). In India, however, smart villages in India are used to increase efficiency in resource use, empower local communities, and provide access to basic

facilities through the use of technology (Shukla 2016). Several studies in India have explored the concept of smart villages by considering various factors including employment, nutritional security, and agriculture (Nazir 2021; Mishra, Sahoo, and Misra 2017). Thus, in addition to improving human resource management and the quality of life of rural communities, smart villages can also address the challenges faced by rural areas by adopting technologies such as the Internet of Things (IoT) (Singh et al. 2022).

Like other countries, Indonesia also applies the concept of smart villages to some of its villages. The smart village concept was initiated in various villages in Indonesia in line with local economic growth and technological developments (Tosida et al. 2023). The existence of uneven development in Indonesia encourages village development as a solution to improve the welfare of marginalized communities (Jayawinangun et al. 2024). Smart village design plays an important role in national development (Almasari and Rachmawati 2023). For this reason, an appropriate governance model is needed to implement the smart village concept (Shukla 2016). One of the villages that used this concept in Indonesia is Sukapura Village, located in Bandung Regency. Sukapura Village's smart village elements include a village website and several other public service applications. However, in its implementation, Sukapura Village still faces challenges such as inadequate information and technological limitations, as well as a lack of academic evaluation that examines the sustainability and quality of its implementation (Nurrahman 2022). The expansion of research related to smart village development strategies in Sukapura Village is necessary because of its significant impact on the implementation of village government functions. An in-depth analysis related to the smart village concept in Sukapura Village is expected to provide insight, especially regarding the potential for success and the obstacles faced. Thus, through the study of smart village development strategies conducted by researchers, opportunities for improvement can be identified to optimize the implementation of smart villages in Sukapura.

Previous studies have examined smart village development strategies. According to the Scopus database, through 2023, 496 documents examined smart villages in various countries. However, only seven documents examined the smart village strategy. Table 1 provides more details.

Table 1. Development of "Smart Village" Publication from 2002 to 2023

No.	Year	Number of Publication Documents
1	2002	1
2	2003 s.d. 2007	0
3	2008	1
4	2009 s.d. 2012	0
5	2013	1
6	2014	1
7	2015	8
8	2016	14
9	2017	29
10	2018	41
11	2019	64
12	2020	64
13	2021	90
14	2022	103
15	2023	79
	Total	496

Source: Scopus, 2023

Based on the Scopus database, smart village publications have increased significantly since 2015, with the most publications (103 documents) being released in 2022. Publications related to smart villages have

attracted the attention of academics and researchers. However, of the 496 publications that reviewed the smart village strategy only seven documents were published. Research conducted by Kaiser (2022) focuses on the EU Smart Village Concept, based on literature and experience from the Digital Success Program in Hungary. The following study, in 2022, presented in Proceedings of Central and Eastern States that there are three steps for public sector institutions in Hungary to implement smart villages: empowerment, scale reduction, and transfer (Machinery 2022). In the same year, research conducted by Renukappa et al. (2022) found that five smart village strategies considered important involve smart energy, smart healthcare, smart transport, smart education, and smart water. Research conducted by Alhari, Febriyani, and Fajrillah (2022) proposed the development of a conceptual model of smart villages using the systematic meta-analysis (PRISMA) method based on 50 articles.

In 2021, Cāne (2021) discussed the concept of digital transformation in the European Union and Latvia, highlighting the role of smart villages as practical tools for overcoming challenges and taking advantage of opportunities in rural environments. For example, in 2020, Pozas et al. (2020) proposed a low-cost ICT-based methodology as the basis for behavior change and smart village strategies. In 2019, Park and Lee (2019) investigated the experience of smart village strategy policies in Korea influenced by the European Union model, focusing on the establishment of regional innovation systems, diversifying rural economies, and the role of tourism in supporting territorial development.

Smart villages are key to rural development through digital technology (Budziewicz-Guzlecka 2019). Smart villages can connect various villages through the use of information and communication technology (Hegade et al. 2016). Smart villages are considered as an option to improve the quality of rural life (Wolski 2018). Through smart villages, sustainable rural development can be carried out (Adamowicz and Zwolinska-Ligaj 2020). The smart village concept is the answer to sustainable development (Guzal-Dec 2018) and can be used to develop rural areas (Klenova, Ivanov, and Koneva 2020).

The smart village concept plays a role in improving public services in rural areas (Satoła and Milewska 2022). Unlike in smart cities, in smart villages rural life reflects history, spiritual values, human resources, traditions, and culture (Brahimi and Bensaid 2019). Although the term smart village sounds futuristic, the concept emerged in response to long-standing problems and challenges (Visvizi, Lytras, and Mudri 2019). One of the obstacles in implementing smart villages is the existence of conservative rural communities with low qualifications (Vaishar and Šťastná 2019). Therefore, one important aspect of analyzing smart village strategies is to analyze the education of villagers (Rahoveanu et al. 2022).

Smart villages are not an inevitable option but rather the most promising option for rural communities under the pressure of rapid urbanization and the worsening digital divide between urban and rural areas. Smart village is not the ultimate goal but is a model and method adopted by a village to achieve a better vision of sustainable development, including economic growth and a healthier environment (Zhang and Zhang 2020).

The various explanations above confirm how smart villages have contributed in various aspects. Sustainability, rural area development, and improvement of rural public services are the goals of smart villages. In order to realize these goals, researchers assess that each smart village needs a strategy or model for its implementation and development. This study aims to fill the theoretical gap by showing publications that discuss smart village development strategies. The following section details the methods used for analysis.

The novelty of this study lies in the data analysis method used by the researchers to formulate village development strategies for smart villages in Sukapura Village: SOAR strategy analysis methods and litmus tests. Researchers who analyze smart villages in the context of development strategies are still minimal; this research, then, is expected to help fill the gap. This study aims to identify and analyze the right strategy to be carried out by Sukapura Village in developing smart villages. Researchers focused their research on Sukapura Village, Dayeuhkolot District, Bandung Regency, Indonesia because Sukapura Village is one of the villages that has adopted smart villages in Indonesia but still faces several challenges in its implementation. Therefore, this research is expected to have implications for developing and increasing the effectiveness of implementing the smart village concept in Sukapura Village, providing strategic guidance that can be applied to developing smart villages in similar areas. Through the SOAR strategy analysis approach and litmus test, this research is also expected to significantly contribute to district/city government policymakers throughout Indonesia as a

contribution to scientific thoughts and studies on models or strategies that should be carried out in implementing smart villages.

RESEARCH FRAMEWORK

This research departs from the phenomenon faced by the Sukapura Village Government in organizing public service functions in the village. The digitization of public services is illustrated through smart cities, which are supported by the development of smart villages in a city. The researcher formulated a smart village development strategy for Sukapura Village.

METHOD

This study is qualitative. Creswell and Creswell (2023) explained that qualitative researchers should collect data through various documents, observation activities, and interview activities with participants. The researchers collected data in this study using semi-structured interviews, observations, and documentation. Related to this study, researchers used purposive sampling techniques to identify research informants. Through this technique, researchers hope to facilitate the analysis of village development in the smart villages of Sukapura Village, Dayeuhkolot District, and Bandung Regency.

The informants for this research are the Head of Sukapura Village, the Secretary of Sukapura Village, the Head of Sukapura Village Government Section, the Head of Sukapura Village Service Section, the Head of Financial Affairs of Sukapura Village, the Head of General Affairs of Sukapura Village, Community Leaders of Majelis Ulama Indonesia members, and the community. This study was analyzed using SOAR analysis and litmus testing. In this study, SOAR analysis consists of Strengths, Opportunities, Aspirations, and Results faced by the Sukapura Village Government in developing villages towards smart villages. Stavros, Cooperrider, and Kelley (2003) state that SOAR is a breakthrough that promotes an innovative mindset.

Table 2. Strategic Inquiry ⟶ Appreciative Intent: Inspiration to SOAR

Strategic Inquiry	Strengths What are our greatest assets	Opportunities What are the best possible market opportunities
Appreciative Intent	Aspirations What is our preferred future	Results What are the measurable results

Source: Stavros, Cooperrider, and Kelley (2003)

After analyzing strategy data using SOAR analysis, selected strategic issues were identified and then evaluated, with subsequent findings. In doing so, litmus test issues were evaluated as suggested by Bryson (2020). The litmus test consists of questions that that the selected strategic issue must answer. The selected answers are then determined with an average score between 1 (one) to 3 (three) where the higher the total score of an issue, the more strategic the issue; on the contrary, the lower the total score of an issue, the issue is not strategic. The list of litmus test questions can be seen in table 3.

Table 3. *Litmus Test* For Strategic Issues

Question	Operational ⟶ Strategic		
	Score	Score	Score
When are the challenges or opportunities of strategic issues in front of you?	Now	Next year	Two years or more from now
How broad will an issue affect your department?	Single unit or division	Some division	Entire department
How big is your department's financial risk/financial opportunity?	Small (10% of budget)	Medium (10-25% of budget)	Large (more than 25% of budget)

Will strategies for problem-solving require the development of new ministry goals and programs?	Not	-	Yes
Significant changes in tax sources or amounts?	Not	-	Yes
Changes in statutes or regulations?	Not	-	Yes
Addition or modification of major facilities?	Not	-	Yes
Significant staff additions?	Not	-	Yes
What is the best approach to problem-solving?	Ready to implement	Broad, rather detailed parameters	Wide open
Which lowest level of management can determine how to resolve issues?	Supervisor Line Staff	Division head	Head of department
What consequences are possible Happens if this issue is not resolved?	Exist annoyance Inefficiency	Ministry chaos, loss	Term service chaos
		Source of funds	Long and large expenses/mero sot income
How many other departments are affected by this issue and should be involved in the solution?	None	1 (one) to 3 (three)	4 (four) or more
How sensitive or "*Changed"* this issue to social, political, religious, and cultural values of the community?	Soft	Keep	Hard

Source: Bryson (2010)

Bryson (2010) explains the classification of grading for each answer as follows:
a) Operational answers are given a value of 1
b) Moderate answers are given a value of 2
c) Strategic answers are given a value of 3

From the results of the strategic issue evaluation score, a classification is then made based on the score range to prioritize these issues:
a) Issues less strategic nature have a score range of 13-21.
b) Issues quite strategic in nature have a score range of 22-30.
c) Issues of a very strategic nature have a score range of 31-39.

RESULTS AND DISCUSSION

Overview of Smart Village Sukapura Village

Smart village in Sukapura Village was implemented based on innovation from regional leaders of Bandung Regency and to support the implementation of electronic-based government (e-government) which then develops into smart governance. Some of the services owned by the Sukapura Village Government that support village development toward a smart village include the following:

The YANYESDUK application is one of the innovations from the Population and Civil Registration Service issued in 2018. Through a letter sourced from DISDUKCAPIL Bandung Regency Number 473 / DISDUKCAPIL / 2018 dated February 28, 2018, in Bandung Regency starting March 1, 2018, the implementation of Population Administration services using the online-based YANDESDUK application. YANDESDUK was created to realize orderly Population and Civil Registration administration in Bandung Regency, synergy is needed in the implementation of population administration services in stages starting from the Village, District, and Regency levels. In response to this, the Population Registration Operator appointed and proposed by the Village Head was assigned to manage, and required to be able to master and understand how the use of YANDESDUK can be applied optimally. In addition, the use of YANDESDUK is also expected to make population more manageable, more effective, and more efficient, especially in implementing population services at the village government level.

Next, the Sukapura Village Website can be accessed via https://sukapura.desa.id/. Its contents of consist of village government menus, village profiles, community institutions, village data, and financial information. In addition, the website is expected to serve as a media interaction between the government and the community in providing services to the community.

Figure 1. Website Display of Sukapura Village

Next is the Basic Service Application Based on Population Data. The Sukapura Village government uses this offline application to carry out population administration services to the community based on population data. It makes it easier for village government officials to determine the development of residents in Sukapura Village.

Figure 2. Basic Service Application Based on Population Data

Further, before the internet network enters remote villages and villages, the transmission of data from the region will be choked because it still uses manual methods by bringing files and proposals which take a long time. In local governments, mainly villages and kelurahan, internet networks have been entered using connections from modems or wifi. Of course, all data and activities in the village can be transferred faster to the Central Government with one village and kelurahan profile account registered and connected online. PRODESKEL stands for village and kelurahan profiles. Prodeskel is an Information System that is undoubtedly of accurate validity, one of the referral planning systems for village and kelurahan development, and all development joints in villages and kelurahan are regulated in Law Number 6 of 2014 article 86 which contains the central government, namely the government in the Province, providing facilities to the village government for all village and kelurahan utilization and resources with a profile of villages and kelurahan better known as Prodeskel. This regulation is certainly by the regulations regulated by Permendagri Number 12 of 2007. Village and Village Profile is important information that includes data in villages and kelurahan such as population and several roles in the existence of a sector that has the potential to be developed. Prodeskel aims to a) increase existing resources within the scope of village and kelurahan government to motivate the continuation of village

and kelurahan investment; b) improve development of existing natural resources, e.g., in a village with one or more natural resources in the form of fishermen's villages, the village government designates the village for natural tourism in addition to being a place to earn a living for residents (ensure that the beach and sea will have more value as financial income with added tourism business fields); and c) develop existing natural resources and the level of success supported by all parties in carrying out sustainable development.

Smart Village Development Strategy in Sukapura Village, Indonesia

Villages are in state administration because most people live in villages, and fundamental public problems are generally found and resolved at the village level (Wasistiono and Tahir 2006). Focusing village development toward a smart village becomes important because villages play an important role in the processes and functions of government in Indonesia. Through the adoption of innovation and technology, the transformation of villages into smart villages in Indonesia is expected to improve the effectiveness and efficiency of public services and the quality of life of rural communities.

The strategy for developing Sukapura Village as a smart village is formulated using the SOAR strategy, as shown in table 4.

Table 4. Soar Identification Strategy Smart Village In Sukapura Village

	Strengths
1.	There is a commitment from village officials
2.	The existence of human resources from village officials who are quite qualified and quickly adapt to changes
3.	There is good communication between village officials and related parties
	Aspirations
1.	It is expected that there will be activities related to the environment
2.	It is expected that there will be involvement in environment-related activities by involving MUI Sukapura Village
3.	It is hoped that the running of village government can be more effective and efficient as well as comprehensive
4.	It is expected to be able to carry out the socialization stage to the community as a whole related to smart village supporting applications and websites
	Opportunities
1.	There is Telkom University (Tel-U) located in the Sukapura Village area
2.	There is collaboration and cooperation between the village government and Tel-U in designing village websites
3.	Application and website support from the Bandung Regency Government
4.	Location of Sukapura Village which is directly adjacent to Bandung City
5.	The existence of cooperation between the village government and the Community Learning Activity Center to improve the quality of education for rural communities
6.	There is a program from the Bandung Regent related to Go Digital Village
	Results
1.	The existence of digital technology that can be utilized to achieve the goals of village government
2.	There are clear regulations related to village development towards smart village*s* starting from Regional Regulations to Village Regulations
3.	There are Technical Guidelines (Juknis) *and Blue Print* related to the direction and stages of village development towards *a* smart village
4.	The support of adequate facilities and infrastructure

Source: Researcher Analysis

Table 5 presents the matrix for the SOAR strategy.

Table 5. Soar Strategy Analysis Matrix

	Strengths	Opportunities
SOAR Strategy Analysis	There is a commitment from village officials The existence of human resources from village officials who are quite	There is Telkom University (TelU) located in the Sukapura Village area

	qualified and quickly adapt to changes There is good communication between village officials and related parties	There is collaboration and cooperation between the village government and Tel-U in designing village websites Application and website support from the Bandung Regency Government Location of Sukapura Village which is directly adjacent to Bandung City The existence of cooperation between the village government and the Community Learning Activity Center to improve the quality of education for rural communities There is a program from the Bandung Regent related to Go Digital Village
Aspirations	**SA Strategy**	**OA Strategy**
It is expected that there will be activities related to the environment It is expected that there will be involvement in environment-related activities by involving MUI Sukapura Village It is hoped that the running of village government can be more effective and efficient as well as comprehensive It is expected to be able to carry out the socialization stage to the community as a whole related to smart village supporting applications and websites	Schedule regular environmental care activities by involving community leaders Collaborate with academics related to village governance through the use of technology Utilizing a good network in the village environment to improve the quantity and quality of program delivery and other related information, especially about village development towards a smart village	Planning regular environmental maintenance activities through collaboration between Tel-you and the village government Optimizing the features or quality of the website and its utilization Improve the quality of district government support to village governments, especially in services and technology support There is a program from the Bandung Regency Government to provide facilitation related to the development and utilization of technology to village apparatus and village communities Collaborating with urban villages in Bandung City as a medium or forum for inspiration and an overview of the development and utilization of technology at the village and/or village level
Results	**SR Strategy**	**OR Strategy**
The existence of digital technology that can be utilized to achieve the goals of village government There are clear regulations related to village development towards smart villages starting from Regional Regulations to Village Regulations There are Technical Guidelines (Juknis) and Blue Print related to the direction and stages of village development towards a smart village The support of adequate facilities and infrastructure	Making grand designs and milestones through internal coordination of village government Conduct deliberations between village governments and external parties such as district and sub-district governments to make regulations related to grand designs and milestones Conduct an inventory of facilities and infrastructure needs in village development towards a smart village	Strengthening collaboration between the village government and Tel-U regarding the development and utilization of technology The preparation of village regulations related to the slice of the Bandung Regency Government's plan regarding Go Digital Village, especially related to village development towards a smart village

Source: Researcher Analysis

Based on the identification of the factors above, 13 strategic issues emerged that can be used in the development of Sukapura Village as a smart village:

1. Involve community leaders to schedule regular environmental care activities.
2. Collaborate with academic leaders related to village governance through the use of technology.
3. Utilize a good network in the village environment to improve the quantity and quality of program delivery and other related information.

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4. Plan regular environmental care activities through collaboration between Telkom-University and village governments.

5. Optimize the features or quality of the website and its utilization.

6. Improve the quality of district government support to village governments, especially in services and technology support.

7. Use an existing program from the Bandung Regency Government to provide facilitation related to the development and utilization of technology to village apparatus and village communities.

8. Collaborate with urban villages in Bandung City as a medium or forum for inspiration and an overview of the development and utilization of technology at the village and/or village level.

9. Make grand designs and milestones through internal coordination of village government.

10. Conduct deliberations between village governments and external parties such as district and sub-district governments to make regulations related to grand designs and milestones.

11. Conduct an inventory of facilities and infrastructure needs in village development toward a smart village.

12. Strengthening collaboration between the village government and Tel-U regarding the development and utilization of technology.

13. The preparation of village regulations related to the slice of the Bandung Regency Government's plan regarding Go Digital Village, especially related to village development towards a smart village.

Further, applying a litmus test based on the value of each strategic issue will determine the right strategy to be carried out by the Sukapura Village Government in developing the village into a smart village. From the results of the strategic issue evaluation score, a classification can be made based on the score range for prioritizing these issues:

a) Issues less strategic nature have a score range of 13-21.
b) Issues that are quite strategic have a score range of 22-30.
c) Issues of a very strategic nature have a score range of 31-39.
d) The strategic issues defined based on their strategic categories are shown in table 6.

Table 6. Strategic Issues Based On Their Strategic Categories

No	Alternative Strategic Steps	Average score	Priority Level
1.	Schedule regular environmental care activities by involving community leaders	1,53	Less strategic
2.	Collaborate with academics related to village governance through the utilization of technology	2,15	Quite Strategic
3.	Utilizing a good network in the village environment to improve the quantity and quality of program delivery and other related information, especially about village development towards a smart village	2,38	Very strategic
4.	Planning regular environmental maintenance activities through collaboration between Tel-you and the village government	2,30	Quite Strategic
5.	Optimizing the features or quality of the website and its utilization	2,23	Quite Strategic
6.	Improve the quality of district government support to village governments, especially in services and technology support	2,15	Quite Strategic
7.	There is a program from the Bandung Regency Government to provide facilitation related to the development and utilization of technology to village apparatus and village communities	2,61	Very Strategic
8.	Collaborating with urban villages in Bandung City as a medium or forum for inspiration and an overview of the development and utilization of technology at the village and/or village level	2,61	Very Strategic

9.	Making grand designs and milestones through internal coordination of village government	2,69	Very Strategic
10.	Conduct deliberations between village governments and external parties such as district and sub-district governments to make regulations related to grand designs and milestones	2,38	Very Strategic
11.	Conduct an inventory of facilities and infrastructure needs in village development towards a smart village	2,15	Quite Strategic
12.	Strengthening collaboration between the village government and Tel-U regarding the development and utilization of technology	2,61	Very Strategic
13.	The preparation of village regulations related to the slice of the Bandung Regency Government's plan regarding Go Digital Village, especially related to village development towards a smart village	2,69	Very Strategic

Source: Researcher Analysis

Based on the identification of the strategic level of strategic issues resulting from the litmus test above, there are 7 (seven) very strategic issues that can be formulated into strategies that should be carried out by the Sukapura Village Government in developing villages towards smart villages as follows:

1. Utilizing good networks in the village environment to improve the quantity and quality of program delivery and other related information, especially about village development towards the smart village;
2. Using the program from the Bandung Regency Government to provide facilitation related to the development and utilization of technology to village apparatus and village communities;
3. Collaborating with urban villages in Bandung City as a medium or forum for inspiration and an overview of the development and utilization of technology at the village and/or village level;
4. Making grand designs and milestones through internal coordination of village government;
5. Conducting deliberations between the village government and external parties such as the District and District Governments to make regulations related to grand design and milestones;
6. Strengthening collaboration between the village government and Tel-U regarding the development and utilization of technology;
7. Preparing village regulations related to the slice of the Bandung Regency Government's plan regarding Go Digital Village, especially related to village development towards a smart village.

Discussion And Implications

Referring to the formulation of strategies through SOAR analysis and litmus tests above, the researchers formulated 4 (four) main strategy groups that the Sukapura Village Government can carry out in developing villages towards smart villages. The four groups of strategies can be abbreviated into a 4-pronged approach, namely the existence of (1) regulation, (2) facilitation, (3) collaboration, and (4) socialization.

The first strategy is the drafting of regulations. The preparation of regulations in village development toward smart villages is essential. The goal is to direct the development of Sukapura Village toward a smart village clearly and measurably. The Sukapura Village Government can initiate the preparation of regulations by drafting Village Regulations to strengthen smart villages. Next, the Sukapura Village Government can compile grand designs and milestones through internal coordination of village government, conducting deliberations between the village government and external parties such as Regency and District Governments to make regulations related to grand designs and milestones. Meanwhile, the Bandung Regency Government, which is currently developing the Go Digital Village program, is also expected to be able to compile regulations in the form of written documents, namely Regional Regulations (Perda), that can support smart villages as a reinforcement for the development of villages in Bandung Regency towards smart villages.

The integration of public data has the potential to provide insights for the government and society but also has security, privacy, and redundancy risks; therefore, innovative policy strategies are needed (Wadhwa 2015). Researchers argue that to maximize the potential of existing resources in a smart village, clear regulations are needed. The significance is that smart villages have a system that have implications for the provision of public services with added value and sophisticated technology (V et al. 2021). A case study in Banyuwangi Regency, Indonesia, explained that the smart village model needs to be adapted to local regulations, focusing

on village governance, resources, technology, and services (Aziiza and Susanto 2020). However, the implementation of regulations in smart villages is challenging (Gasiola et al. 2019).

The second strategy is facilitation. Facilitation is intended to be carried out by the Bandung Regency Government to village officials and village communities. As described earlier, the existence of human resources from village apparatus and village communities is an important dimension that can strengthen the development of a village toward a smart village. The smart village stage developed by the Sukapura Village Government has only entered the early stages, namely the stage of providing technological services to the village community, such as websites and applications provided by the Bandung Regency Government. However, server errors (see Figure 3) remain an obstacle in the process of providing services to the public. Researchers consider that after providing technological facilities to villages, the Bandung Regency Government should also be able to facilitate the development and improvement of adequate facilities and infrastructure–and follow up on obstacles immediately. The subsequents facilitation is in the form of training related to the use of applications and websites supporting the smart village.
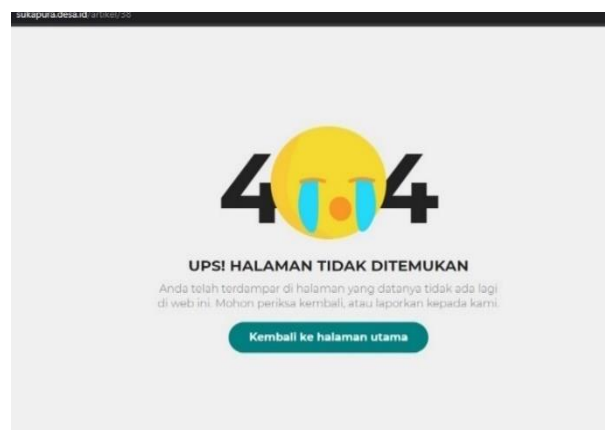

Figure 3. Information on Sukapura Village Community Institutions Cannot Be Accessed

Research findings that emphasize the importance of facilitation in various forms of training, especially the use of applications and websites supporting smart villages in Sukapura Village, reinforce previous research results. According to Avdeeva et al. (2019), the successful implementation of smart villages is closely related to the abilities and skills of all human resources involved. Further, Nurchim and Nofikasari (2018) explained that the challenges that must be overcome for the sustainability and effectiveness of smart village implementation are staff salary payments, equipment maintenance, and information and financial management. Smart village initiatives covering aspects of education, health, and information connectivity have the potential to promote sustainable development and improve the quality of life in rural areas (Mohanty et al. 2020).

Various training methods and technical guidance have been proposed to support the development of smart villages, as emphasized by Bomba et al. (2018), who focused on career orientation and data analysis. Another approach mentioned by Anderson (2019) is that training in job skills, technical skills, and business is required. Lakshmanan et al. (2021) emphasized the importance of skill development. This aligns with Rahmadanita, Santoso, and Wasistiono's (2019) opinion, emphasizing that capacity-building development for employees, organizational strengthening, and institutional reform are important elements in using technology in government functions. Therefore, researchers consider that in developing smart villages in Sukapura Village, it is necessary to organize training activities and technical guidance for village employees related to the use of technology, data management, village financial management, and skills in managing information transparency to village communities. This effort is expected to strengthen village employees' capacity to face challenges and take advantage of opportunities in the context of smart villages in Sukapura.

Further facilitation can be carried out through assistance to the community as the smart village development stage enters the next stage, namely the development stage. The development stage the community's convenience in managing mail administration online. The community can carry out the submission of letter administration independently through the sukapura.digital website, and the implementation

can be completed quickly in the realm of RT/RW only so that all matters are completed at the RT/RW level, meaning that the community does not need to come to the village office to take care of the required mail administration. Through the development stage that will be carried out in the future, it is very necessary to facilitate both the Regency Government and the Sukapura Village Government in providing facilities and infrastructure in the form of laptops, wifi, etc. that support. The next facilitation can be carried out by assisting to Rukun Tetangga (RT)/Rukun Warga (RW) leaders and the community to maximize the use of the technology.

The importance of integrated online service information systems cannot be ignored (Suryatiningsih, Hernawati, and Aji (2020). Digital technology aims to introduce village potential and encourage the preservation of local culture, but villagers are still limited in their skills in independently utilizing technology (Rochman et al. 2020). Current trends show a focus only on technology-based approaches, so a conceptual model that focuses on humans, oriented towards knowledge-based village communities, is needed (Wang et al. 2022). On the one hand, several previous studies have examined the importance of training and mentoring in developing smart villages, especially in rural communities. Based on the results obtained by (Erlando et al. 2021; Suryani and Soedarso 2021) agreed to examine the importance of collective learning and community empowerment in this process. Further, research by Dillahunt et al. (2022) confirms the importance of community assistance. On the other hand, when referring to the smart village concept developed by IEEE Smart Village (ISV), it is stated that education for the community is an important key to supporting the sustainability of community development programs (Anderson 2019). In line with that, Rahoveanu et al. (2022) emphasized that improving community education is the main focus for smart villages. The existence of community empowerment activities through socioeconomic education, counseling activities, training, partnerships, and mentoring is also recorded as a relevant strategy (Sulaiman et al. 2022).

The third strategy is collaboration, where the Sukapura Village Government needs to collaborate and collaborate on an ongoing basis with academics, especially Tel-U. Collaboration has been established in designing a new village website, which can be accessed through sukapura.digital. However, researchers consider that the collaboration can be strengthened by compiling a Collaboration Planning Document or Cooperation Document between the Village Government and related academics. The next collaboration that needs to occur at the development stage is collaboration with villages in Bandung Regency closest to Sukapura Village. Collaboration and cooperation can be accomplished as a medium or forum for inspiration and an overview of the development and use of technology at the village/village level.

Collaboration is an important factor in the development of smart villages because it includes the involvement of the government, private sector, Non-Governmental Organizations (NGOs) and communities (Roidatua and Purbantara 2021). Zhao et al. (2023) considered that there was a significant, albeit limited, influence from central government interference in collaboration. The participation of stakeholders encourages the quality of development to be more predictable and fair (Richards and Dalbey 2006). Apart from the stakeholder side, digital transformation and community involvement emphasize the importance of collaboration in successfully implementing smart village strategies (Choudhary et al. 2021; Zavratnik et al. 2020). The need for collaboration remains a challenge in smart village initiatives. Thus, Halim, Pramesti, and Permatasari (2023); Renukappa et al. (2022) explain that policies from local governments related to collaborative governance are needed. Collaboration can encourage easy access to training, business consultation, control, monitoring, and reporting by all smart village implementing actors (Prabowo et al. 2020).

The community has high motivation and involvement but needs the support of external professional actors in the development of smart villages (Zerrer and Sept 2020). Active participation from the private sector also plays an important role in the success of smart village programs in India (Karki 2020). Likewise, in Indonesia, the smart village concept is implemented through collaboration with stakeholders, including the private sector, to improve the community's quality of life (Syaodih 2019). However, challenges involving depopulation in rural areas during the Industrial Revolution 4.0 are still a concern that needs to be overcome (Tumiwa et al. 2022). In line with this thinking, it is emphasized that collaboration from the government, private sector, and other related parties is an element that cannot be ignored in formulating comprehensive smart village development.

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In addition to the government, community, and private sectors, involvement from academics is important in the development of smart villages. Academics can contribute to the formulation and implementation of these initiatives. (Visvizi and Lytras 2018; Wolski 2018), agreed that the needs related to equipment and the application of technology are discussed in rural areas. Therefore, academic specialists are increasingly important in the smart village ecosystem (Syaodih 2019). by contributing to diagnosing problems, proposing solutions, and building consensus (Visvizi, Lytras, and Mudri 2019).

Developing smart villages in Sukapura Village also requires media involvement, especially social media. According to Groot, Effing, and Veenstra (2018), social media can influence community participation in urban planning. In addition, Coldevin (2001); Sáez (2013) have proven the existence of participatory communication strategies involving "small media" and community media in rural development. In the context of Sukapura Village, the involvement of social media such as the Sukapura Village website and the development of other social media can open a space for interaction, discussion, participation, and collaboration between the village government and the people of Sukapura Village.

Transparency is recognized as an important public value although not the most important value (Schnell et al. 2023). For citizens, ease of service, responsiveness, and dedication can be provided by government employees (Neo, Grimmelikhuijsen, and Tummers 2023). In the village development toward a smart village, the village community can be actively involved in expressing suggestions/opinions/criticisms of the implementation of programs and activities organized by the village government. The Sukapura Village Government might also use social media as a forum for the transparency of public information. This goal emphasizes the results of research conducted by Santoso and Rahmadanita (2020) that transparency of government activities creates collaborative innovation and forms public trust in government institutions.

The fourth strategy is socialization, which should be performed gradually, periodically, and continuously. Socialization via the sukapura.digital website utilizes technology or gadgets owned by the people of Sukapura Village. Socialization needs to be accomplished in a planned, gradual, and sustainable manner and repetitively. Monitoring and evaluation are essential. Sustainable socialization activities are important for disseminating smart village programmes (Zavratnik et al. 2020). Zavratnik et al. (2020). emphasized that the development process requires a community-oriented approach and focuses on community needs. A similar perspective was expressed by Mackenzie (2019; Viron and Mudri (2019), who explained the importance of sustainable development and integration of various policy instruments to drive the success of smart village programs (Viron and Mudri 2019).

Social media can be used to socialize various programs and activities supporting smart villages in Sukapura Village. The use of social media in the development of smart villages has been described in several studies. As argued by Darmawan, Fardiah, and Rinawati (2020), social media have the potential to facilitate communication and interaction in local governance. Anggadwita et al. (2020); Lytras, Visvizi, and Jussila (2020) agreed that social media could potentially increase the value of smart cities and smart villages. Social media are also considered a force that can encourage social innovation by facilitating long-distance communication in the village (Onitsuka 2019). People can take advantage of social media using their smartphones. Fennell et al. Fennell et al. (2018) assessed that mobile phone access can encourage the delivery of people's aspirations.

However, the Sukapura Village Government also needs to consider people who still have low knowledge related to the use of technology. Therefore, researchers consider that socialization by conducting education directly with the community by inviting the community to the village office and/or collaborating with community leaders, traditional leaders, and religious leaders in the Sukapura Village environment, as well as optimizing the existence of RT and RW, still needs to be done to disseminate information to the community.

Various elements also determine the success of smart village development, including education, information and communication technology (ICT) literacy, and cooperation between the government, private sector, and community leaders (Rahoveanu et al. 2022). Through this study, researchers also assess that the media has a significant role and contribution in increasing rural communities' participation in developing villages towards smart villages. This research also confirms that village governments are not the only actors involved in developing a village towards a smart village. The role and contribution of various elements outside

village government also support the development of smart villages within the framework of regulation, facilitation, collaboration, and socialization.

The findings of this study confirm the four strategic priorities that need to be carried out in the development of smart villages. The findings of this research have a theoretical impact that reinforces the smart village framework conveyed by Ramachandra et al. (2015) that the smart village concept requires resources, institutions, technology, and sustainability. Theoretically, these findings reinforce the framework by presenting four strategic priorities in smart village development. This research explains that smart village sustainability can be developed through regulatory clarity, increased facilitation and education for village officials and village communities, opening collaboration space for village governments both internal and external organizations, and organizing socialization in a planned, structured, systematic, gradual, and sustainable manner.

These findings also have implications for practice. Village government is not an independent entity that can organize smart villages. However, village governments need roles and contributions from other entities to realize smart village development effectively and efficiently. Degada, Thapliyal, and Mohanty (2021) stated that smart villages need time to realize better health and education, and achieve economic growth in the future. In practice, the research findings that state the four priorities of the smart village development strategy are expected to accelerate the achievement of smart village goals. Slee (2019) explained the importance of effectively organizing bottom-up community involvement to create new opportunities in village development. To reinforce the point, Haniyuhana and Wicaksono (2023) stated that the position of villagers in a community is considered to be able to help in overcoming regional problems through smart utilization of resource potential. Through the four strategic priorities in the findings of this study, community involvement is mandatory in practice. In addition, community elements can help village governments realize smart village goals, and elements from the private sector, businesses, academics, and other stakeholders can contribute to the collaboration. Thus, through the four priorities of smart village development strategies in this finding, it is hoped that it can practically realize the goals of smart villages, including overcoming fundamental problems in rural areas (Alhari, Febriyani, and Fajrillah 2022), and provide sustainability solutions (Anna Visvizi, Lytras, and Mudri 2019).

CONCLUSION

The Sukapura Village Government can develop smart villages through four main strategies: regulation, facilitation, collaboration, and socialization. These strategies involve the drafting of regulations, providing facilitation and training, collaborating with academics and other stakeholders, and utilizing social media for community involvement. These strategies aim to strengthen village development, improve public services, and promote sustainable development in rural areas. The limitation of this study is that it uses only one strategy measurement tool, namely SOAR Strategy and litmus test. Therefore, using different methods for strategy measurements is recommended as an important next step in following up on the current research.

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