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Smart Village Tourism: Barriers and Facilitators in Adopting a Smart City Perspective Using SWOT Analysis

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Abstract
This disruptive era, tourist villages must adapt to technological advancements to innovate and drive the digitalization of these villages. Data processing, speed, and clarity of information can be utilized for the development of smart village tourism, where innovation and technology become the main drivers of transformation. The smart city concept can be adopted in the development of smart village tourism to enhance sustainability in tourist villages. A deep and ongoing study of the potential and local wisdom of rural communities is a key factor in the development of smart village tourism. This research serves as a preliminary study in the context of smart village tourism. The aim of this study is to formulate a development model for smart village tourism based on the identification and analysis of the barriers and facilitators in adopting the smart city perspective. The case studies involve two tourist villages in Boyolali Regency. The data analysis method uses SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). Data were collected through interviews, field observations, and document analysis to support the SWOT framework. SWOT analysis is useful for evaluating various aspects of tourist villages and identifying strategies that can be implemented for development and improvement. These findings represent an initial step towards formulating the development of smart village tourism by adopting a smart city perspective based on an ICT model, aligned with local potential and wisdom as key factors for the sustainability of tourist villages.

Keywords: smart village tourism; smart city; SWOT analysis; barriers; facilitators

1. Introduction

In this disruptive era, the development of tourist villages is undergoing significant transformation in line with technological changes, innovations, and the latest trends in adopting smart tourism digitalization (Rudwiarti et al., 2021). If developed properly, tourist villages can have a positive impact on the advancement of the (Fafurida et al., 2023). According to the Central Java Tourism Statistics Development report for 2022, Central Java has a total of 1,300 tourist attractions, comprising 454 Natural Attractions, 172 Cultural Attractions, 414 Man-Made Attractions, 71 Special Interest Attractions, 84 Tourist Villages, and 105 other Tourist Destinations (Dinas Kepemudaan Olahraga dan Pariwisata Provinsi Jawa Tengah, 2022). The statistics for the development of tourism in Central Java, particularly in tourist villages, have been increasing each year, as shown in Figure 1.

The development of tourist villages has shown significant and consistent growth with no decline from 2018 to 2022. The enhancement of tourist villages supports the acceleration of tourism recovery and stimulates economic growth (Ciolac et al., 2022) (Torabi et al., 2022). Technology plays an active role in data processing, and the speed and clarity of information can be utilized in the development of smart village tourism (Chung et al., 2021). Innovation and technology are key drivers of transformation in the concept of smart tourism (Goo et al., 2022; Q. Li & Zhang, 2022; Novera et al., 2022). The smart city concept can be adopted in the development of smart village tourism to enhance sustainability, creative economy (Riza Chakim et al., 2023), efficiency, and visitor experience in tourist villages (Habeeb & Weli, 2020). There is a need for in-depth studies on developing tourist villages by adopting the smart city concept to support the realization of smart village tourism.

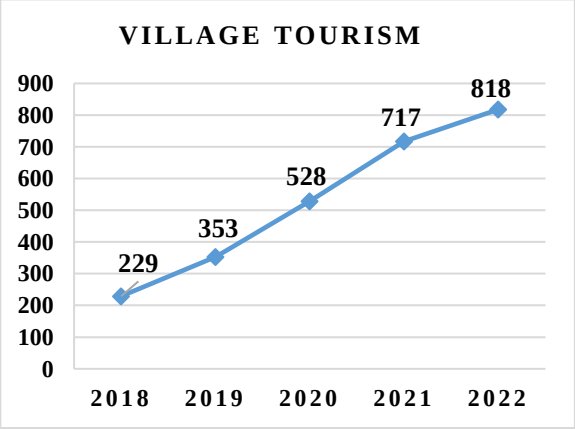

Figure 1. Tourism Village Development Chart

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Designing a model that meets these needs begins by involving relevant stakeholders, including village tourism managers, local government officials, tourists, and regional tourism policy implications (Eichelberger et al., 2020). Another driving factor for smart village tourism is the potential and local wisdom of rural communities, which serve as attractions for tourist villages (W. Z. Li & Zhong, 2022). Another driving factor for smart village tourism is the potential and local wisdom of rural communities, which serve as attractions for tourist villages (W. Z. Li & Zhong, 2022). The study of developing tourist villages with the smart village concept serves as the starting point for village tourism planning. The issue at hand is formulating a model for smart village tourism development to transform tourist villages into smart village tourism.

The case study focuses on tourist villages in Boyolali Regency, which have unique characteristics and local wisdom that offer distinct attractions. This study is also aligned with local government policy, particularly Boyolali Regency Regional Regulation No. 10 of 2022 on the Management of Tourist Villages, which supports the sustainable development and governance of village-based tourism (Boyolali, 2022). The problem-solving approach used in this research is the SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). Several previous studies have successfully implemented SWOT analysis in the context of rural tourism and digital transformation. For instance, (Rebuya & Gasga, 2022) utilized SWOT analysis as a strategic planning instrument for tourism development in a rural municipality in the Philippines. The state-of-the-art and novelty of this research lie in formulating a smart village tourism model by adopting the smart city perspective. The smart city concept serves as a foundation for developing technology-based village tourism to optimize potential and local wisdom (Samora-Arvela et al., 2020). Additionally, the identification of barriers and facilitators is conducted through SWOT analysis, with the results used in formulating and designing the smart village tourism model according to needs. This research is expected to be an initial step in formulating a technology-based smart village tourism development model, adopting the smart city perspective while remaining grounded in the village's potential and local wisdom to preserve nature and culture.

2. Smart Village Tourism

The development of smart village tourism refers to the integration of technology to enhance the tourist experience, operational management, and sustainability of regional improvements (Manapa Sampetoding & ER, 2024). The concept of smart village tourism focuses on utilizing technology to develop tourist destinations in villages in line with their potential and attractions. Supporting components for the development of smart village tourism include technological infrastructure, digital applications and platforms, digital tourism experiences (Aziz et al., 2024), data-driven tourism management, digital promotion (Nabil Mohemmed AL-Hazmi, 2023) and marketing, training and empowerment of human resources, sustainability and environmental preservation, as well as security and comfort. With the implementation of the smart village tourism concept, villages can become attractive, innovative, and sustainable tourist destinations (Lombardo et al., 2023). Additionally, it can boost the local economy while preserving nature and local wisdom.

Efforts to formulate the potential of villages form the basis for developing smart village tourism by identifying various resources and assets to make them more functional. Optimizing village potential is supported by community participation, local government, village managers, and the effective use of technology (Riza Chakim et al., 2023). The smart village concept was launched by the Ministry of Villages, Disadvantaged Regions, and Transmigration with the aim of integrating village development with technological advancement. Designing and formulating an appropriate concept is crucial for achieving the Indonesian Government's target of 3,000 smart villages by 2024. The Central Statistics Agency (BPS) reports that there are 1,734 tourist villages in Indonesia, which serve as a barometer for the tourism sector's economy. Integrating technology into tourist village development can enhance the quality of life for communities. Developing village potential within the tourist village concept can be achieved by highlighting natural beauty, culture and traditions, crafts and local industries, history and architecture, sustainability, and preservation (W. Z. Li & Zhong, 2022). The development of tourist village potential requires sustainable planning and effective management. The tourist village concept is a step towards empowering rural communities to manage and enhance their potential by building on local opportunities (Lak et al., 2020).

Boyolali Regency is one of the areas developing smart village tourism. The natural charm of Boyolali Regency, with its combination of highlands and lowlands, is a key attraction for village tourism potential. The diversity of culture and local wisdom of rural communities adds value for tourists. An analysis of the barriers and facilitators faced is necessary to support the transition from tourist villages to smart village tourism. This focus also aims to assist rural communities in increasing regional income as an innovative solution by leveraging natural potential and local culture/wisdom. This study aims to examine the barriers and facilitators in developing smart tourist villages, with a research focus on transforming tourist villages into smart villages by adopting a smart city perspective. This research is an initial effort in

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formulating a model for developing smart tourist villages based on ICT.

3. Methods

In the research methodology stage, a case study approach is used with two case studies: Samiran Tourism Village and Durensari Tourism Village in Boyolali Regency. These tourist villages were chosen for their unique characteristics and local wisdom, as well as being the best tourist villages in Boyolali with distinct attractions. Samiran Village is one of the tourist villages in Boyolali located in a highland area, offering stunning natural beauty with mountain views and refreshing air. It also provides an authentic rural lifestyle. Durensari Village is another tourist village in Boyolali that highlights the richness of local traditions and customs, packaging them in the form of an "Education Village." By selecting these two case studies, a conceptual development method is employed to identify obstacles in the development of smart tourism villages by adopting the smart city perspective. The research framework outlines the flow and stages in designing a suitable smart village tourism model based on the two case studies in this research. The flow and stages of the research can be seen in Figure 2.

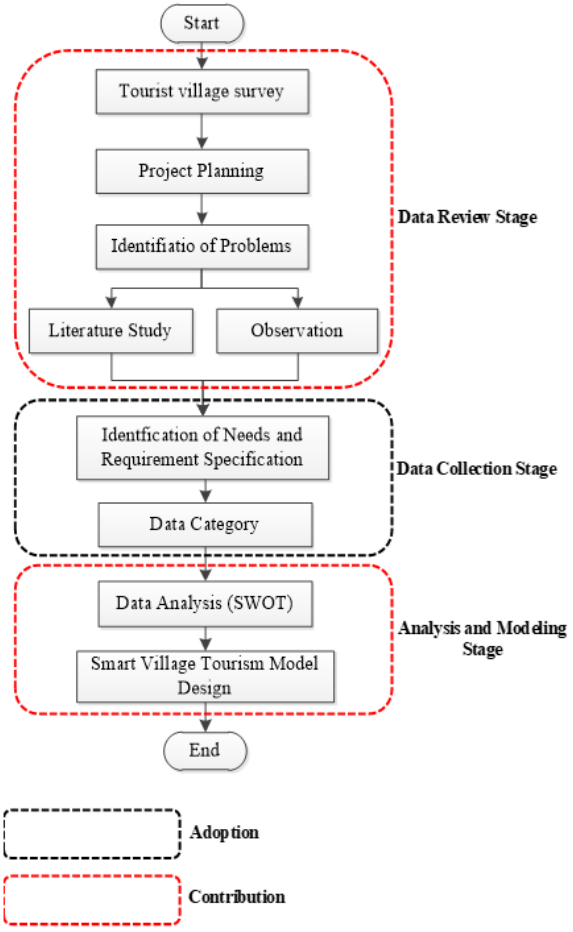

Figure 2. Research Flowchart

Based on Figure 2, the research process begins with the data review stage, followed by the data collection stage, and finally the analysis and modeling stage. The data review stage consists of a tourist village review, project planning, and identification of problems. The purpose of the data review stage in the context of developing tourist villages is to understand performance, and accessibility, and identify existing strengths, uniqueness, and weaknesses. The data collection stage is useful in the development and management of tourist villages by gathering relevant information to categorize data based on the identification of needs and requirements specification for the potential of tourist villages. The analysis and modeling stage involves processing data to understand issues, obstacles, and opportunities, and formulating a model for the development of smart village tourism. To support this process, the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices were employed to systematically identify and assess relevant strengths, weaknesses, opportunities, and threats. The data analysis method uses SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) (Fan et al., 2023), which is useful for evaluating various aspects of tourist villages and identifying strategies that can be implemented for development and improvement (Thamrin et al., 2024). This approach is consistent with the previous study (Sibarani & Pasaribu, 2025), which demonstrated that integrating the IFE and EFE matrices within the SWOT framework can effectively generate well-prioritized strategies through a structured matrix evaluation method. The SWOT analysis method can be applied to tourism development strategies (Reihanian et al., 2012)(Mallick et al., 2020) by adapting to the potential or local wisdom of a region (Heshmati et al., 2022). Internal factors (strengths, weaknesses) and external factors (opportunities, threats) are systematically and comprehensively processed to design a TOWS matrix that includes four modeling groups: strengths-opportunities (SO), weaknesses-opportunities (WO), strengths-threats (ST), and weaknesses-threats (WT). Subsequently, a suitable model is formulated for the two selected tourist villages: Samiran Tourism Village and Durensari Tourism Village (Education Village). This research represents the formulation of a technology-based tourist village development model by adopting the smart city perspective, in accordance with the potential and uniqueness highlighted as part of preserving local wisdom in the follow-up development of smart village tourism.

4. Result and Discussion

This study utilizes two case studies of tourism villages in Boyolali Regency, Samiran Tourism Village and Durensari Tourism Village (Education Village). Based on data obtained from reviews and data collection, a SWOT analysis and a smart village tourism model were conducted. The strategy for

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developing smart village tourism through SWOT analysis aims to identify findings from the aspects of strengths, weaknesses, opportunities, and threats. The potential, based on data review and collection, can be seen in Table *1*.

Table 1. Potential of Samiran Tourist Village and Durensari Tourist Village

Potential of Samiran Tourism Village	Potential of Durensari Tourism Village
1. Natural tourism potential with the attraction of beautiful landscapes and vegetable plantations. 2. Cultural tourism potential with the attraction of traditional dances and local culinary delights. 3. Artificial tourism potential with the attraction of homestays, Merapi Garden, and Sanjaya Hill.	1. Educational tourism potential with the attraction of learning about Javanese etiquette, traditional museums, traditional games, and puppet learning. 2. Artificial tourism potential with the attraction of copper handicrafts, local SMEs' specialty products, and "Griya Palerenan", which offers meeting venues and homestays.

Based on Table *1*, it can be concluded that the two tourist villages have diverse potentials, including natural tourism, cultural tourism, artificial tourism, and educational tourism. These potentials can be utilized and developed towards becoming smart tourist villages. The strategy to enhance the development of smart tourist villages can be analyzed using the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices. Internal and external factor evaluations were conducted by distributing a questionnaire containing 10 statements, which had been tested for validity and reliability with a sample size of 30 respondents. The reliability test results, as shown in Table *2*, were obtained using the SPSS tool with Cronbach's alpha.

Table 2. Reability of Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0,872	0,876	10

Based on the reliability statistics in Table *2*, the Cronbach's alpha value obtained was > 0.6, so that it can be concluded that the questionnaire passed the reliability test. An evaluation of internal and external factors was initially carried out to analyze the surrounding environment and identify the main opportunities and threats in the development of tourist villages. This was followed by a more systematic SWOT analysis to formulate strategies for developing smart tourist villages. The process was further strengthened through the use of the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices, which provided a structured framework for identifying and assessing strengths, weaknesses, opportunities, and threats. The results of the analysis were then aligned with the long-term objectives of developing sustainable and digitally empowered smart village tourism (Ben-Abdallah et al., 2022). The results of the Internal Factor Analysis for Samiran Tourist Village can be seen in Table *3*.

Table 3. Internal Factor Evaluation of Samiran Tourist Village

No	Factor/Indicator (Strengths)	Bobot	Rating	Skor
1	Presence of an official website for Samiran Tourist Village	0,13	3,50	0,47
2	High enthusiasm of managers and community for developing the tourist village	0,12	3,67	0,38
3	Samiran Tourist Village has local potential, wisdom, and flagship products	0,14	3,50	0,51
4	Partnerships and collaborations with stakeholders in developing the tourist village	0,13	3,33	0,47
5	Most managers or communities have social media accounts and can operate basic smartphones and computers	0,12	3,17	0,38
	Faktor/ Indikator Weaknesses			
6	The level of education and skills within the community still needs improvement	0,06	1,67	0,11
7	Lack of regulations for the development and management of the tourist village	0,07	1,83	0,13
8	Absence of technology-based innovations in the development of the tourist village	0,08	2,00	0,15

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9	Limited infrastructure and facilities supporting the tourist village	0,07	1,83	0,13
10	Skill gaps in utilizing technology and digitalization for the development and marketing of village tourism products	0,07	1,83	0,13
	TOTAL	**1,00**		**2,86**

Based on the data in Table *3*, it can be concluded that the main strength of Samiran Tourist Village is its local potential, wisdom, and flagship products. Meanwhile, its primary weakness is the need to improve the education level and skills of the community. The total IFE matrix score for Samiran Tourist Village is 2.86, indicating that the growth and development potential of the tourist village can be optimized and holds promise for becoming a smart tourist village. The analysis of the External Factor Evaluation (EFE) matrix can be seen in Table *4*.

Table 4. External Factor Evaluation of Samiran Tourist Village

No	Faktor/ Indikator	Bobot	Rating	Skor
	Opportunity			
1	Potential of Samiran Tourist Village attracts investors or partners	0,14	3,67	0,52
2	Digitalization of the tourist village towards the development of smart village tourism	0,12	3,17	0,39
3	Samiran Tourist Village has local potential, wisdom, and flagship products	0,13	3,33	0,39
4	Local government policies regarding the implementation and development of tourist villages	0,13	3,50	0,48
5	Development of a sustainable tourist village based on local wisdom	0,13	3,33	0,43
	Faktor/ Indikator Threat			
6	Digital crimes related to fraud and data theft	0,07	1,83	0,13
7	Dependence on digital technology	0,05	1,33	0,07
8	Tourist visits exceeding the village's carrying capacity	0,07	1,67	0,11
9	Decline in local identity and culture	0,09	2,33	0,21
10	Environmentally unfriendly development	0,06	1,67	0,11
	TOTAL	**1,00**		**2,84**

Based on the data in Table *4*, it can be concluded that the main opportunity for Samiran Tourist Village is its potential to attract investors or partners for the development of local wisdom-based tourism as its main attraction. Meanwhile, the primary threat is the dependence on digital technology. The overall total score from the External Factor Evaluation (EFE) matrix analysis is 2.84, indicating a good external capacity to recognize the available opportunities for enhancement and development as a smart tourist village.

The case study for the second tourist village is Durensari Tourist Village. The results of the Internal Factor Analysis for Durensari Tourist Village can be seen in Table *5*, while the results of the External Factor Analysis for Durensari Tourist Village can be found in Table *6*.

Table 5. Internal Factor Analysis of Durensari Tourist Village

No	Faktor/ Indikator	Bobot	Rating	Skor
	Strength			
1	Presence of an official website for Durensari Tourist Village	0,13	3,50	0,47
2	High enthusiasm of managers and community for developing the tourist village	0,14	3,67	0,51
3	Durensari Tourist Village has local potential, wisdom, and flagship products.	0,13	3,50	0,47
4	Partnerships and collaborations with stakeholders in developing the tourist village	0,13	3,33	0,42
5	Most managers or communities have social media accounts and can operate basic smartphones and computers	0,12	3,17	0,38

On-line: http://ejournal.undip.ac.id/index.php/jsinbis/article/view/68328

	Faktor/ Indikator Weaknesses			
6	The level of education and skills within the community still needs improvement.	0,08	2	0,15
7	Lack of regulations for the development and management of the tourist village	0,06	1,67	0,11
8	Absence of technology-based innovations in the development of the tourist village	0,06	1,67	0,11
9	Limited infrastructure and facilities supporting the tourist village	0,07	1,83	0,13
10	Skill gaps in utilizing technology and digitalization for the development and marketing of village tourism products	0,08	2	0,15
	TOTAL	**1,00**		**2,89**

Based on the data in Table 5, it can be concluded that the main strength of Durensari Tourist Village is the high enthusiasm of the managers and the community for the development of the tourist village. Meanwhile, the primary weaknesses are the lack of regulations for the development and management of the tourist village and the absence of technology-based innovations in its development. The total score from the Internal Factor Evaluation (IFE) matrix for Durensari Tourist Village is 2.89, indicating that the growth and development potential of the tourist village can be optimized and holds promise for becoming a smart tourist village.

Table 6. External Factor Analysis of Durensari Tourist Village

No	Faktor/ Indikator Opportunity	Bobot	Rating	Skor
1	Potential of Durensari Tourist Village attracts investors or partners	0,12	3,17	0,39
2	Digitalization of the tourist village towards the development of smart village tourism	0,12	3,17	0,39
3	Durensari Tourist Village has local potential, wisdom, and flagship products	0,13	3,33	0,43
4	Local government policies regarding the implementation and development of tourist villages	0,13	3,33	0,43
5	Development of a sustainable tourist village based on local wisdom	0,14	3,50	0,49
	Faktor/ Indikator Threat			
6	Digital crimes related to fraud and data theft.	0,08	2	0,15
7	Dependence on digital technology	0,05	1,33	0,07
8	Tourist visits exceeding the village's carrying capacity	0,07	1,83	0,13
9	Decline in local identity and culture	0,10	2,50	0,24
10	Environmentally unfriendly development	0,06	1,67	0,11
	TOTAL	**1,00**		**2,81**

Based on the data in Table 6, it can be concluded that the main opportunity for Durensari Tourist Village is the sustainable development of the tourist village while preserving its local wisdom and potential. Meanwhile, the primary threat is the dependence on digital technology. The total score from the External Factor Evaluation (EFE) matrix is 2.81, indicating that there is a good external capacity to recognize the available opportunities for improvement and development as a smart tourist village. The SWOT analysis is beneficial for systematically analyzing various factors in identifying the development of the tourist village towards becoming a smart tourist village after reviewing the results of the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices. The results of the SWOT analysis are shown in Table 7.

On-line: http://ejournal.undip.ac.id/index.php/jsinbis/article/view/68328

Table 7. SWOT Matrix

SWOT Matrix	**Opportunity (O)** 1. The potential of the tourist village attracts investors or partners. 2. Digitalization of the tourist village towards the development of smart village tourism. 3. The tourist village has potential, local wisdom, and outstanding products. 4. Local government policies related to the organization and development of tourist villages. 5. Development of tourist villages with sustainable local wisdom.	**Threat (T)** 1. Digital crimes related to fraud and data theft. 2. Dependence on digital technology. 3. Tourist visits exceeding the carrying capacity of the tourist village. 4. Decline in local identity and culture. 5. Development that is not environmentally friendly.
Strength (S) 1. The existence of an official website for the tourist village. 2. The willingness of managers and the community for the development of the tourist village. 3. The tourist village has high potential, local wisdom, and outstanding products. 4. The presence of relationships and partners collaborating in the development of the tourist village. 5. Almost all managers or communities have social media and can operate basic smartphones and computers.	**(S-O)** Utilize the official website and existing social media to attract investors or partners (S1, O1). Leverage the potential of digitalization to strengthen promotions through the website and social media (S1, S5, O2). Develop outstanding products based on local wisdom through collaboration with the government and partners (S3, S4, O3, O4). Enhance collaboration with the government and relationships to support policies for sustainable tourism development (S4, O4, O5). Develop technology-based innovations by utilizing existing digital competencies to expand market reach (S5, O2, O3).	**(S-T)** Improve digital security to prevent online crimes by using secure and certified platforms (S1, S5, T1). Control the number of tourists with an online reservation system to maintain capacity (S1, T3). Develop sustainable tourism by involving the local community to preserve cultural identity (S2, S3, T4). Ensure that all developments consider environmental factors, through relationships with partners committed to sustainability (S4, T5). Provide cybersecurity training to the managers of the tourist village to reduce the risk of digital crimes (S5, T1).
Weaknesses (W) 1. The level of education and skills of the community still needs improvement. 2. There are no regulations in place for the development and management of tourist villages. 3. There is a lack of technology-based innovation in the development of tourist villages. 4. Limited supporting facilities and infrastructure for the tourist village. 5. A skills gap in utilizing technology and digitalization for the development and marketing of tourist village products..	**(W-O)** Conduct digital skills and tourism management training for the community to take advantage of digitalization opportunities (W1, O2, O5). Encourage collaboration with local governments to quickly establish regulations that support the development of tourism based on local wisdom (W2, O4, O5). Promote innovation by leveraging digitalization opportunities for developing smart tourist villages (W3, O2). Attract investors by showcasing high potential and local wisdom to build supporting facilities (W4, O1, O3). Provide intensive training for the community on technology and digital marketing (W5, O2, O3)..	**(W-T)** Conduct digital security training to avoid risks of fraud and data theft (W1, T1). Urge regulations to protect local culture and manage tourism impacts in an environmentally friendly manner (W2, T4, T5). Reduce dependence on digital technology by diversifying services and maintaining relevant offline interactions (W3, T2). Develop sustainable partnership programs to improve infrastructure with an environmentally friendly approach (W4, T5). Manage technology dependence by enhancing the basic technology skills of the community and managers (W5, T2).

On-line: http://ejournal.undip.ac.id/index.php/jsinbis/article/view/68328

Based on Table 7, the SWOT analysis results indicate that Samiran tourist village has significant potential for development with the smart village tourism concept, emphasizing the nature-based tourism sector in a cool rural atmosphere. Its strategic location near Mount Merapi and Mount Merbabu provides a strong attraction with beautiful scenery. However, there are several obstacles and challenges, such as some human resources lacking understanding of technology and the development of village potential that could attract tourists, impacting the village's economic growth (Nabil Mohemmed AL-Hazmi, 2023). Additionally, the infrastructure is inadequate, and disaster emergency response simulations are still minimal. Support from the government and cooperation with third parties are necessary to address the existing obstacles and issues. Strategies to leverage strengths and opportunities to overcome weaknesses and threats can include enhancing technological skills, improving infrastructure, diversifying the economy, and strengthening disaster mitigation systems. With the smart village tourism concept, the well-being of the community can be improved while developing potential sustainably. The SWOT analysis results for the development of Durensari tourist village (Education Village) indicate a significant potential for the smart village tourism concept, with strengths including partnerships or third-party collaborations in the development of the tourist village. Additionally, the strength of copper craft potential can be developed as a unique characteristic for digital marketing (Aziz et al., 2024), which can enhance the community's income. The education concept emphasizes local wisdom, culture, and traditions that should be preserved and introduced to the younger generation. This approach is essential to ensure that existing values and knowledge not only endure but are also embraced and practiced by future generations. However, there are obstacles and challenges, such as limited facilities, a lack of human resources with specialized skills in technology understanding and digitalization (Giang et al., 2021), competition from other tourist villages with their attractions, and the community's understanding of the smart village tourism concept. Support from the local community, government, and additional partnerships is necessary to expand relations in the development of smart village tourism in Durensari with an educational concept. Strategies to leverage strengths and opportunities to address weaknesses and threats can be implemented through consistent development of the tourist village, synergy with third parties to enhance infrastructure, and training programs to improve the quality of skilled human resources related to the utilization of technology and digitalization of smart tourist villages by adopting the smart city perspective (Chang et al., 2023).

The conceptual model of the smart village for the case studies of Samiran Tourist Village and Durensari Tourist Village (Education Village) has been developed by adopting the smart city perspective. There are four aspects in the proposed smart village tourism model: people, governance, financial & resources, and technology & education. These aspects form a strong foundation for sustainable and inclusive tourist village development that can be applied in Samiran and Durensari. Adapting smart city principles in the smart village tourism modeling is crucial to creating technology-based tourist village development while preserving local wisdom and village potential. The smart village tourism model for application in this research case study is illustrated in Figure *3*.

The smart village model consists of four facets: people, governance, financial and resources, technology, and education. The people aspect in the smart village tourism modeling includes customer relationships, education, innovation, and health, all interconnected and contribute to the successful development of sustainable and technology-based tourist villages. The governance aspect comprises internal processes, e-governance, collaboration, and data analytics and management, which act as facilitators to enhance the management of tourist villages by strengthening the governance of technology utilization and improving service quality. The financial and resource aspects include village tourism, marketing strategies, local businesses, and energy, contributing to the sustainable development and economic growth of tourist villages. Technology and education encompass internet availability, local applications, infrastructure, and the Internet of Things. Each element within the technology and education aspect contributes to improving service quality and education in the development of technology-based tourist villages.

All Elements In The Proposed Smart Village Tourism Model Have A Contributory From Every Aspect. Table 8 summarizes the sub-aspects and explanations related to the smart village tourism model based on case study results from the two tourist villages, Samiran and Durensari. Both Samiran Village and Durensari Village have significant potential for the development of technology-based tourist villages that highlight local potential and wisdom. This smart village tourism model is expected to create an innovative and sustainable tourist village ecosystem.

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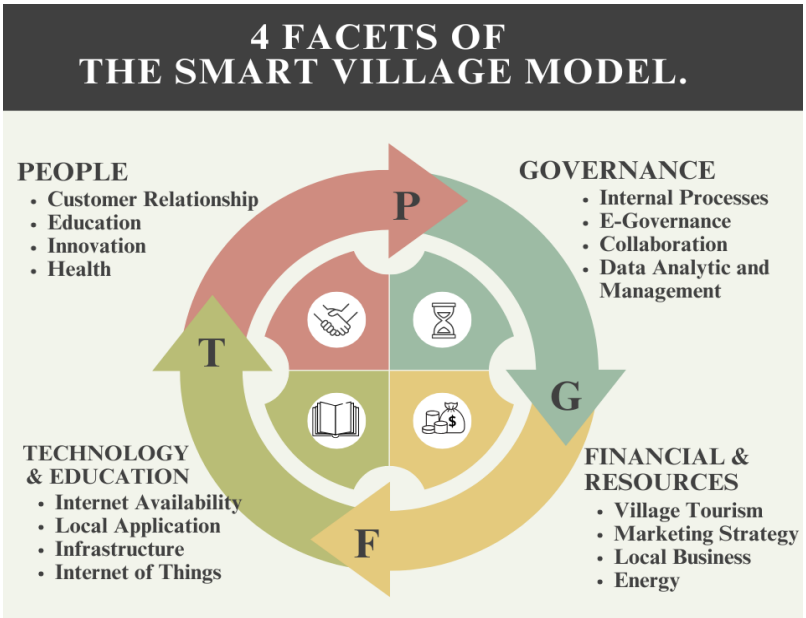

Figure 3. The smart village model

Table 8. Descriptions 4 Facets of The Smart Village Tourism Model

Aspect	Sub-Aspect	Contribution
People	Customer Relationship	Building relationships with tourists and gathering feedback from them to improve services.
	Education	Providing training to the community on skills needed for developing smart village tourism and understanding the preservation of local culture and traditions as attractions and uniqueness.
	Innovation	Encouraging the community to innovate in developing tourism products and services that meet market needs.
	Health	Improving access to and the quality of health services for tourists and local communities, including providing health and hygiene information.
Governance	Internal Processes	Establishing an efficient organizational structure and implementing SOPs for tourist village management.
	E-Governance	Implementing an electronic governance system to enhance transparency and accountability in public services.
	Collaboration	Building cooperation among stakeholders, including the government, community, and private sector in the development of smart tourist villages.
	Data Analytics and Management	Collecting and analyzing data to support decision-making based on historical data in tourist village management.
Financial & Recources	Village Tourism	Developing diverse tourism products and services to diversify income and increase funding for tourist village development.
	Marketing Strategy	Implementing digital marketing strategies and branding products to promote the tourist village.
	Local Business	Empowering MSMEs and facilitating the marketing of local products to increase community income.
	Energy	Managing energy sources sustainably and promoting energy efficiency.
Technology & Education	Internet Availability	Enhancing internet accessibility through good network infrastructure and providing public connectivity in tourist village areas.
	Local Applications	Developing local applications for community information and interaction, as well as for tourist village management.
	Infrastructure	Building and improving public facilities and technological infrastructure to support smart tourist villages.
	Internet of Thing	Utilizing IoT technology to enhance tourist experiences and improve resource management efficiency.

The proposed smart village model adopts the principles of smart cities to create an intelligent and sustainable tourist village. Each aspect contributes to enhancing the quality of life for local communities, promoting village development, improving public services, and leveraging technology as an attractive and engaging new experience. By integrating all elements, the goal of sustainable village development can be achieved while preserving the potential, culture, and local wisdom inherent in the community. Based on research findings (Bahtiar et al., 2020) explains that by utilizing technology can be used to improve and help preserve and introduce the potential of village tourism Consistent development is a key point for the sustainability of smart village tourism. Digital marketing strategies can be utilized for supporting the management and development of smart tourist villages (Nurmadewi, 2024). Collaboration and innovation can be utilized to address future challenges and obstacles.

5. Conclusion

The development of tourist villages has undergone a significant transformation in line with changes in technology, innovation, and the latest trends in adopting smart tourism digitalization. This study is an initial exploration of the smart village tourism development model based on the results of identification and SWOT analysis to understand the barriers and facilitators related to the adoption of a smart city perspective. The results of the SWOT analysis, presented in Table *7*, are used to propose a model displayed in Figure *3*. The contribution of each aspect within the smart village tourism model is explained in detail as shown in Table *8*. The proposed model is expected to provide practical guidance for the sustainable and innovative development of village tourism. Future research is recommended to further explore smart village tourism, particularly focusing on the challenges of technology implementation in rural areas and a deeper investigation of its socio-economic impacts.

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