

Community-Based Business Transformation in Rural Destination: Strategic Planning for Sustainable Tourism

Gregorius Antariksa Berybe¹, Dewi Sartika Umul², Roseven Rudiyanto³, Yohana Etheldreda Ine Dae⁴, Septian Hutagalung⁵, Wilhelmus Sabatani Jangku⁶, Laurensius Sandrio^{7*}

^{1,2,3,4,5,6,7}Politeknik eLBajo Commodus, Indonesia.

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Abstract. Community-Based Tourism (CBT) is increasingly recognized as an effective strategy for sustainable rural tourism development. However, business planning in rural destinations often lacks local engagement, integration of digital innovation, and robust evaluation frameworks. This study presents the development and implementation of a participatory, digitally integrated business plan for Wae Lolos Village, West Manggarai. Using a mixed-methods approach field observation, semi structured interviews with key local actors, and participatory workshops this research maps local potentials, develops strategic business units, and formulates risk mitigation measures contextualized to the village's social, economic, and environmental dynamics. Integration of digitalization manifests through an ongoing village website initiative, combining online marketing, digital reservations, safety information, and MSME e-marketplace within a single platform. The business plan operationalizes key frameworks such as the Business Model Canvas, PESTEL analysis, SMART indicators, and Logical Framework Analysis, ensuring the plan is both strategic and measurable. Results show: (1) enhanced digital marketing and community engagement, (2) diversified local income streams via the activation of eight business units, and (3) improved risk governance for sustainable economic resilience. This model offers practical and replicable lessons for rural destinations seeking to balance community empowerment, digital transformation, and sustainable business management.

1. INTRODUCTION

Tourism villages have become a central pillar in Indonesia's sustainable tourism strategy. Government initiatives such as those from the Ministry of Tourism and Creative Economy have supported hundreds of priority villages through digitalization, community empowerment, and institutional development (Kemenparekraf, 2021). However, despite abundant natural and cultural resources, many rural destinations lack structured, participatory, and data-driven business plans with measurable evaluation tools (Yusuf & Latifah, 2023; Ramdhani et al., 2022). This gap often leads to fragmented growth and limited economic impact for local communities. Business planning documents are often prepared externally with minimal local involvement and rarely integrate digital services or evaluation frameworks (Rachmawati & Yunita, 2020; Dwiyanto, 2021). In Wae Lolos Village, Manggarai Barat home to Cunca Plias waterfall and trekking routes—the absence of a comprehensive, locally grounded business plan with digital integration and risk mitigation has resulted in fragmented development, especially in service quality, market segmentation, and promotion. This underscores the urgent need for strategic business planning approaches rooted in community-based tourism (CBT). Recent studies emphasize CBT as essential for rural destination development. Giampiccoli and Mtapuri (2020) stress participatory planning and equitable benefit-sharing as key success factors. Tools like the Business Model Canvas (BMC) help map value propositions, markets, and resources (Pinaria & Kalpikawati, 2023), while evaluation frameworks such as SMART and Logical Framework Analysis (LFA) enhance performance tracking (Amalia et al., 2022; Kurniawan & Wibowo, 2021). Yet, most studies stop at potential mapping, lacking implementable plans for communities (Setyawan et al., 2023; Harini & Mukhlis, 2022).

Recent literature underscores that the success of rural tourism business plans hinges on how well local participation and digital integration are combined with sustainability and risk management frameworks (Giampiccoli & Mtapuri, 2020; Nguyen et al., 2021; Gretzel et al., 2015). While tools such as the Business Model Canvas (Osterwalder & Pigneur, 2010) and PESTEL analysis (Gupta, 2013) have been widely adopted for strategic planning, few studies focus on operationalizing these tools within participatory, field-driven frameworks (Setyawan et al., 2023; Wicaksono & Wahyuni, 2021). This study bridges that gap by not only employing these frameworks but by ensuring that business planning emerges organically from local needs, documented through iterative workshops and local actor interviews, thereby answering the call for more actionable and sustainable rural development strategies. This research novelty lies in combining CBT, digital service development, and evaluation using SMART and LFA offering a replicable model for rural destinations. It aims to map potential and context, design participatory business strategies, and develop evaluation tools for sustainability and risk mitigation.

1.1. Background to the Study

Tourism development in rural areas has increasingly been linked to the concept of Community-Based Tourism (CBT), which emphasizes local ownership, participation, and the equitable distribution of benefits. CBT is widely recognized as a strategy for achieving sustainable rural development, as it provides economic opportunities while reinforcing cultural identity and environmental stewardship. In the Indonesian context, particularly in Eastern Indonesia, CBT has gained relevance given the richness of cultural traditions and natural landscapes that can serve as competitive tourism assets.

Despite this recognition, the planning and management of rural tourism enterprises often face structural limitations. Business plans for rural destinations are frequently developed with minimal community involvement, leading to limited local ownership and

sustainability challenges. Moreover, the fast-evolving digital transformation of the tourism sector, from online marketing to digital booking systems remains underutilized in rural settings. Without digital integration, many rural communities struggle to compete with established tourism destinations that benefit from global visibility and streamlined service delivery.

Additionally, there is a lack of robust evaluation frameworks in community tourism planning. Many rural tourism initiatives operate without clear strategic direction, measurable indicators, or risk management strategies. This gap results in projects that are highly vulnerable to market volatility, environmental pressures, and governance challenges. To ensure resilience and long-term viability, rural tourism must be guided by structured business planning tools such as the Business Model Canvas, PESTEL analysis, SMART indicators, and Logical Framework Analysis.

Against this backdrop, the present study focuses on Wae Lolos Village in West Manggarai, Indonesia, as a case study to explore how digitally integrated and participatory business planning can strengthen community-based tourism. The village is currently undertaking a digital initiative to create a community website that integrates marketing, online booking, safety information, and a local e-marketplace for small enterprises. By combining field observation, semi-structured interviews with key local actors, and participatory workshops, this study seeks to map local potential, design strategic business units, and formulate context-sensitive risk mitigation strategies. This background underscores the dual imperative of empowering rural communities while simultaneously embracing digital innovation and structured planning to enhance resilience, competitiveness, and sustainability in community-based tourism

1.2. Problem Statement

Community-Based Tourism (CBT) is promoted as a pathway for sustainable rural development, yet its implementation often lacks three critical elements: meaningful community participation, digital integration, and structured evaluation frameworks. In Wae Lolos Village, West Manggarai, despite its rich cultural and natural potential, tourism initiatives remain fragmented, under-promoted, and weak in governance. The absence of a digitally integrated and participatory business plan threatens both the sustainability of local tourism and the preservation of cultural heritage.

1.3. Purpose of the Study

The purpose of this study is to develop and implement a digitally integrated and participatory business plan for Community-Based Tourism (CBT) in Wae Lolos Village, West Manggarai. This study aims to empower the local community through active involvement in tourism planning, integrate digital tools to strengthen marketing and enterprise promotion, and establish a structured framework that ensures risk management and sustainable tourism development.

1.4. Research Questions

This study seeks to answer how the external context of Wae Lolos Village can be analyzed using the PESTEL approach to identify opportunities and challenges for community-based tourism, what potential business units can be developed along with their operational feasibility, and how market segmentation and digitalization strategies may strengthen tourism promotion and local enterprise growth. It also explores what key risks exist in the development of a tourism village business and how these can be effectively mitigated, how the Business Model Canvas can be applied to design an integrated and strategic business model for Wae Lolos Village, and how the proposed business plan can be evaluated using SMART indicators and the Logical Framework (Logframe) to ensure measurable outcomes and long-term sustainability.

2. THEORETICAL FRAMEWORK

The research is structured systematically, beginning with an introduction that highlights the importance of community-based tourism for sustainable rural development and the need for adaptive business models. The literature review synthesizes key frameworks, including Community-Based Tourism (CBT), PESTEL analysis, Business Model Canvas (BMC), digital tourism, and evaluation methods such as SMART indicators and the Logical Framework, all supported by relevant recent studies. The methodology employs a mixed-methods approach, combining qualitative and quantitative data collection through observations, interviews, documentation, and focus group discussions—with purposive sampling.

Data analysis integrates thematic coding for qualitative insights and quantitative techniques such as cost simulation and market forecasting, culminating in business feasibility assessments. The results and discussion section systematically explores village potential, external factors, business unit determination, market segmentation, risk analysis, and the formulation of a business model and evaluation framework. The study concludes with practical recommendations and a replicable business plan model, aiming to strengthen the sustainability and competitiveness of rural tourism initiatives.

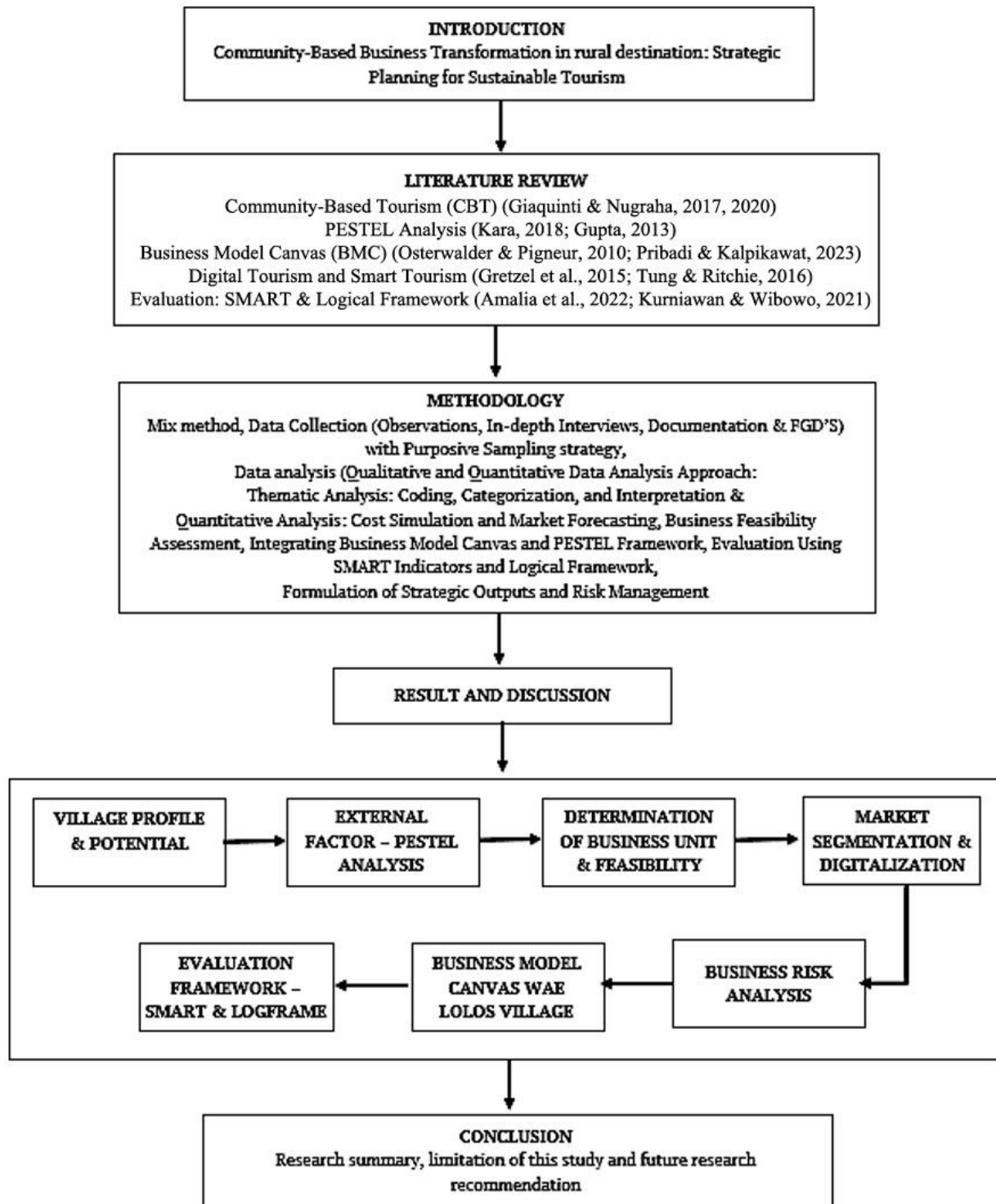


Figure 1. Research framework

3. LITERATURE REVIEW

The development of rural tourism villages has been widely recognized as a strategic approach to achieving sustainable tourism, particularly in Indonesia. The concept of Community-Based Tourism (CBT) places local communities at the center of planning, managing, and benefiting from tourism activities (Giampiccoli & Mtapuri, 2020). CBT emphasizes participation, equitable benefits, and preservation of local culture and environment. A robust business plan is essential for the sustainability of tourism villages. However, many studies have found that most rural destinations lack structured, participatory, and data-driven business models (Yusuf & Latifah, 2023; Ramdhani et al., 2022). For example, research in Baros Village demonstrated that integrating digital strategies with clear business planning increased reservations and income by 25% over two years (Ramdhani et al., 2022).

Similarly, Elmia et al. (2023) reported that digital business plans led to a 30% increase in MSME income in tourism villages. To ensure that business planning is not only participatory but also adaptive to external changes, it is essential to analyze the broader macro-environmental context. The PESTEL framework—which stands for Political, Economic, Social, Technological, Environmental, and Legal factors—serves as a comprehensive tool for this purpose (Gupta, 2013; Kara, 2018). In the context of rural tourism, PESTEL helps identify opportunities and threats arising from government policies, economic conditions, social

dynamics, technological advancements, environmental sustainability, and legal regulations (Harahap & Rahmadana, 2020). PESTEL analysis is essential in rural tourism, as village tourism depends on both internal community assets and external factors like regulations, markets, technology, and environment. Integrating PESTEL with CBT enables holistic, adaptive, and sustainable business planning by aligning local strengths and challenges with broader external influences. The following table summarizes key PESTEL indicators specifically adapted for village tourism development:

Table 1. PESTEL mapping and its implication for sustainable in Wae Lolos.

No	PESTEL Dimension	Key Indicators in Village Tourism Context
1	Political	Government tourism policies, decentralization, local leadership, funding access, stability of regulations
2	Economic	Local income diversification, employment opportunities, market access, seasonality effects, pricing strategies, payment systems
3	Social	Community participation, cultural authenticity, demographic trends, education levels, gender roles
4	Technological	Internet connectivity, digital literacy, online marketing and booking systems, innovation adoption
5	Environmental	Natural resource conservation, disaster risk management, ecological sustainability, waste and water management
6	Legal	Land tenure and ownership, business licensing, labor laws, safety regulations,

Source: Adapted from Kara (2018), Gupta (2013), and Harahap & Rahmadana (2020)

The study integrated PESTEL analysis and the Business Model Canvas, as recommended in recent international research for sustainable tourism development (Nguyen et al., 2021). The model is frequently recommended as a practical tool for mapping business elements such as customer segments, value propositions, channels, and key resources (Osterwalder & Pigneur, 2010; Pinaria & Kalpikawati, 2023). BMC's visual and systematic approach helps communities understand and develop their tourism products more effectively. However, as Ramli and Mukhlis (2022) noted, many villages adopt BMC superficially, without adapting it to local characteristics, resulting in poor implementation. Smart tourism represents another significant advancement, involving the use of digital technologies for planning, promotion, and service delivery (Gretzel et al., 2015). Tools such as village tourism websites, QR codes, e-marketplaces, and real-time dashboards enhance efficiency, visitor experience, and data-driven promotion (Tung & Ritchie, 2016).

In terms of evaluation, frameworks like SMART (Specific, Measurable, Achievable, Relevant, Time-bound) and Logical Framework Analysis (LFA) are increasingly used to measure program success objectively and systematically (Amalia et al., 2022; Kurniawan & Wibowo, 2021). These tools facilitate the tracking of key performance indicators and logical relationships between inputs, outputs, outcomes, and impacts. Risk management is also crucial for tourism business sustainability. Gunawan (2021) classified tourism village business risks into five categories: operational, financial, managerial, marketing, and external. Effective risk identification and mitigation, supported by regular evaluation, are key to long-term success (Ghozali & Suherlan, 2020). Despite these advances, few studies have produced implementable business plans as a direct output of community-based research. Most research remains focused on mapping potential or measuring perceptions, without delivering actionable strategies for local adoption (Setyawan et al., 2023; Harini & Mukhlis, 2022). This study addresses this gap by integrating field research findings into a comprehensive, community-driven business plan, enhanced with digital and evaluative frameworks, to serve as a replicable model for other rural tourism villages.

4. RESEARCH METHODOLOGY

This study employed a mixed-method approach with an exploratory case study design to examine strategic community-based tourism planning in Wae Lolos Village. The qualitative component explored local perspectives and readiness, while the quantitative aspect supported financial feasibility simulation. This approach is increasingly recognized as essential for comprehensive tourism research and strategic planning, especially in complex social contexts (Riandy et al., 2022). The case study design facilitated in-depth contextual analysis and promoted participatory research, as recommended by Yin (2018) and Beeton (2006). The research not only aimed to describe the tourism potential but also to develop strategic outputs, including a community-based business model, a Business Model Canvas, and an evaluation matrix using SMART and Logical Framework Analysis. The research adopted participatory action principles, emphasizing the critical role of community involvement in sustainable tourism (Bramwell & Lane, 2011).

Primary data were collected through participatory observation, semi-structured interviews, and analysis of administrative and policy documents. Observations were conducted during tourism activities and community meetings to identify real-time operational gaps such as the absence of procedures, service, potential bisnis. Interviews involved purposively selected informants: the Pokdarwis leader, secretary, local guide, homestay provider, and culinary entrepreneur. Selection followed the criteria of active engagement in tourism activities and business development, in accordance with Patton (2015) and Palinkas et al. (2015). Secondary data sources included village development plans, statistical reports, and government regulations. Data triangulation increased the credibility and dependability of findings, consistent with the framework by Miles, Huberman, and Saldana (2014). Thematic analysis was applied to qualitative data in three steps: coding and reduction, theme categorization, and narrative interpretation. Key themes identified included "institutional readiness," "business feasibility," and "digital transformation." Quantitative data, such as cost simulations and market segmentation, were analyzed using simple forecasting models. Business feasibility was calculated by estimating unit costs, pricing strategies, and projected income based on 2024 visitor data (11,015 visitors). To contextualize the business model, the study employed the BMC (Osterwalder & Pigneur, 2010) and PESTEL analysis (Gupta, 2013). Evaluation was conducted using SMART indicators and the Logical Framework, following best practices in international tourism planning (Johnson & Samakovlis, 2019). These frameworks also guided the formulation of strategic outputs such as business projections, risk management tables, and an integrated digital tourism development roadmap.

5. RESULT AND DISCUSSION

5.1. Profile and Potential of Wae Lolos Village

Wae Lolos Village, located in Mbeliling District, West Manggarai Regency, East Nusa Tenggara, was formally designated as a tourism village through the Decree of the Head of the Tourism Office No. 106/KEP/HK/2021. The village offers significant potential in adventure-based ecotourism (trekking, waterfalls), educational tourism (conservation, heritage), and supports a creative economy through bamboo handicrafts and traditional culinary products. The tourism development is primarily driven by the local community organization, Kelompok Sadar Wisata (Pokdarwis). Despite these assets, tourism development is still early. Limited internet hampers field communication, especially in emergencies during trekking, as guides struggle to contact the guard post (Marwan, Pokdarwis secretary, 2025). Data on tourist visits in 2024 and the number of visits until July 2025 are the basis for estimates and targets for tourist visits in 2026 as shown in the following table:

Table 2. Visitor forecast.

Month	2024 (sources: Pokdarwis)			% of Total 2024 (11,193 × 100)	Target for 2026 (12,000 × % monthly 2024)
	Domestic	Foreign	Total		
January	801	49	850	7.59%	987
February	1067	89	1156	10.33%	1343
March	542	141	683	6.10%	683
April	767	192	959	8.57%	809
May	665	326	991	8.85%	991
June	772	400	1172	10.47%	1172
July	485	507	992	8.86%	1350
August	419	817	1236	11.04%	1500
September	374	475	849	7.58%	1200
October	372	482	854	7.63%	900
November	368	355	723	6.46%	750
December	452	276	728	6.50%	650
Total	6,814	4,378	11,193	100%	12,335

Community involvement is evident, but lack of a business mindset hinders development. As Robert, the Pokdarwis chairperson (2025), explained, “We’ve been serving tourists for some time, but we never considered it a formal business. We haven’t set prices, made long-term plans, or identify product potential.” This concern is echoed in the limited commercialization of local MSME products, which are available but not yet curated for the tourist market. This challenge is common across rural tourism villages where potential exists but lacks market-oriented packaging (Fitri et al., 2022). CBT principles exist, but without managerial systems, participation alone does not ensure business success (Okazaki, 2008). This highlights the need to transform local enthusiasm into a strategic, market-responsive business model.

5.2. External Context Analysis with the Pestel Approach

Wae Lolos, as a tourism support zone, benefits from national and regional policies, but these must be adapted to local limitations. To gain a holistic view of the external forces influencing business development, this study applied a contextualized PESTEL framework. The analysis examined macro- environmental factors namely political, economic, sociocultural, technological, ecological, and legal aspects that shape the village’s tourism dynamics. PESTEL allows analysis not only on internal strengths and weaknesses, but also on policy dynamics, social change, technology adoption, and potential environmental risks that have not been well accommodated in the SWOT approach. As stated by Harahap and Rahmadana (2020), community-based tourism villages need macro analysis tools that are able to accommodate pressures and opportunities from external systems such as regulations, markets, and tourism trends. Political and Policy Factors). Located in a strategic area that is included in the supporting area of the Labuan Bajo. The central and regional governments have issued various policies to accelerate the growth of tourism villages, such as the Regulation of the Minister of Tourism and Creative Economy Number 7 of 2021 concerning professional and sustainable management of tourism villages. At the scale of the local government, West Manggarai Regency Regional Regulation Number 9 of 2017 concerning the Regional Tourism Development Master Plan (RIPPARDA) for 2017-2032 in Chapter IV on: Tourism Development Policy Direction to focus on community empowerment and destination development and Chapter IV part two on: Tourism Development Strategy where villages must have strategies in marketing, destination development and institutional development. This shows the support of the government, both central and regional, in the development of tourism villages in management management. This is an important foundation for managers in compiling work programs and village development.

Economic Factors and Market. Economically, Tourism revenue is narrowly concentrated in trekking and guide services, with minimal monetization of local crafts or culinary potential. “This notion aligns with Robert’s (2025) statement that managing a homestay was initially seen as a communal responsibility, not an economic opportunity. This exposes the village to income volatility and underutilized community assets. Sales in terms of cultural attractions, homestays, culinary, or local crafts are still very small. In terms of transactions, it still uses a cash payment system and the village still does not have a business accounting system. It is necessary to diversify products, package prices vary, maximize income potential from other business units and basic financial management systems, cash flow training. Social-Cultural Factors. Socially, local community show high enthusiasm for tourism development. For example, during discussions with youth in the village, many conveyed that they already support tourism

activities informally but had never considered themselves as business actors. This mindset shift reflects the practical relevance of CBT in the local context. Local tour guides are only 2-3 people who can speak English. Lack of service competence can be a challenge in the development of business units where this is in line with the opinion of Berybe et al., (2021) that the competence to communicate in English will become a keyfactor when meeting with foreign tourists.

Culturally, the village upholds a rich set of traditions such as the ritual of welcoming guests (*Kepok*), accompanying dances (*Sanda*), traditional interaction (*Ris*), ancestor respect (*Wae Lu'u*), and *Caci* dance as a symbol of Manggarai's typical agility which, when appropriately packaged, could form a cornerstone of educational and heritage tourism. All of these traditions strengthen local identity and become an integral part of the village's educational and cultural tour packages. As suggested by Wibowo and Septiani (2022), the success of tourism villages depends on comprehensive and non- elitist community involvement. Women's involvement in management is still limited to eating and drinking. Technology and Digitalization Factors. Currently, Pokdarwis assisted by the eLBajo Commodus Polytechnic is developing a tourism village website. Roseven (2025) as the head of the website development team revealed that the website was developed to support smart tourism in the management of tourist villages with features that make it easier for tourists to find out the activities that will be obtained in Wae Lolos village. The main problem is the limitation of internet and telecommunication networks. It is an obstacle in the development of villages towards smart tourism. The existence of a website is a competitive advantage, but it must be accompanied by a team that is responsible as an operator so that it is always updated for tourists. Technological barriers, including poor signal reception and low digital literacy, hinder the adoption of smart tourism. Although a village website is in development, continuous capacity building is required to sustain its functionality. Environmental and Factors.

Wae Lolos area has the main attraction in the form of waterfalls (*cunca*), forests, and natural trekking trails. However, the accessibility to the location of the *Cunca Plias* waterfall is very slippery and potentially dangerous during the rainy season and is not equipped with infographics related to safety and security. Business development needs to consider risk mitigation systems and visit capacity settings. Safety and mitigation SOPs are needed from the village in minimizing accidents. In addition, tour guides need to be equipped with knowledge and skills in handling safety, this is the hope of the secretary of the pokdarwis where Marwan (2025) revealed that there is no special training related to handling safety during tracking activities. Legality and Institutional Factors). *Pokdarwis Cunca Plias* has been formed in 2024 based on the Decree of the Head of the Tourism, Creative Economy and Culture Office of West Manggarai Regency No: 556.9/281/Parekrafbud/V/2024. This encourages pokdarwis to access funding, official cooperation, and legal protection as part of village management management. As stated in Permenparekraf No. 10/2021, tourism village management bodies are required to have formal legality to be able to establish partnership cooperation. In terms of work programs, Pokdarwis does not yet have a program in village development in a structured, systematic and measurable manner, especially related to the development of a business unit. This customized PESTEL lens allowed for both macro and micro interpretations of the challenges and opportunities facing Wae Lolos, as recommended in community-based tourism research by Gupta (2013), Harahap & Rahmadana (2020), and Wibowo & Septiani (2022).

5.3. Potential Business Units and Operational Feasibility

The PESTEL analyses revealed both internal and external drivers affecting business sustainability. Furthermore, the roadmap provides a staged operationalization plan through 2030, visually linking annual targets, business unit development, and training programs. The community- based business plan developed in Wae Lolos Village is designed by taking into account the geographical characteristics of the village which is dominated by hilly areas and natural waterfalls, as well as the social conditions of the community who are compact and enthusiastic in tourism development. The results of the analysis show that villages have the main strength in the attractiveness of ecotourism and communities that are adaptive to change. However, management that has not been digitized and the absence of institutional legality poses serious challenges to sustainability. The results of discussions with pokdarwis and the community show that there are eight business units that have the potential to be developed and managed in a sustainable manner. which is formulated based on a combination of asset potential, human resource readiness, and product marketability. This determination refers to the principle of diversification of village tourism products as developed by Lane & Kastenzholz (2015) in their study of rural tourism. The determination of this business unit is carried out by considering several main criteria, namely: 1. Tourist attractions that already exist or have the potential to be developed. 2. Availability of relevant local human resources. 3. Measurable market segmentation. 4. Conformity with the local geographical and cultural character. 5. Easy integration with promotional digital media. The village business units are determined as follows:

Table 3. Business Unit Projection.

No	Units of business	Development Steps
1	Waterfall Trekking Tour Package	Lane mapping & classification of safety and driving SOPs Local guide training Digital promotion & QR code
2	Educational Tour Package / Teaching Factory	Identification of educational materials Curriculum development Facilitator training School/campus cooperation
3	Local Guide	Training & certification, Guide rotation & incentives, SOP
4	Homestay	Assessment of homes, Guest service training & Hospitality training, SOP
5	Local Cuisine	Identification of typical menus, Food processing and safety training, Strategic serving locations, Food Costing, Digitization of menus via QR & website
6	MSME Products & Souvenirs	Mapping of local products (coffee, processed bamboo, weaving), Emarket packaging & storytelling training on the website, exhibitions during high season
7	Cultural Attractions	Identification of art attractions Rehearsal & curation of performances Preparation of cultural packages Bundling promotion on the website
8	Tourist Parking	Parking lot arrangement, Vehicle ticketing system Management.

The determination of eight business units in the business plan document is based on two main approaches: (1) existing local potential that has not been packaged as an economic product; (2) the needs of tourists based on segmentation and visit patterns.

These findings reinforce the important role of the village's attractions and potential as a foundation in the determination of business units, thereby further increasing community involvement in the implementation of the designed business units. This model is in line with the lean business model approach for rural tourism outlined by Ritchie and Crouch (2010), which emphasizes the importance of building businesses from the micro potential and resources available in the village. Each business unit is designed based on the principles of efficiency, sustainability, and ease of implementation by residents. For example, in determining the homestay business, an assessment of residents' houses is carried out based on homestay standards according to the Ministry of Tourism and Creative Economy (Kemenparekraf) of the Republic of Indonesia Number KM.37/HK.501/MPEK/2017 and SNI 9042:2021). This supports the view of the findings in Wae Lolos Village showing that most of the business unit initiatives such as homestays and MSME products, come from existing local potentials but have not been strategically processed. This is in line with Karampela et al. (2020) who emphasized that the success of tourism village development is highly dependent on the optimization of local resources to avoid external dependencies that can interfere with sustainability. Based on the business unit analysts above, the following is a financial simulation in a business plan including cost calculation and projected revenue that can be obtained.

Table 4. A year financial simulation of business units.

No	Business Units	Type	Unit Price	Target (Guest/Unit)	Revenue Target	Information	
1	Entrance Fee	Local	IDR5.000	6984	IDR34.920.000	- Visitor target is 12,000 people in 2026	
		Domestic	IDR15.000	3651	IDR54.765.000		
		Foreign	IDR30.000	1700	IDR51.000.000		
		Total		12335	IDR140.685.000		
2	Guiding Services	Non-english	IDR35.000	2127	IDR63.810.000	- Local & domestic tourist, - Foreigner tourist	
		English	IDR50.000	340	IDR17.000.000		
3	Educational tour packages	Total		2467	IDR80.810.000	- Ratio 1:5	
		Halfday	IDR25.000	530	IDR13.250.000		Group of 10 pax minimum.
		Fullday	IDR50.000	290	IDR14.500.000		
4	Homestay	Total		820	IDR27.750.000	- 5 homestays	
		Room	IDR200.000	33	IDR6.600.000		
5	Local cuisine	Total		33	IDR6.600.000	- 70% of total target visit - 30% of total target visit	
		Snack	IDR10.000	8635	IDR86.345.00		
		Lunch	IDR25.000	3701	IDR92.512.000		
6	MSME Products	Total			IDR178.857.500	- Target of 500 products	
		Souvenirs	IDR50.000	2467	IDR123.350.000		
7	Cultural Attractions	Total			IDR12.500.000	- 20% of total target visit	
		Perform	IDR1.500.000	28	IDR42.000.000		
8	Parcking fee	Total			IDR42.000.000	- 40% of total target visit - 35% of total target visit - 25% of total target visit - 5% of total target visit	
		Motorcycle 1:2	IDR2.000	2467	IDR4.934.000		
		Car 1:4	IDR5.000	1079	IDR5.396.563		
		Mini Bus 1:8	IDR7.000	308	IDR2.158.625		
		Big Bus 1:14	IDR10.000	44	IDR440.536		
Total				3899	IDR12.929.723		
1-YEAR REVENUE TARGET					IDR612.982.223		

The implementation of business units requires the competence of each related group. Capacity building is carried out through guidance and intelDRetasi training, homestay services such as welcoming guests, simple communication and food and drink services, food safety training for culinary managers, synchronization between cultural attractions in the context of attractions for tourists, and digital training for reservation teams. This is important because according to Kurniasih and Setiawan (2021), the success of tourism business units is highly determined by the competence of human resources who are in direct contact with tourists. The feasibility of the business unit is also evaluated through revenue projections and unit cost simulations. Data shows that the trekking and education sector has the highest potential because it dominates the main tourist experience and is repeatable. Complementary business units such as parking and MSME products are significant additional economic supports. This is a way of developing community-based tourism as explained by Novelli (2016), in the context of community-based tourism, the selection of business units must pay attention to the relationship between the products offered and local identity, so as to produce uniqueness that is difficult for other destinations to imitate. Thus, the eight business units that were prepared are not only economically feasible, but also authentic and support cultural sustainability.

5.4. Market Segmentation and Digitalization

The segmentation strategy employed in this business plan is rooted in empirical data and community consultation, not assumptions. Visitor records from 2024 indicating over 11,000 arrivals combined with insights from local stakeholders such as vocational educators and tour guides, informed the classification of four key market segments: school and university students for field-based learning; adventure-seeking domestic and international tourists; nature-oriented communities such as hiking groups; and spontaneous local visitors on leisure outings. Field interviews revealed that student groups seek structured educational content and safety guidelines, while adventure tourists value authenticity, and local visitors are driven by affordability and shared experiences. These distinctions support the market-driven rural tourism model described by Lane and Kastenholz (2015), which emphasizes tailoring tourism services to actual market demands rather than relying solely on resource availability. Customized pricing, targeted content, and tailored communication strategies were designed to meet these diverse needs. Kotler et al. (2019)

further emphasize that successful segmentation in community-based tourism depends on aligning service value with tourist expectations. The focus on educational segments offers both economic resilience and social value, as frequent visits help strengthen local capacity and foster long-term partnerships. This aligns with Indonesia's vocational education policy on teaching factories, where tourism-based curricula enhance creative industry competencies (Ministry of Education and Culture, 2022).

Promotion is executed through a community-led digital strategy utilizing a village tourism new and development website <https://wisatawaelolos.com/>, social media platforms, and interactive QR signage. This approach is supported by the Digital Tourism Experience theory (Tung & Ritchie, 2016), which finds that digital tools enhance tourist perceptions of safety and enrich the overall experience. For instance, a local guide reported that QR codes containing trekking maps and SOPs boosted his confidence in communicating with foreign tourists, illustrating how digital features support interpretive services. Patterson (2017) also highlights digital integration as a means to reduce manual workloads and improve management efficiency. Furthermore, digitalization enables alternative revenue streams. Features like online reservations, donation modules for conservation, and an e-market for local products contribute to economic sustainability without overburdening the physical environment (Elmia et al., 2023). The ongoing website development represents a pivotal initiative by Pokdarwis to integrate marketing, booking, safety education, and community business promotion into one platform. However, current use of the website remains basic, limited to displaying general information. Future plans include integrating unit catalogs, digital SOPs, culinary menus via QR, booking features, and service monitoring dashboards. This direction aligns with the smart destination framework proposed by Ivars-Baidal et al. (2021), emphasizing transparency, efficiency, and user-centered services. Nevertheless, the digital capacity of local stakeholders remains a constraint. To address this, training sessions and a dedicated digital management team are included in the operational roadmap. This strategy aligns with Gretzel et al. (2015), who underline that technological success in smart tourism depends as much on human content management as on digital infrastructure. The participatory and digital approach developed in Wae Lolos resonates with the smart destination principles promoted by UNWTO and successful models in Spain, Portugal, and Vietnam, which demonstrate the advantages of combining digital literacy, community-based tourism, and multi-stakeholder collaboration for strengthening rural economies and resilience.

5.5. Risk Analysis in Tourism Village Business Development

In community-based business development, risks come not only from the tourist's side (such as accidents), but also from internal and external uncertainties that can hinder business sustainability. Widyaningsih et al. (2022) explained that the success of risk mitigation in tourism villages is highly dependent on community involvement in formulating and implementing SOPs consistently. Business risk analysis is a strategic step in determining mitigation steps. Based on previous literature reviews, there are five main risk groups in the tourism village business (Ghozali & Suherlan, 2020; Gunawan, 2021), the business risks that arise in the management of the Wae Lolos Tourism Village are as follows:

Table 5. Risk Analysis and Mitigation.

Risk Category	Specific Risk	Related Business Units	Potential Impact	Probability	Mitigation Strategy
External Risk	Changes in regulations	All units	Activity restrictions	Medium	Monitor regulations, communicate with government, adapt policies
	Tourist number fluctuations, seasonal/pandemic	All units	Revenue operational disruption	High	Intensive off-season promotion, target local & student segments, product diversification,
	Natural disasters (floods, landslides)	All units	Asset damage, Tour disruption	Low-Medium	Emergency response plan, asset insurance, routine maintenance
Operational Risk	Delay in website development	Promotion & Reservation	Information disruption	Medium	Realistic timeline, regular evaluation, technical assistance
	Unstructured program	All units	Distruption activities	Medium	Create program based on unit bisnis
	Lack of local participation	All units	Operational disruption,	Medium	Community discussions, awareness campaigns, participation incentives
	Low HR competence	All units	Low service quality	Medium	Routine training, safety certification, technical mentoring
	Unstandardized safety procedures	All units	accidents, complaints	Medium	Develop safety SOPs, safety training, monev
	Dangerous and difficult trekking	Guiding & Conservation	Tourist accidents and injuries	Medium	Guide safety training, protective equipment, evacuation routes
	Limited parking area	All units	Block street,house	Medium	Plot parking area and operational system
	Variety and quality of MSME & culinary	Culinary & MSME	Reduced tourist interest,	Medium	Product quality mentoring, innovation training, quality control
	Business units not fully ready	Accommodation, Culinary, MSME	Suboptimal operations	Medium	Form business groups, provide facility preparation mentoring
	Minimal digital marketing	Promotion & Reservation	Limited tourist reach	Medium	SEO strategy development, social media optimization, influencer
	Delay in disbursing funds	All units	Ops financing disruption	Low	Ensure complete documents, intensify coordination with related
	Facility damage	All units	service decline	Medium	Routine maintenance, reserve fund

Digital Risk	Website downtime/data loss	Promotion & Reservation	Disruption promotion,reservation	Low	Regular data backup, SLAs with hosting, secure data management
	Cyber-attacks/data theft	Promotion & Reservation	Loss of data and damaged reputation	Low	Access protection, digital security training, antivirus software
Financial Risk	Imbalance costs and revenue	All units	Losses, uncontrol cash flow	High	Realistic cash flow projections, BEP analysis, strict expense control

5.6. Business Model of Wae Village (Business Model Canvas)

As the final result of the process of exploration, opportunity identification, and mapping of community-based business strategies, this study formulated a comprehensive business model for Wae Lolos Tourism Village using the Business Model Canvas (BMC) approach. This model aims to provide systematic direction for Pokdarwis and partners in carrying out business activities efficiently, sustainably, and adaptively to market needs. The business model used in this study refers to the Business Model Canvas (BMC) approach, but is equipped with an external analysis based on PESTEL. As emphasized by Pavlovich (2019), in the context of community-based tourism, business plans need to adapt to local social dynamics and geospatial conditions for their implementation to be effective. In Wae Lolos, digitalization through a village-managed website allows tourists to access QR-based trekking maps, real-time reservation systems, and curated cultural experiences. The website that is being developed is a means not only for reservations and promotions, but also a tool for managing tourist data, MSME e-markets, and tourism safety educational media. This is in line with the Smart Tourism framework (Gretzel et al., 2015) which emphasizes technology as an instrument for managing destinations in an efficient, safe, and inclusive manner.

Thus, the preparation of Wae Lolos' business model is not only conceptual but also contextual. Business models built from local strengths such as waterfalls, trekking trails, and active Pokdarwis communities show that natural potential and social readiness are the two main pillars of development. This approach is in line with the findings of Ardika et al. (2022) who stated that the integration of the two is a key factor in the success of a tourism village business plan. The BMC approach was chosen because it is able to bridge strategic and operational concepts through 9 main blocks that are interrelated (Osterwalder & Pigneur, 2010). The BMC model used in the Wae Lolos business plan document contains nine key blocks that are interintegrated and contextualized in rural tourism settings. This is in accordance with the update of BMC's use in the development of community-based tourist destinations proposed by Darmawan and Nurhayati (2022), that this model is able to bridge social and economic strategies in the village business structure. Each block in this model is developed based on the results of observations, in-depth interviews, and an analysis of the local potentials and challenges faced by Pokdarwis.

Table 6. Wae Lolos Village Business Model Canvas

No	Component	Implementation Issues and Strategies
1	Customer Segments	Domestic and foreign adventurous tourists ,students (educational), Hiking communities and nature lovers
2	Value Propositions	Smart Tourism Village, Natural waterfalls and safe trekking trails Environmental & cultural education, Homestays and local cuisine, Typical village experiences
3	Channels	Tourism village website: www.wisatawaelolos.com , QR signage on location Social Media (Instagram, TikTok, YouTube) Cooperation with schools and travel agencies
4	Customer Relationships	Hospitality and communication training for soft skill,
5	Revenue Streams	Entrance fee, Guiding service, Educational package, Homestay, MSME & culinary products, Cultural attractions, Parking
6	Key Resources	Tourist locations (Cunca Plias, trekking trails), Pokdarwis human resources, Website & digital systems, Residents' houses, local products
7	Key Activities	Online promotion and booking, Guiding & training, Culinary and souvenir production, SOP management & conservation of tourist routes
8	Key Partnerships	Polytechnic/university, Tourism Office, Partner Vocational Schools, Certification Institutions (LSPs), Banking Partners, Local communities, industry.

The Business Model Canvas not only presents the structure of the Pokdarwis business system, but also maps the direction of development that is relevant to the geographical, social, and market potential characteristics of Wae Lolos Village. The Business Model Canvas (BMC), developed by Osterwalder and Pigneur, provides a strategic framework that breaks down a business idea into nine essential segments, including customer segments, value propositions, and revenue streams. In this research, BMC was not only used as a tool but became a means for Pokdarwis to visualize their own economic ecosystem for the first time. According to Marwan (2025), "It helped us realize that everything we do from guiding guests to selling snacks that is part of a business model, not just voluntary work. By integrating all business units, supporting partners, and digitalization approaches in this model, the business plan developed can be used as a realistic implementable reference. This model is also a strategic output of the research that underlies the preparation of the final business plan document of Pokdarwis, thus ensuring that each element designed has a field database, theoretical studies, and social validity. During a participatory workshop, one community member remarked, 'We didn't know we had a model already; it just wasn't drawn out.' This shows how practical tools like BMC become empowering when contextualized properly.

5.7. Evaluate Business Plans with Smart and Logframe

This business model was then evaluated with two approaches, namely SMART and Logframe, where to measure the success of the implementation of the business plan systematically, a combined approach was used between SMART indicators. The SMART approach guides community planners to set objectives that are measurable within the socio-economic realities of rural destinations and Logical Framework Matrix (Logframe). Program evaluation is carried out using the SMART method including Specific, Measurable, Achievable, Relevant and Time-bound. This model was also used in the research of Febrian et al. (2023) where

SMART-based indicators were used to evaluate the implementation of Smart Villages in Kemiren Village where the measurement results were carried out to see real changes in economic aspects (number of homestays and home industry), human resources (guide training), and digitalization (websites and reservations). The SMART-based evaluation of this business plan allows program indicators such as increased tourist visits, MSME income, and human resource quality to be measured concretely. This is in accordance with the study by Hasibuan and Manurung (2023) which states that the SMART indicator is very effective in measuring the success of community-based programs because it is able to monitor the achievement of stages on an ongoing basis.

Table 7. Example of a SMART evaluation.

No	Key Indicators	Specific	Measurable	Achievable	Relevant	Time
1	Number of tourist visits	Number of visitors in a year	An increase of 10% visits every year from the baseline 2024 reaching 11,015 people	Yes/No	Boosting the local economy	Every year
2	Number of transactions on the website	Booking, reservations, purchases	≥ 100 transactions/year and 20% increase the following year	Yes/No	Supports Smart Tourism	From 2026
3	Homestay	Room rental	30 homestay rental transactions in 2026 and 10% increase yearly	Yes/No	Empowerment of local homes	From 2026
4	MSME products sold	Variety of MSME products	1,000 products/year	Yes/No	Empowerment of MSMEs	2026–2030
5	Certified Local Resources	Certificate of competency	10 persons and 20% addition next year	Yes/No	Improved quality of services	2026–2030
6	Total Revenue	Annual revenue accumulation	≥ IDR 483,325,000, 10% addition next year	Yes/No	Business sustainability	2026–2030
7	Periodic evaluation	Monitoring & evaluation	2 times/year	Yes/No	Program control	Semester

The Logical Framework (Logframe) approach offers a structured method for planning and evaluating development programs by linking resources, actions, and desired results. In the context of this research, Logframe allowed the Pokdarwis to see the relationship between their day-to-day tasks and long-term impacts. This was particularly helpful when setting outcome targets such as increasing certified guides and improving booking systems. As stated by the homestay coordinator, “We finally understand what our work means in the bigger picture on how it connects to tourism income and village progress” (Marwan, 2025). These two approaches were compiled based on the results of observations, interviews, business plan documents, and recommendations from similar literature studies (Ramadhani et al., 2022; Wibowo and Septiani, 2022). The Ministry of Villages and Rural Development (2022) also recommends the use of SMART and Logframe in community-based planning so that village activities can be monitored in a sustainable and accountable manner. The Logframe template, initially unfamiliar to most community members, turned into a practical discussion tool to evaluate progress of the business

Table 8. Example of Log-frame evaluation.

Level Logis	Indicator	Verification Source	Key Assumptions
Impact	Wae Lolos is a community-based tourism and digital educational destination	Visit statistics, media coverage, visitor testimonials	Stakeholder support and social stability
Outcome	Pokdarwis is able to manage 8 business unit and digital services independently	Financial statements, reservation dashboard, external audit	Human resources available and trained, legality completed
Output	SOP available, training completed, business unit active, website running	SOP documents, training lists, promotional videos, web data	Infrastructure available, partner cooperation is ongoing
Activities	Preparation of SOPs, training, creation of digital systems, promotion	Activity logs, attendance lists, training reports, website progress	Facilitators available, operational funds allocated
Inputs	Local human resources, campus assistants, CSR/government funds, ICT tools	Activity proposals, MoU, financial statements	All inputs can be accessed and used on schedule

Implementation of the digital-based business plan in Wae Lolos could lead to tangible improvements annual growth in visits, increased community income. The plan also serves as a replicable template for other rural destinations seeking to integrate community empowerment, digital marketing, and sustainable financial management within their tourism sector. All the template for financial and program is handed over to Pokdarwis Wae Lolos as a reference for program development. The findings in this study have answered the problem formulation regarding the importance of community-based business plans in the digital era. The emphasis on digital strategy, SMART evaluation, and the sustainability of local HR-based services are the main strengths of Wae Lolos in the transformation towards a competitive tourism village. Implementation of the digital-based business plan in Wae Lolos has already led to tangible improvements: a projected 10% annual growth in visits, increased community income from MSMEs, and more structured risk mitigation. The plan also serves as a replicable template for other rural destinations seeking to integrate community empowerment, digital marketing, and sustainable financial management within their tourism sector.

6. IMPLICATIONS

The findings from Wae Lolos Village carry broad implications for theory, practice, and policy in community-based tourism development. Theoretically, this research demonstrates how a contextualized integration of PESTEL analysis, Business Model Canvas, SMART, and Logframe can strengthen the academic discourse on rural tourism planning. The combination of macro-environmental analysis with micro-level business unit design offers an enriched framework beyond conventional SWOT approaches, showing how external pressures and internal readiness can be operationalized in a village setting. This contributes to scholarship by highlighting digital integration and structured evaluation as central elements in contemporary CBT models.

Practically, the study provides Wae Lolos Village and similar destinations with a replicable model for developing community-based tourism that is participatory, digitally integrated, and market-oriented. The identification of eight business units not only diversifies income streams but also embeds cultural authenticity and environmental sustainability into economic activities. The

use of digital tools such as a village website, QR-based SOPs, and e-market platforms illustrates how technological adoption can enhance marketing, safety, and efficiency even in resource-limited rural contexts. For the local community, the findings imply a shift in mindset from voluntary participation to professionalized business practices, supported by training in financial management, hospitality, and digital literacy.

At the policy level, the results suggest that government and development agencies should move beyond issuing regulatory frameworks and actively support capacity building, infrastructure for digital connectivity, and access to finance for rural tourism actors. The evidence that participatory planning, when paired with digital innovation, generates measurable outcomes—such as projected 10% annual visitor growth, MSME income increases, and structured risk mitigation—offers a strong case for institutionalizing these practices in rural development strategies. More broadly, the Wae Lolos model can be adapted as a blueprint for tourism villages across Indonesia and beyond, demonstrating how community empowerment, cultural preservation, and smart tourism principles can converge to build resilient rural economies.

7. RECOMMENDATIONS

Based on the findings, it is recommended that Pokdarwis Wae Lolos strengthen institutional governance through clear managerial systems, financial accountability, and routine evaluations using SMART and Logframe, while gradually developing the eight identified tourism business units with consistent quality standards and SOPs. Continuous human resource capacity building should be prioritized through training, certification, and greater involvement of youth and women, alongside accelerating digital transformation by optimizing the village website (wisatawaelolos.com) as an integrated ecosystem for reservations, e-marketplace, QR-based SOPs, and promotion. Risk mitigation and safety systems must be embedded into all services, complemented by the strategic packaging of local cultural assets as unique attractions that differentiate the village.

Market segmentation strategies should target four main groups, students, adventure tourists, nature enthusiasts, and local visitors, through tailored offerings, while expanding partnerships with government agencies, universities, certification bodies, and travel operators for technical support, promotion, and funding access. Ultimately, business development must remain aligned with environmental sustainability principles, ensuring that Wae Lolos' digital community-based tourism model not only boosts income and community participation but also serves as a replicable best practice for other rural tourism destinations.

8. CONCLUSION

This study concludes that the development of Wae Lolos as a community-based tourism village is supported by significant natural and cultural potential, active community involvement, and strategic location. The use of PESTEL analysis, business unit mapping, and the Business Model Canvas has enabled the identification and structuring of eight viable business units, each aligned with local strengths and market needs. Digitalization through website development and smart tourism strategies has enhanced promotional reach and service innovation, although limited digital infrastructure and human resource capacity remain key challenges. The novelty of this research lies in the integration of business planning, digital transformation, and measurable evaluation using SMART and Logframe approaches, resulting in a practical and replicable business plan model for rural tourism villages. The main advantage of this study is its comprehensive and context-based approach, involving local stakeholders at every stage and producing an actionable business plan document. However, the research is limited by the early stage of digital adoption and the need for ongoing capacity building among local actors. Future research is recommended to focus on the implementation and long-term impact of the business plan, the effectiveness of digital marketing strategies, and the scalability of the model to other rural tourism destinations with similar characteristics. This study, grounded in field collaboration, reveals that community empowerment requires not only frameworks but also shifts in perception and confidence.

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