

DEVELOPMENT OF A FISHERY CULTIVATION MODEL AS A MINATOURISM OBJECT IN SUMBERKIMA VILLAGE, GEROKGAK DISTRICT, BULELENG

Pengembangan Model Budidaya Perikanan Sebagai Objek Minawisata di Desa Sumberkima, Kecamatan Gerokgak, Buleleng

Tarissa Azzahra Azhar^{1*}, I Nyoman Dodik Praselia², Made Dwipa Kusuma Maharani³

¹ Department of Aquaculture, Universitas Pendidikan Ganesha, Singaraja-Bali

^{2,3} Department of Biology, Universitas Pendidikan Ganesha, Singaraja-Bali

Udayana Street No. 11, Central Campus, Singaraja, Buleleng Regency, Bali

*Corresponding Author: Tarissa@student.undiksha.ac.id

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ABSTRACT

Sumberkima Village, Gerokgak District, Buleleng Regency has fishery cultivation potential in the form of floating net cages (KJA) as well as coastal ecosystems that support minatourism development. This study aims to determine the fishery cultivation potential that can be developed into a minatourism object and to design a sustainable fishery cultivation development model to support minatourism in Sumberkima Village. The study used a Research and Development (R&D) approach with the ADDIE model, involving 77 respondents determined using the Slovin Formula, consisting of aquaculture business actors, local minatourism managers, village officials, and tourists. Data were analyzed using multiple linear regression and SWOT (IFAS-EFAS) analysis. The results showed that fishery cultivation potential (X1) and community participation (X3) had a positive and significant effect on minatourism development (Y), while supporting facilities (X2) had no significant effect, with a coefficient of determination (R²) of 0.761. The SWOT analysis placed Sumberkima Village in Quadrant I with coordinate point (0.85 ; 1.05), indicating that an aggressive (SO) strategy is the most appropriate strategy to apply. The recommended development model integrates local potential, supporting facilities, and community participation, while still considering environmental, economic, and social sustainability aspects.

Keywords: Aquaculture; Community Participation; Minatourism; Sumberkima Village; SWOT

ABSTRAK

Desa Sumberkima, Kecamatan Gerokgak, Kabupaten Buleleng memiliki potensi budidaya perikanan berupa keramba jaring apung (KJA) serta ekosistem pesisir yang mendukung pengembangan minawisata. Penelitian ini bertujuan untuk mengetahui potensi budidaya

perikanan yang dapat dikembangkan menjadi objek minawisata dan merancang model pengembangan budidaya perikanan yang berkelanjutan untuk mendukung minawisata di Desa Sumberkima. Penelitian menggunakan pendekatan Research and Development (R&D) dengan model ADDIE, melibatkan 77 responden yang ditentukan menggunakan Rumus Slovin, terdiri atas pelaku usaha akuakultur, pengelola minawisata lokal, perangkat desa, dan wisatawan. Data dianalisis menggunakan regresi linear berganda serta analisis SWOT (IFAS-EFAS). Hasil penelitian menunjukkan bahwa potensi budidaya perikanan (X1) dan partisipasi masyarakat (X3) berpengaruh positif dan signifikan terhadap pengembangan minawisata (Y), sedangkan fasilitas pendukung (X2) tidak berpengaruh signifikan, dengan nilai koefisien determinasi (R^2) sebesar 0,761. Hasil analisis SWOT menempatkan Desa Sumberkima pada Kuadran I dengan titik koordinat (0,85 ; 1,05), yang menunjukkan bahwa strategi agresif (SO) merupakan strategi paling sesuai untuk diterapkan. Model pengembangan yang direkomendasikan mengintegrasikan potensi lokal, fasilitas pendukung, dan partisipasi masyarakat, dengan tetap memperhatikan aspek keberlanjutan lingkungan, ekonomi, dan sosial.

Kata Kunci: Budidaya Perikanan; Desa Sumberkima; Minawisata; Partisipasi Masyarakat; SWOT

INTRODUCTION

"Minawisata" (fishery-based tourism) is a development concept that integrates aquaculture activities with tourism, thereby generating economic value for coastal communities while supporting the sustainability of fishery resources (Yudasmara, 2016; Wulandari *et al.*, 2023). Developing this type of tourism is considered strategic for coastal areas that possess aquaculture potential but have not yet optimized its use as a tourist attraction (Bidayani & Robin, 2024).

Sumberkima Village, located in Gerokgak District, Buleleng Regency, is a coastal village in North Bali with significant aquaculture potential. This potential is evidenced by the presence of floating net cages (KJA) used to cultivate various economically valuable fish species, as well as supporting coastal ecosystems such as coral reefs, seagrass beds, mangrove forests, and the white-sand beach area of Gili Putih (Pradisty *et al.*, 2021; Prasetya *et al.*, 2024). Previous studies in Sumberkima Village have confirmed the richness of its coastal biological resources as a foundation for sustainable aquaculture development (Prasetya *et al.*, 2025). However, leveraging this potential for fishery-based tourism requires a development model that integrates local assets, supporting facilities, and community participation.

The success of fishery-based tourism development depends heavily on synergy among stakeholders, including aquaculture operators, tourism managers, village authorities, and the local community (Sakina *et al.*, 2023; Dewanti *et al.*, 2023). Furthermore, the availability of supporting facilities and the level of community participation are crucial factors influencing the appeal and sustainability of such tourism areas (Agarwal *et al.*, 2023). Therefore, a comprehensive analysis of the potential, supporting factors, and appropriate development strategies is required to ensure that the aquaculture model serving as a fisheries-based tourism attraction in Sumberkima Village operates optimally and sustainably.

Based on this background, this study aims to (1) identify the aquaculture potential in Sumberkima Village that can be developed into a fisheries-based tourism attraction, and (2) design a sustainable aquaculture development model to support fisheries-based tourism in Sumberkima Village.

RESEARCH METHODS

Place and Time

The research was conducted in Sumberkima Village, Gerokgak District, Buleleng Regency, Bali Province, over a period of five months, from August to December 2025.

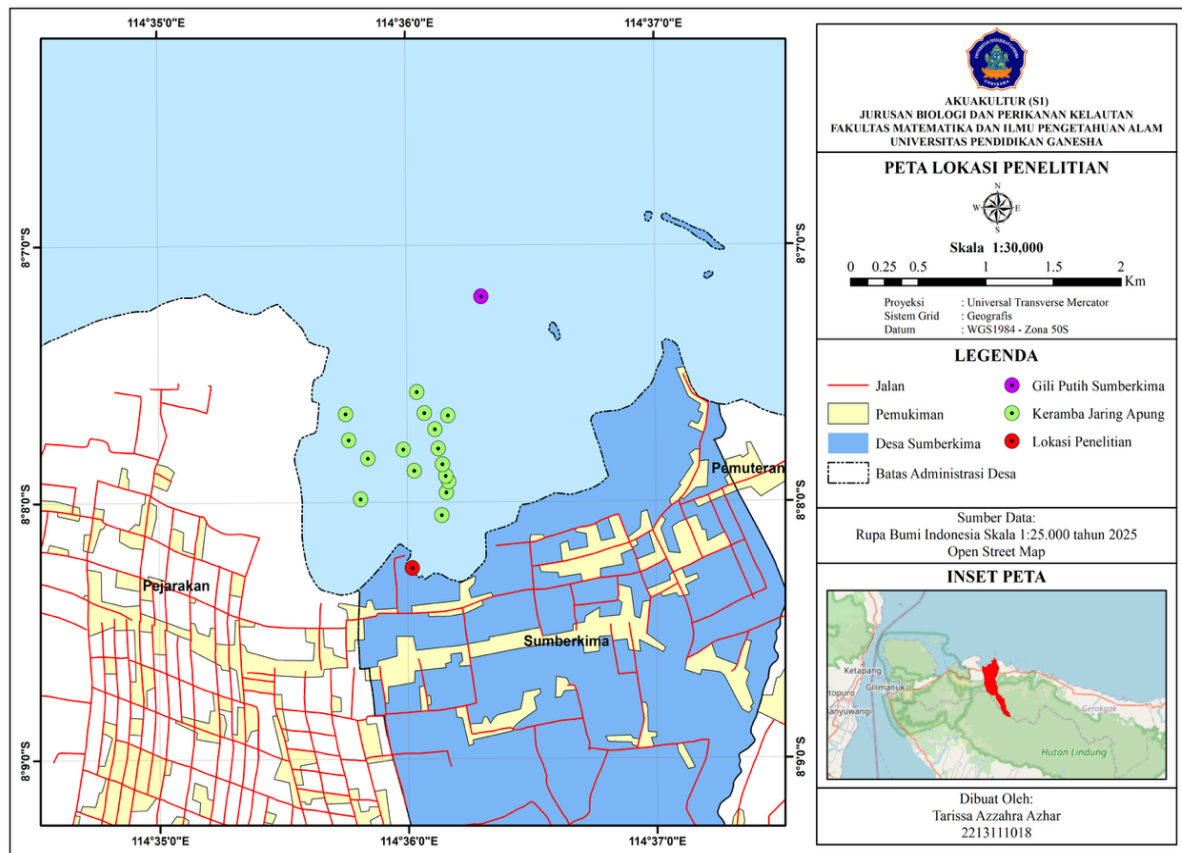


Figure 1. Map of the research location in Sumberkima Village, Gerokgak District, Buleleng Regency

Research Design

This study employs the Research and Development (R&D) method using the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation) (Branch, 2010; Dick et al., 2009). A descriptive quantitative approach is used to measure respondent perceptions via a Likert scale, while an associative quantitative approach is utilized to identify strengths, weaknesses, opportunities, and threats (SWOT) regarding the development of sustainable aquaculture-based minitourism.

Population and Sample

The study population comprises aquaculture operators, local agro-fishery tourism managers, village officials and community leaders, as well as visitors/tourists in Sumberkima Village. The sample size was determined using Slovin's formula with a margin of error (e) of 10%, resulting in a total of 77 respondents distributed across the four population groups, as presented in Table 1.

Table 1. Number of Research Samples for Each Respondent Group

Respondent Group	Population Estimate	Sample Size
Pond business actors (pond farmers/hatchery managers)	257	8
Local tourism managers (homestays, tour guides, educational tour packages)	30	4
Village officials and community leaders	5	3
Visitors/tourists	315	62
Amount	1.914	77

Research Variables

The dependent variable (Y) is fishery-based tourism development, with indicators comprising tourism attractions, facilities, accessibility, tourist satisfaction, and sustainability. The independent variables consist of aquaculture potential (X1), supporting facilities (X2), and community participation (X3). Each variable is measured using a five-point Likert scale.

Data Collection and Analysis Methods

Primary data were collected through a Likert-scale closed-ended questionnaire, semi-structured interviews with key stakeholders, field participant observation, and local documentation and archives. Data were analyzed using instrument testing (validity and reliability), classical assumption testing, multiple linear regression, partial tests (t-test), simultaneous tests (F-test), and coefficient of determination (R²) using the SPSS program. A SWOT analysis was conducted through the preparation of Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices, by assigning weights and ratings to each internal and external factor to determine the position of the development strategy quadrant (Sugiyono, 2013; Ghozali, 2018).

RESULT

Aquaculture Potential in Sumberkima Village

Sumberkima Village possesses excellent potential for aquaculture, supported by high water quality and the presence of floating net cages (KJA) used to farm grouper, snapper, milkfish, and dory. This potential is further bolstered by coastal ecosystems—including coral reefs, mangroves, and seagrass beds—as well as the white-sand beach area (Gili Putih), all of which offer the prospect of becoming attractions for aquaculture-based educational tourism.

Multiple Linear Regression Analysis

The multiple linear regression analysis yielded the equation $Y = 4.166 + 0.258X_1 + 0.008X_2 + 0.728X_3 + e$, as presented in Table 2.

Table 2. Multiple Linear Regression Analysis Results

Variable	B	Std. Error	t	Sig.
(Constant)	4,166	2,110	1,975	0,052
Aquaculture Potential (X1)	0,258	0,107	2,418	0,018
Supporting Facilities (X2)	0,008	0,102	0,081	0,936
Public Participation (X3)	0,728	0,112	6,503	<0,001

Source: Processed primary data (2025)

The significance value for X1 of 0.018 (< 0.05) indicates that fishery cultivation potential has a positive and significant effect on the development of fishery-based tourism (*minawisata*). Variable X2 has a significance value of 0.936 (> 0.05), meaning it does not have a significant effect. Variable X3 has a significance value of < 0.001 (< 0.05), indicating a positive and significant effect on the development of fishery-based tourism.

The simultaneous test results (F-test) show a calculated F-value of 77.352 with a significance of < 0.001 (< 0.05), meaning that variables X1, X2, and X3 collectively have a significant effect on the development of fishery-based tourism (Y). The coefficient of determination (R^2) value of 0.761 indicates that 76.1% of the variation in the development of fishery-based tourism can be explained by the three independent variables, while the remaining 23.9% is influenced by factors outside the model.

Analisis SWOT

Table 3. Internal Factor Analysis Summary (IFAS) Matrix

Internal Strategic Factors	Weight	Rating	Score
Strengths: Aquaculture potential	0,15	4	0,60
Strength: Natural resources	0,10	3	0,30
Strength: Community participation	0,20	3	0,60
Strengths: Stable production and quality	0,05	3	0,15
Weakness: Environmental management is not yet optimal.	0,10	1	0,10
Weakness: Insufficient tourism promotion	0,10	2	0,20
Weakness: Limited infrastructure	0,10	1	0,10
Weakness: Limited human resources	0,20	2	0,40
Amount	1,00	-	2,45

Source: Processed data (2025)

Table 4. External Factor Analysis Summary (EFAS) Matrix

External Strategic Factors	Weight	Rating	Score
Opportunity: Government support	0,10	4	0,40
Opportunity: Strategic location	0,15	3	0,45
Opportunity: Collaboration with research institutions and universities	0,10	3	0,30
Opportunity: Trend of interest in marine tourism	0,15	4	0,60
Threat: Climate and environmental change	0,20	1	0,20
Threat: Environmental pollution	0,10	2	0,20
Threat: Competition with other destinations	0,10	2	0,20
Threat: Damage to local ecosystems	0,10	1	0,10
Amount	1,00	-	2,45

Source: Processed data (2025)

Based on Tables 3 and 4, the difference between strength and weakness scores is 0.85, while the difference between opportunity and threat scores is 1.05. The coordinate point (0.85, 1.05) places the strategy for developing minitourism in Sumberkima Village in Quadrant I; this indicates that internal and external conditions are mutually supportive, meaning the most appropriate strategy to implement is an aggressive (SO) strategy—specifically, maximizing internal strengths to capitalize on external opportunities—as illustrated in Figure 2.

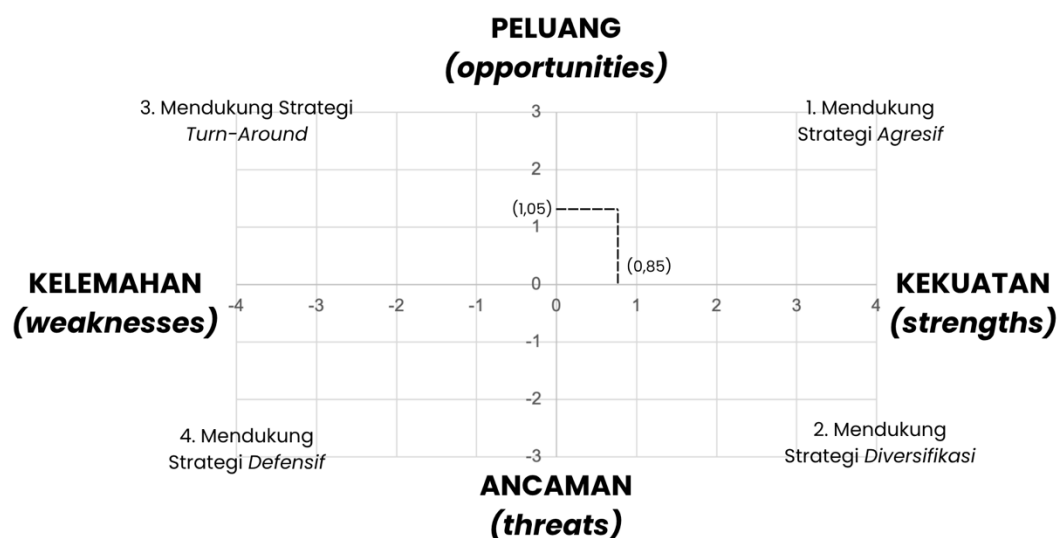


Figure 2. SWOT Quadrant Diagram for Fishery-based Tourism Development in Sumberkima Village

DISCUSSION

The positive and significant influence of aquaculture potential (X1) on *minawisata* (fishery-based tourism) development aligns with studies on Sumberkima Village's coastal resources, which highlight its rich ecosystems and biodiversity as the foundation for sustainable aquaculture (Prasetia *et al.*, 2024; 2025). The presence of floating net cages and supporting ecosystems, such as mangroves (Pradisty *et al.*, 2021), adds distinct value as an educational, fishery-based tourist attraction—a feature also observed in *minawisata* developments in other coastal areas of Buleleng (Yudasmaru, 2016; 2017; Wulandari *et al.*, 2024).

Community participation (X3) proved to be the variable with the greatest influence on *minawisata* development. This finding reinforces the view that the successful development of coastal resource-based tourism areas relies heavily on the active involvement of local communities—whether as managers, tour guides, or partners in environmental management (Sakina *et al.*, 2023; Dewanti *et al.*, 2023). Stakeholder synergy also plays a crucial role in determining the sustainability of community-based tourism development models (Agarwal *et al.*, 2023).

Meanwhile, supporting facilities (X2) did not show a significant influence, indicating that the infrastructure and amenities supporting *minawisata* in Sumberkima Village are still in the early stages of development. This situation is consistent with the common challenges faced by nascent *minawisata* areas, where strengthening infrastructure and promotion become subsequent priorities (Hardjanto, 2020).

SWOT analysis results placing Sumberkima Village in Quadrant I (SO/aggressive strategy) indicate that the area's internal and external conditions are highly favorable for optimal development; this aligns with *minawisata* development strategies observed in other coastal areas situated in the same quadrant (Tuhumena *et al.*, 2022). The recommended aggressive strategy must be implemented while adhering to principles of environmental, economic, and social sustainability (Brundtland, 1987; Valenti *et al.*, 2018), ensuring that the development of the aquaculture model for *minawisata* (fishery-based tourism) in Sumberkima Village proceeds optimally without compromising the long-term preservation of coastal resources.

CONCLUSION

The aquaculture potential in Sumberkima Village—supported by the presence of floating net cages and diverse coastal ecosystems—has proven viable for development into a fisheries-based tourism (minawisata) attraction, as evidenced by the significant positive impact of this aquaculture potential on such tourism development. The most suitable development model integrates local potential, supporting facilities, and community participation; community participation has proven to be the most influential factor, whereas supporting facilities require further strengthening. SWOT analysis places Sumberkima Village in Quadrant I, indicating that an aggressive strategy (SO)—leveraging internal strengths to capitalize on external opportunities—is the most appropriate approach to support the development of sustainable aquaculture-based tourism in the village, while simultaneously addressing environmental, economic, and social sustainability aspects.

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