e-ISSN: 2986-1667
EDUCATUM
Scientific Journal of Education
https://ojs.jurnalbk.com/index.php/educatum

GOVERNING MANGROVE TOURISM VILLAGES FOR SUSTAINABLE ECONOMIC OUTCOMES: INSIGHTS FROM A SYSTEMATIC LITERATURE REVIEW

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Abstract. *Tourism villages represent a strategic solution for generating employment and promoting sustainable economic development in rural areas, particularly in the context of the Society 5.0 era. To ensure the sustainability of tourism village development, regional management must prioritize environmentally sound and cost-effective principles supported by educational approaches that strengthen community knowledge, skills, and environmental awareness. One proposed strategy is the application of the ecovillage concept, especially in coastal village development through the conservation-based utilization of mangrove resources. This study aims to identify policy models that support the management of sustainable mangrove tourism villages by integrating education for sustainable development as a core component of community empowerment. The research employed a Systematic Literature Review, with literature searches conducted across several academic databases and article selection following the PRISMA protocol. The findings indicate that the current condition of tourism villages has not yet achieved the expected level of sustainability, largely due to local government policy models that insufficiently support educational programs, capacity building, and community learning processes related to sustainable mangrove management in Malang Regency. Priority analysis using SWOT Analysis and the Analytical Hierarchy Process (AHP) reveals that sustainable policy development should emphasize environmental education, participatory learning, and continuous training for local communities to minimize conflicts of interest and maximize socio-economic benefits. Overall, the study highlights that the integration of education-based policy interventions in mangrove tourism village management is essential for strengthening community competence, fostering environmental stewardship, and improving local welfare through sustainable mangrove ecotourism.*

Keywords: *"Policy, Mangrove Tourism Village, Sustainable Tourism"*

Article info:

Submitted: 17, june, 2025 *Accepted:15, july, 2025*

How to cite this article:
Tri Achmad Budi Susilo, Abd. Syakur, M. Khusni Mubarok, Moch Dicky Riza, Sunardi, "Governing Mangrove Tourism Villages for Sustainable Economic Outcomes: Insights From a Systematic Literature Review", *EDUCATUM: Scientific Journal of Education.* Vol. 3, No. 2, pp. 48-57, June, 2025.

1. INTRODUCTION

Coastal areas possess significant potential, including biodiversity, mineral and energy resources, maritime industries and services, sea transportation, environmental services, and rich cultural heritage [1]. The importance of sustainable coastal management and utilization strategies has been increasingly recognized, particularly by considering the uniqueness of ecosystems such as coral reefs, mangrove forests, and coastal zones [2]. In the context of climate change, efforts to preserve coastal ecosystems while simultaneously providing alternative income sources for coastal communities have become a critical concern [3].

However, the effectiveness of sustainable coastal management is not solely determined by policy and infrastructure, but also by the educational capacity of local communities in understanding ecological functions, sustainable tourism practices, and economic decision-making. Education plays a central role in strengthening community awareness, skills, and attitudes toward environmental conservation and responsible resource utilization. Without adequate environmental and economic education, the exploitation of mangrove tourism potential risks becoming unsustainable and may increase ecological degradation and economic vulnerability.

This study aims to maintain a balance between the utilization of mangrove tourism potential in Malang Regency and environmental preservation, as well as the socio-economic well-being of local communities, particularly in addressing potential economic risks [4]. In this regard, the Community-Based Tourism (CBT) approach is considered a relevant strategy, as it emphasizes active community participation supported by learning processes, capacity building, and community-based education to enhance local competencies in tourism management and environmental stewardship. Similarly, the eco-village concept serves as a model of community empowerment that integrates education for sustainable development, enabling communities to protect coastal ecosystems through participatory and adaptive management practices.

To systematically examine these issues, this study investigates the potential, challenges, and development models of Mangrove Tourism Villages in the coastal areas of Malang Regency using a Systematic Literature Review (SLR) approach. The SWOT analysis method is employed to identify key internal and external factors influencing successful implementation, particularly those related to community knowledge, skills, and educational readiness [5,6]. Therefore, this research is expected to provide deeper insights into the design of education-based, sustainable tourism village development models that not only enhance environmental conservation and tourism governance, but also strengthen the economic resilience and welfare of coastal communities through continuous learning and community empowerment.

2. RESEARCH METHODS

This research is a descriptive study that adopts the Systematic Literature Review (SLR) method. According to Parums [7], a comprehensive literature search was conducted using Harzing's Publish or Perish application across several databases, including Scopus, Google Scholar, and Crossref, with the keywords "Modeling AND mangrove AND regulation and policy AND Sustainable Tourism." Article selection was carried out according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol.

The inclusion criteria in this study include research articles published between 2019 and April 2024, in Indonesian and/or English; types of research that include True Experimental, Quasi Experimental, Randomized Controlled Trial (RCT), and Cohort; articles with a critical appraisal score ≥ 50% and articles that meet the following PICO (Population, Intervention, Outcome): Population: Tourism villages that currently have not yet reached the level of sustainability; Intervention: Local government policy models in Malang Regency that support mangrove tourism village activities qualitatively, quantitatively, and using the Analytical Hierarchy Process (AHP) Outcome: Development of a priority model to realize Mangrove Tourism Villages in the coastal areas of Malang Regency through SWOT Analysis that refers to a structured and measurable Strategic Plan. Data quality analysis in this study used a critical appraisal tool [8] cited by Santos et al. [9] for Quasi-Experimental Studies, consisting of 9 questions. Each question answered "yes" will receive one point, while answers "no," "unclear," and "not applicable" will receive zero points.

3. RESULTS AND DISCUSSION

Data Synthesis

The diagram below shows the results of searching for articles from the Google Scholar, Crossref, and Scopus databases (Figure 1).

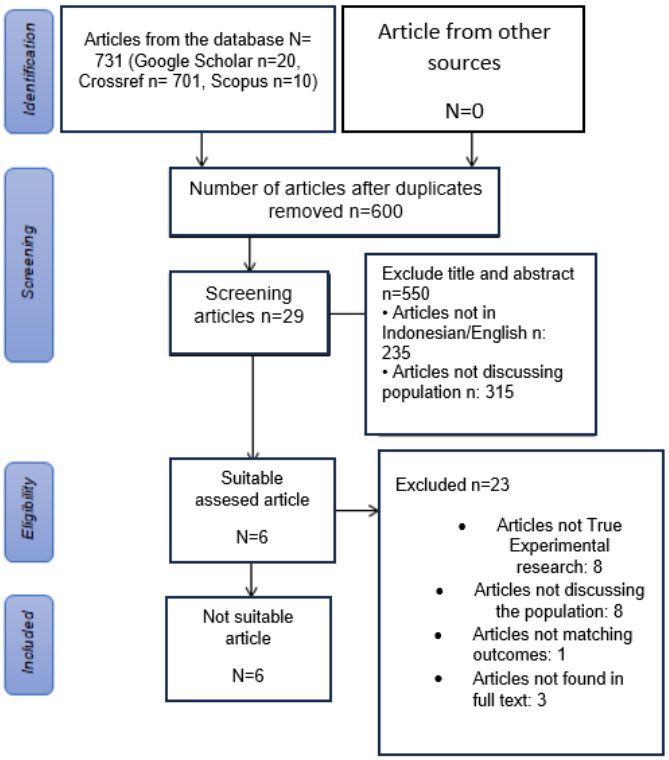

Figure 1: Prism Diagram

Data Quality

Six articles successfully met the data quality evaluation standard requirements by achieving a score of 50% or higher. This assessment process followed clear criteria: articles with a score between 80 and 100% were considered excellent quality, those with a score between 50 and 79% were considered fair quality, and those with a score below 50% were considered poor quality. By achieving or exceeding the 50% threshold, these articles met the established standards for data quality evaluation (7), demonstrating that they underwent a rigorous research process and produced data that is accountable and reliable in the relevant research context (Table 1).

Table 1. Data Quailty Analysis

Author (Year)	P1	P2	P3	P4	P5	P6	P7	P8	P9	Score	Conclusion
(Treephan et al., 2019)	✓	✓	✓	✓	-	✓	✓	✓	✓	8/9 (88,89%)	Very good
(Maretti et al., 2019)	✓	✓	✓	✓	-	✓	-	✓	✓	7/9 (77,78%)	Good enough
(Radianto et al., 2019)	✓	✓	✓	✓	-	✓	-	✓	✓	8/9 (88,89%)	Very good
(Swangjang & Kornpiphat, 2021)	✓	✓	✓	✓	-	✓	✓	✓	✓	8/9 (88,89%)	Very good
(Akram et al., 2023)	✓	✓	✓	✓	-	✓	✓	✓	✓	9/9 (100%)	Very good

(Nuraeni & Kusum, 2023)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9/9 (100%)	Very good

Article Search Profile

In the article search profile (Table 2), six articles met the inclusion and exclusion criteria. The research in these six articles was conducted in five Asian countries and one European country: two in Thailand, two in Indonesia, and one in Brazil. The research designs in these six articles varied, with three articles [10,11,12]using mixed methods, while two articles [13,14] used qualitative approaches, phenomena, and literature reviews.

Of the articles obtained, one article had a Citation Index (IS) of 0 [10]. This may be due to the article's relatively recent publication year, May 2023, which means few researchers have cited it. Furthermore, all six articles found also had an impact factor. The impact factor indicates how frequently the journal is cited, but does not necessarily reflect the quality of the articles as it is only a measure of the journal's popularity over a given period.

Table 2. Article Search Profile

IS	Author (Tahun)	Country	Journal and *Impact Factor*	Research design	Research object	Theme
33	(Treephan et al., 2019)	Thailand	*African Journal of Hospitality, Tourism and Leisure* Scopus (Q3: 0.22)	*Interview, Survey, (Quisioner)*	*Mangrove Tourism Village community and Management*	• Ecotourism Management Model • Mangrove Forest Conservation • Local Community Participation Policy
25	(Maretti et al., 2019)	Brazil	*Journal of Aquatic* (IF:04)	*Interview, survey, (Quisioner)*	*Local Communities and the Mangrove Tourism Village Management Model*	• New Strategy for Mangrove Ecotourism Management • Coastal Ecosystem Conservation Policy • Collaborative Local and Broad Community Engagement
5	(Radianto et al., 2019)	Indonesia	*Jurnal Manajemen Hutan Tropika* Scopus (Q3: 0.22)	*Interview, survey, (Quisioner)*	*Local Communities and Scholars, Government Policy in Managing Mangrove Tourism Villages*	• Government Strategy for Managing Mangrove Ecotourism Nationally • Coastal Tourism Regulations • Sustainable Education for Local Coastal Communities
6	(Swangj	Thaila	*International*	*Interview,*	*Local Communities and Scholars,*	• Ecotourism Model • Mangrove Areas

6	ang & Kornpiphat, 2021)	nd	*Journal Springer*	*Survey, (Quisioner*	*Administrative Officials in Managing Mangrove Tourism Villages*	• Administrative Organizational Policies • Local Government Awareness of Sustainable Ecology
17	(Akram et al., 2023)	Malaysia	*Journal of Agricultural and Biological Sciences* Scopus (Q1: 0.65)	*International publication with relevent previous studies*	*Literature and The management of Mangrove Tourism village*	• Sustainable Mangrove Area Management Model • Government Policy and Framework • Coastal Community Ecosystem Services, Functions, and Risk Mitigation
0	(Nuraeni & Kusum, 2023)	Indonesia	*Journal of Natural Resources and Environmental Management* Scopus	*Interview, survey, (Quisioner)*	*Coastal Communities and the Mangrove Coastal Village Management Model*	• Community-Based Tourism Model • Policy on gaps and evaluation of local community involvement • Mangrove conservation and restoration as a local community economy

The Phenomenon and Policy Model for Sustainable Mangrove Tourism Village Management

Data analysis is based on the results of Focus Group Discussion (FGD), where six Scopus studies were selected based on their understanding of the potential and problems that occur in the scope of the study and the Tourism Village Management model, especially mangrove problems. This research is very important for sustainable data analysis in the future [15].

Table 3. Mangrove Tourism Village Management Policy Model

Author (Year)	Management Model DWM	Aim of the study	Treatment Design and Measurement of Research Objects	Result
(Treephan et al., 2019)	• Ecotourism Management Model • Mangrove Forest Management	• To understand mangrove forest management and ecotourism • To preserve natural resources and cultural heritage	• Research Subject: The Ban Hua Thang Community • Structured interviews, field surveys, participant observation, and questionnaires. • Joint goal setting, participatory management brainstorming, and community engagement.	• Preserving natural resources and cultural heritage by building community pride, • Improving the learning process and increasing the income of coastal communities • Producing orderly, administratively-based community tourism management implemented by (1) stakeholders, (2) having clear regulations, (3) having financial transparency, (4) being able to be evaluated, (5) having security guarantees and (6) providing excellent service • Producing local government policies to promote community-based tourism and the expansion of ecotourism, as well as increasing the trend of tourists regarding

Author (Year)	Management Model DWM	Aim of the study	Treatment Design and Measurement of Research Objects	Result
				environmentally sustainable social responsibility
(Maretti et al., 2019)	• Financial Management Models and New Challenges for Local Community Participation • Management Strategies for Protected Areas and Marine Conservation and Coastal Mangrove Forests Brazil	• To enhance key elements of the new strategy for the protection of coastal communities and marine areas • To implement national and international commitments and targets; clarity on the need for partnerships and funding	• Research Object Treatment: Brazilian society and stakeholders • Structured interviews, field surveys, participant observation, and questionnaires.	• Produce a new and more collaborative protected area model for conservation management; • Produce national and international commitments and targets for funding; • Produce information transparency in relations with the wider community.
(Radianto et al., 2019)	National Tourism Management Strategy	• To analyze the influence of tourist arrival rates, prices, and human development index • To implement sustainable tourism promotion policies	• Research Object Treatment: Morotai Island Regency Community • Measurement: Fixed-Effect Model (FEM) panel data regression based on Generalized Least Square (FGLS) feasibility Method VI	• Develop tourism and economic growth, both in the short and long term. • Establish regional regulations on the implementation of sustainable tourism businesses and educate local communities.
(Swangjang & Kornpiphat, 2021) [16]	• Ecotourism Model DPSIR	• To integrate SWOT provision of areas for ecotourism in mangrove areas with tourists	• Research Object Treatment: Tourist Communities and Tourist Area Operators • Structured interviews, field surveys, participant observation, and questionnaires.	• Generate tourism-related income that supports nature tourism • Generate local stakeholder understanding and awareness of

Author (Year)	Management Model DWM	Aim of the study	Treatment Design and Measurement of Research Objects	Result
				ecological mechanisms; • Generate DPSIR ecotourism models and concepts
(Akram et al., 2023)	• Mangrove Management Model from a Health Perspective	• To maintain the health and productivity of coastal ecosystems from the perspective of services and functions	• Treatment of Research Objects: Literature Study Formal Documentation	• Coastal development, expansion of fisheries, deforestation, and climate change will result in eutrophication, disease, and pollution, all of which threaten mangrove sustainability. • Strict regulations exist, but implementation of government policies and frameworks is inadequate; • Policy restructuring and adequate supporting infrastructure are needed.
(Nuraeni & Kusum, 2023)	• Mangrove forest community-based tourism model	• To fill the gap in evaluating local community involvement • To conserve mangrove forests that provide economic benefits	• Research Object Treatment: Citeureup Community • Structured interviews, field surveys, participant observation, and questionnaires.	• Develop public understanding of mangrove species biology and ecology for mangrove restoration. • Promote mangrove conservation and restoration that contribute to community economic

Author (Year)	Management Model DWM	Aim of the study	Treatment Design and Measurement of Research Objects	Result
				well-being. • Produce various products derived from mangroves.

Based on the information in Table 3, it can be concluded that achieving the goal of developing a Tourism Village as part of sustainable Mangrove Ecosystem Management in the coastal area of South Malang requires a well-thought-out integrated strategy. The recommended approach is to use a SWOT analysis and the Analytical Hierarchy Process (AHP). From this analysis, several key strategic aspects can be clearly identified and are important to consider:
1. Increasing human resource capacity. These aspects are interrelated. These aspects include:
2. Strengthening the capacity and role of local wisdom in managing the social and environmental life of the mangrove ecosystem in South Malang.
3. Strengthening tourism village institutions and active community participation in deriving economic benefits from these activities.
4. Increasing public support.
5. Ensuring that mangrove-based ecosystem development in South Malang is sustainable.

Several factors influencing the management of Mangrove Ecosystem Management Tourism Villages, particularly in Malang Regency, are strongly influenced by policy integration, leading to the formation of the "Sustainable Mangrove Tourism Village Management Policy Model." This model is based on the concept of sustainable development and considers three main variables: community empowerment and participation, mangrove tourism village management, and stakeholder role optimization. Judging from the data listed in the SLR Table, it appears that the desired approach is to combine factors such as human resources, management of the social and environmental life of the mangrove ecosystem, government policy, and public support, using SWOT analysis and the Analytical Hierarchy Process (AHP) as key indicators.

4. CONCLUSIONS

Based on a systematic literature review, it can be concluded that the current state of Tourism Villages has not yet reached an adequate level of sustainability, reflected in the currently observed phenomenon, which has reached the lowest indicator of 25%. In addition, the local government policy model in Malang Regency still does not fully support the development of sustainable Mangrove Tourism Villages, with a sustainability level reaching 35%. Furthermore, commonly used priority analysis models, such as the SWOT Analysis and the Analytical Hierarchy Process (AHP), are considered important strategies for realizing Mangrove Tourism Villages along the coast of Malang Regency. Success in realizing this Mangrove Tourism Village is considered an important indicator, with a 40% success rate. Therefore, it is clear that there are still major challenges in achieving the sustainability of Mangrove Tourism Villages in the coastal area of Malang Regency, which requires serious attention in terms of policy and implementation strategies.

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