

EXPLORING MARINE TOURISM ON SUSTAINABLE DEVELOPMENT SEGMENT IN INDONESIA: SPAR-4-SLR

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Abstract: Marine tourism has emerged as a rapidly growing sector within the tourism industry, offering diverse recreational activities in coastal and marine environments. Marine tourism encompasses various forms, from beach tourism to whale watching, and plays a significant role in many countries' tourism economies, including in Indonesia. Exploring marine tourism in Indonesia reveals significant potential for sustainable development, particularly through community involvement and effective policy implementation. Despite the potential, challenges such as inadequate infrastructure, low human resource capacity and limited investment hinder the progress. Thus, addressing these issues is vital for realizing the full benefits of marine tourism in Indonesia. This study is designed to elucidate the evolution and development of marine tourism within the Indonesian context, while simultaneously evaluating the extent to which academic discourse has concentrated on the principles and practices surrounding sustainable development, and ultimately, to outline prospective research agendas that could guide future researchers in this vital area of study. The methodological approach adopted for this research is a systematic literature review (SLR), which rigorously incorporates the SPAR-4-SLR protocol in conjunction with a robust analytical framework known as the Theory, Context, Characteristic, and Method (TCCM) that facilitates a comprehensive analysis of the relevant literature. Our findings revealed that Indonesian marine tourism possesses considerable potential to serve as a pivotal engine for advancing the blue economy. However, it is imperative to acknowledge that this sector is concurrently grappling with significant obstacles that impede the establishment and maintenance of sustainable marine ecosystems; inadequate management of tourist destinations, minimal innovation and application of technology need to be further academic focus. In conclusion, there is a strong emphasis placed on the imperative need for cooperative initiatives that engage a diverse array of stakeholders, including both public and private sector entities, to formulate and implement effective and sustainable tourism policies that are conducive to long-term ecological and economic resilience. Overall, our research facilitates understanding marine tourism development in Indonesia and provides useful theoretical insights to fill the research gap in this context.

Keywords: marine tourism, sustainable tourism, SPAR-4-SLR, TCCM, Indonesia

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INTRODUCTION

The tourism industry is a growing sector with harsh criticism; economic improvement along with diluting local identity, capital accumulation, environmental damage, and increased pollution (Baloch et al., 2023; Bianchi & Milano, 2024; Mulyadi et al., 2024). In response to criticism, academics and stakeholders conceptualized sustainable tourism as an alternative to reduce the negative impact of the industry's development (Zolfani et al., 2015). Sustainable tourism is expected to create multiple impacts, substantively impacting economic circulation through accommodation rentals, culinary, souvenirs, transportation, tourist guides or as a medium to boost the development of other sectors (Andolina et al., 2021; Portella-Carbó et al., 2023). At the same time, the rapid development of the tourism industry, although it has attracted criticism and debate, has grown with significant economic potential (KC et al., 2024). The beauty of the beaches and the diversity of marine life attract tourists to explore marine tourism (MT). From an economic perspective, tourist demand for underwater recreation is relatively high, attracting at least 600,000 tourists yearly (Zimmerhackel et al., 2019).

Arcos-Aguilar et al. (2021) estimate economic transactions to reach US\$ 36 billion globally and are expected to be a pioneer in improving the blue economy, which will lead to improvements in the local, regional, and national economy (Smith et al., 2014). However, Lamb et al. (2014) assess coral disease as the primary source of coral degradation, and this

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is closely related to human activities that have changed environmental conditions through inappropriate fishing, use of coastal land that removes freshwater filters and waste from land, and marine environmental pollution. This condition is exacerbated by underwater recreation assessing the ecological damage to underwater habitats caused by tourist interactions (Atkins et al., 2011; Lucrezi et al., 2021). We investigate marine tourism development (MTD) by reviewing relevant literature. This article explores sustainability ideas in MT, discussing how academics' attention and sustainability of MT in Indonesia. How do we understand the development of Indonesian MT? How do academics explore sustainable development in the context of MT? What are the future research agendas? are the key questions we formulated. Researchers explored articles from international journals with the Scopus index and determined the search keywords "marine, coastal, seafront tourism in Indonesia". The data collected through this study can promote sustainable tourism, increase awareness of ecosystem conservation and MT attractiveness, and provide direction for future research.

MATERIALS AND METHODS

This research analyzes marine tourism research (MTR) by emphasizing the views of academics regarding the MTD. This research adopts a systematic literature review (SLR) approach with a strict and transparent process in determining which manuscripts to use as references. The researcher then used SLR with a structured and domain-based systematic approach to identify, assess, and comprehensively evaluate research relevant to the themes discussed in this research. Furthermore, researchers adopted the TCCM framework (theory, context, characteristics, and method).

The discussion of "theory" leads to a conceptual or framework of thought; "context" discusses the study area; "characteristic" explores factors or variables and output; and "method" discusses the use of analytical methods or tools (Veerabhadrapa et al., 2023). Furthermore, the researchers used a methodological design of SPAR-4-SLR protocol to assess, organize, and combine (Figure 1), which is recommended by (Paul et al., 2021a).

Data Collection Procedures

Researchers followed procedures at the data collection stage (Paul et al., 2021b) (Figure 1). In the initial stage, the researcher determined the limitations of the reference articles. First, we defined the journal's scope as a source and eliminated types of articles that did not match the focus of the research discussion. Furthermore, researchers also limited the time interval to 2010 to 2024. The process of searching for articles, researchers used the software "Publish or Perish" by setting the criteria "Scopus" and the keywords "marine, coastal, and seafront tourism in Indonesia." More detail, the researchers carried out manual article tracing by visiting the official website of the journal article source; "ScienceDirect, Taylor & Francis, Emerald, Springer, and MDPI Journal, etc." The next stage, we entered keywords to track articles reviewing MT. Furthermore, article selection included an analysis of the title, abstract, and keywords included in the article manuscript. Simultaneously, we provided an assessment of the context of the discussion of the article addressed. This approach ensured the appropriateness of the article's discussion, which is the research reference.

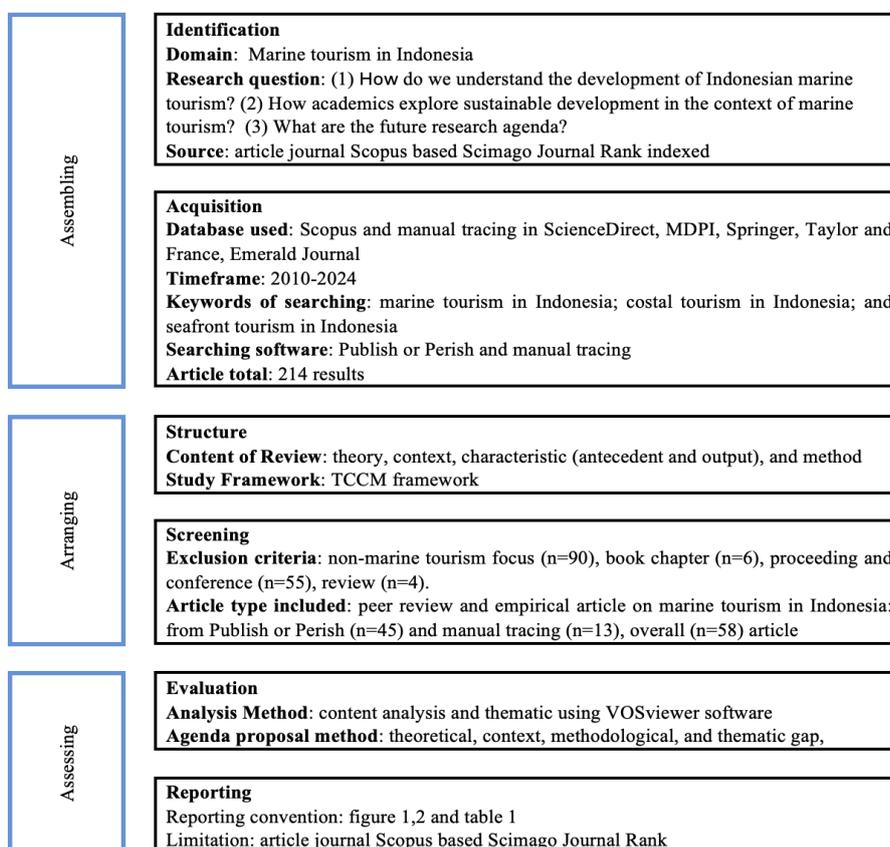


Figure 1. Methodological design using the SPAR-4-SLR protocol

This was also a step to avoid selecting articles subjectively based on the title. After determining several search stages, the researchers took 58 journal articles about MT that were relevant and did not involve book chapter manuscripts, conferences, or proceedings. The specified text was a reference for exploring academics' views on MTD and their attention to exploring sustainable marine tourism (SMT). Data was collected from March to April 2024.

Data Analysis Procedures

In the data analysis process, researchers conducted an in-depth and comprehensive evaluation of from each article. The researcher tabulated the articles in the future by following the flow of the TCCM framework. The researcher highlighted the "theory" used by each author - the theoretical approach used in discussing MTD. Next, the discussion regarding the "context" of tourism development is examined in detail, highlighting the focal points of development, e.g., development location in terms of province considering Indonesia as an archipelagic country. Paul & Rosado-Serrano, (2019) suggest a "characteristic" review by emphasizing the "antecedent" and "output" of the research being referenced. Furthermore, researchers analyzed based on the methods used by previous researchers; methods are classified into three forms. Quantitative research leads to empirical data analysis using statistics or mathematical calculations. Research that uses observation, interviews, FGDs, and document studies and does not use statistical techniques to process data is classified as qualitative. Researchers used qualitative and quantitative methods into mixed methods (Ribeiro et al., 2023).

RESULTS AND DISCUSSION

Theory and Concept

In our review of 58 scientific articles, 44 (75.86%) articles used theory, four used more than one theory, and two articles with concepts and theory. 10 of the 58 (15.52%) used concepts, and 5 (8.62%) without theory and concept approaches. The theory most widely employed in the MTR we reviewed uses the Sustainable Development theory (Pohoață et al., 2020) (19 of 44, 38,78%) to offer a development model that prioritizes the harmony of socio-economic improvement with the environment and culture without sacrificing each other. The dominance of sustainable development theory indicates the increasing awareness of the negative repercussions of tourism on the environment, socio-culture, and climate change. Interestingly, the application of sustainable development theory in contemporary literature has experienced a shift in investigating the consequences and services of tourism more deeply.

For example, tourism's sustainable economic contribution is increasingly being debated intensely. Kinseng et al. (2018b) found economic and welfare improvements increased access to education and health. Previous research employing the Sustainable Development theory framework evaluated the impacts with different analysis centers. This research plays a significant role in assessing sustainable tourism because it emphasizes long-term consequences that can be felt, collaboration and empowerment, and reciprocal benefits between hosts and tourists. For example, Turisno & Dewi (2021b) and Dodds et al. (2010b) adopted this conceptualization to explore environmental and conservation challenges. Another study by Gerungan & Chia (2020b) reminds us of environmental damage that can result in long-term business potential loss and conflicts of interest between groups (Lasso & Dahles, 2018b). Furthermore, the concept of sustainability in the context of MT is more widely utilized to analyze sociocultural and economic dimensions (Table 1).

Table 1. List of articles in the literature of review

Authors	Theory/concept	Context	Antecedent	Output	Method
(Sukuryadi et al., 2021a)	Stakeholder theory	West Nusa Tenggara	Tourism management; institutions	Ecotourism areas are less sustainable, socio-economically unsustainable	Quantitative – observation, interview and questionnaire (n=100)
(Singgalen, 2020)	Resources-based Theory	North Maluku Province	Mangrove forest tourism potential;	Benefits of mangrove forest: environmental, local culture and livelihoods sustainability	Qualitative – interview (n=17), observation and study documents
(Albasri & Sammut, 2022)	Resources-based Theory	Riau Island Province	Ecotourism development	Fish farming and ecotourism in medium sustainability; natural resource utilization patterns	Mix method – interview, questionnaire (n=66) and document study
(Lasso & Dahles, 2018a)	Sustainable development theory	East Nusa Tenggara	Tourism development	Tourism development stops fishing activities; economic dependence on tourism	Qualitative – observation and interview (n=15)
(Naja et al., 2021a)	Stakeholder Theory	Bali Province	Diving business; business actors collaboration	Centralized collaboration network; establishment of conservation institutions	Qualitative – interview (n=27) and document study
(Nuraini et al., 2021a)	Institutional theory	West Papua Province	Destination affordability; performance of marine ecotourism institutions	The social and ecological dimensions are appropriate; the economy is inappropriate	Mix method – questionnaire, interview, focused group discussion (n=90) and observation
(Mafruhah et al., 2020)	Social Network theory and empowerment theory	Central Java Province	community empowerment; stakeholder participation	Institutional readiness; community involvement	Mix method – interview (n=150)
(Lukman, 2020a)	Theory of Reasoned Action	Bali Province	Diving tourism attraction; community participation;	Protection of cultural heritage; social and economic improvement of society	Qualitative – interview (n=9), informal conversation dan observation

(Tjajja et al., 2022)	Sustainable development theory	Central Sulawesi Province	Tourism development	Sustainable tourism development; tourism environmental impact management	Mix method – interview and questionnaire (n= -)
(Phelan et al., 2020a)	Ecosystem services	South Sulawesi Province	Environmental protection; community-based ecotourism	Community-based ecotourism development model sustainable management is supported by community culture	Qualitative – interview (n=38)
(Lagarens & Walansendow, 2015)	Public Participation Theory	North Sulawesi Province	Tourism development impact	Economic impact; environmental awareness;	Mix method – survey questionnaire, interview (n=15) and observation
(Atmodjo et al., 2017a)	Transaction cost theory	West Papua Province	Marine conservation; institutional arrangement	Changes in destination entry fee policies; increased transparency and participation	Qualitative – interview (n=33), observation, dan document analysis
(Towner, 2016a)	Stakeholder theory	West Sumatra Province	Surfing management	Stakeholder collaboration, decision-making and coordination problems	Qualitative – interview (n=108)
(Turisno & Dewi, 2021a)	Sustainable development theory	Central Java Province	Environment reclamation regulation	Coastal community empowerment and business development	Qualitative – study document, observation
(Booth et al., 2022a)	Willingness to pay	West Nusa Tenggara Province and Aceh Province	Environmental responsibility; shark endan-ger and protection	Experience and economic value; conservation and tourist satisfaction	Mix method – interview, focus group discussion, survey (n=206)
(Hayati et al., 2020)	Theory of Planned Behavior	Special Province of Jakarta	Tourism debris; waste management	Management is not integrated, and there is an accumulation of waste, unsustainable tourism destinations, and fewer tourist visits and satisfaction.	Quantitative – interview (n=50)
(Intyas et al., 2023)	Maximum sustainable Yield	West Nusa Tenggara Province	Utilization of coral reefs	Use of moderate condition corals; coral reef transplantation training	Quantitative – time series
(Kinseng et al., 2018a)	Sustainable development theory	Special Province of Jakarta	Tourism development; social change in society	Increasing people's income and living standards, easy access to education and health, moral and behavioural changes.	Mix method – questionnaire and interview (n=120)
(Bakri et al., 2023a)	Sustainable development theory	Lampung Province	Sustainability of ecology, socio-cul-ture, economy, in-frastructure and technology, institutions	The ecology is quite sustainable; sustainable socio-culture, economy, infrastructure, and institutions are less sustainable.	Quantitative – observation, interview, and questionnaire (n= -)
(Nurhayati et al., 2019a)	Sustainable development theory	West Java Province	Economic, cultural, social, environmental and in-frastructure sustainability	Economy, culture, society, environment, and infrastructure support sustainable ecotourism.	Quantitative – interview (n=50)
(Mulyadi, 2019a)	Sustainable development theory	Riau Island Province	Quality of human resources, culture and environment	Quality of human resources, culture and environment influence the quality of ecotourism; the benefits of ecotourism on the economy and environmental conservation	Quantitative – questionnaire (n=200)
(Abidin et al., 2022a)	Theory of Reasoned Action	East Java Province	Ecotourism management	Health risks; attitude towards risk	Mix method – survey, interview (n=362), observation, and documentation
(Towner & Orams, 2016)	Sustainable development theory	West Sumatra Province	Surfing tourism development; Impacts of surfing tourism	Long-term unsustainable impacts; changing behaviour to negative	Qualitative – interview (n=28)
(Gerungan & Chia, 2020a)	Sustainable development theory	Bali Province	Environmental issues; government support; operator competition	Diving destinations are not sustainable; coral reef degradation; damage to the marine environment and loss of business potential	Qualitative – interview (n=10)
(Partelow & Nelson, 2020a)	Evolutionary Governance Theory, Social Network Theory, and Collective Action Theory	West Nusa Tenggara Province	Social network; governance	Threat of environmental damage; self-governance adaptation	Mix method – interview (n=50), observation, and ethnographic
(Suteja et al., 2021a)		Bali Province	Source and amount of waste	Level and type of waste at each destination; Differences in waste weight during the rainy and dry seasons	Quantitative – field survey
(Huang & Coelho, 2017)	Sustainable development theory	Indonesia, Malaysia, Philippines, Papua New Guinea, Timor Leste and Solomon Islands	Environmental impact	Coral reef conditions are poor	Quantitative – Data Envelopment Analysis

(Marlina et al., 2020)	Sustainable development theory	Southeast Sulawesi Province	Tourism management; local wisdom	Collaboration on ecosystem resource management and local wisdom	Qualitative – interviews (n= -), observation, documentation and literature review
(Bottema & Bush, 2012a)	Entrepreneurship theory,	Bali and West Nusa Tenggara Province	Business development; institutional framework	Increasing awareness of marine conservation; alternative local economic sources	Qualitative – interview (n=17) and observation
(Sulistiyadi et al., 2024)	Sustainable development theory	Gorontalo Province	Local wisdom; environmental sustainability	The role of the community in transforming tourist areas; alignment of tourism with the environment, culture and universal sustainability; increase in livelihood	Qualitative – interview, focus group discussion, and questionnaire (n=18)
(Hengky & Kikvidze, 2021a)	Sustainable development theory	Belitung Islands Province	Policy implementation; stakeholder involvement	Policy effectiveness; Enhanced Socio-Economic Activity; drive to reduce environmental impact	Mix method – questionnaire, interview (n=150), observation and secondary data
(Lukman et al., 2022a)	Sustainable development theory	Central Java Province	The impact of tourism on the economy, social, culture and environment	The economic impact of tourism is low; there is a positive sociocultural impact, threat of environmental damage, changes in marine ecosystems	Quantitative – interview and questionnaire (n= -)
(Praptiwi et al., 2021a)	Sustainable development theory	South Sulawesi Province	Livelihood change; tourism development impact	The benefits of tourism are not evenly distributed; tourism does not make a big contribution to conservation and development.	Qualitative – interviews, focus group discussion (n=31), and secondary data
(Kurniawan et al., 2016a)	Ecological resilience	West Nusa Tenggara Province	Tourism activities; local wisdom	Changes in coastlines and coral reefs; the destination is in vulnerable, low, medium status; decline in ecosystem quality	Scoping, baseline data development, indicator analysis
(Nurhayati et al., 2022a)	Theory of Planned Behavior	Bali Province	Conservation education; hatchling release program	Increased conservation awareness; reduced consumption of turtle products	Quantitative – interview and questionnaire (n= -), secondary data
(Dodds et al., 2010a)	Sustainable development theory	West Nusa Tenggara and Thailand	Environmental problems: tourists' intention to pay	Willingness to pay for environment sustainability	Quantitative – survey questionnaire (n=400)
(Harianto et al., 2023)		Lampung Province	Tourist access; natural resources	Tourist interest in Pasaran and Permata Island	Quantitative – interview and questionnaire (n=228)
(Adrianto et al., 2021)	Sustainable development theory	Special Province of Jakarta	Social-ecological system carrying capacity	Decline in the quality of coral reefs	Quantitative – questionnaire (n=74), WorldView-2 satellite, observation, and ground checkpoint,
(Charlie et al., 2013a)	Environmental Governance Network Theory	West Nusa Tenggara and Bali Province	Environmental conservation; governance; environmental governance network	Conservation networks are action-oriented, dependent on non-government stakeholders on Trawangan Island; policy, planning, and international networks on Lembongan Island	Qualitative – observation, stakeholder consultations (n= -), study document
(Mustika et al., 2013a)	Sustainable development theory	Bali Province	Dolphin tourism; tourism management	Tourist satisfaction is low-medium; there is potential for improving the local economy.	Mix method – observation, interview, and questionnaire (n= -)
(Nelson et al., 2021a)	Willingness to pay	West Nusa Tenggara Province	Socio-Demographic; environmental attitudes	Most tourists condensed paying for sustainability; trust, environmental awareness, climate change, and conservation are willingness-to-pay factors.	Quantitative – questionnaire (535)
(Banarsyadhimi et al., 2022a)	Cultural ecosystem services	West Nusa Tenggara Province	Management of marine tourism activities; marine protected area; ecosystem service	Tourist features, ecosystem service benefits, spiritual well-being, social ties and identity influence property prices	Quantitative – questionnaire (n=263) and secondary data
(Vipriyanti et al., 2024a)	Sustainable development theory	Bali Province	Suitability of mangrove ecotourism; area carrying capacity; internal and external factors	Utilization of mangrove forests; improving the socio-economic conditions of society	Mix method – interview (n= -) and observation
(Kurniawati et al., 2022a)		East Java Province	Role of youth; digitalisation process	Opening a culinary business; tourism and conservation movements; use of media and digitalization	Qualitative - observations, field measurements, documentation, and interviews (n= -)

(Atmodjo et al., 2020a)	Theory of Collaborative Governance	West Papua Province	Marine conservation tourism governance; Changing governance arrangements	Change of management to shared governance	Qualitative – interview (n=37), observation and study document
(Anna & Saputra, 2017a)	Willingness to pay	Central Papua Province	Economic value; ecosystem service	Increasing the community economy; increased conservation awareness	Quantitative – questionnaire (n=71)
(Hermawan et al., 2023)		Central Sulawesi Province	Natural resources	Suitable for marine development	Quantitative – hydro-dynamic and Analysis Hierarchy Process
(Kurniawan et al., 2023)		West Nusa Tenggara	Development of marine tourism; management of marine protected areas	Decreased water quality	In situ and ex-situ methods dan quantitative, Geographic Information System
(Chen et al., 2021a)	Stakeholder Theory	West Nusa Tenggara Province	Understanding stakeholders, stakeholder satisfaction, resource development	Tourism conditions are well organized; the role of customary regulations; value orientation towards satisfaction	Quantitative – questionnaire (n=130)
(Solihin et al., 2020a)	Stakeholder Theory	West Nusa Tenggara Province	Collaborative management; sustainable institutional arrangements	Participative and communicative management model; ecological preservation in conservation areas	Qualitative – interview (n= -) and secondary data
(Insafitri et al., 2020a)	Willingness to pay	East Java Province	Conservation: willingness to pay	Willingness to pay for snorkelling; willingness to pay with a ticket system	Quantitative – questionnaire (n= -)
(Azzahra et al., 2023)	Social network theory and Resources-based theory	Central Java Province	Natural tourism potential; carrying capacity of mangrove ecotourism; role of stakeholders,	Ecotourism development strategy; positive perception from society	Mix method – interview and questionnaire (n=74)
(Lelloltery et al., 2018)	Resources-based theory	Maluku Province	Coral reefs condition; coral reef potential	The suitability index for snorkelling and diving is decent;	Quantitative – survey and interview (n= -), observation, study literature
(Zamzami et al., 2021a)	Ecosystem Services	West Sumatra Province	Conservation regulations	Priority of fishermen on the economy and stakeholders on conservation	Mix method – questionnaire, interview (n=36), and observation
(Nelson et al., 2019a)	Assimilation–contrast theory and heuristic decision-making	West Nusa Tenggara Province	Environmental conservation issues; waste management	Tourism management is not environmentally friendly; collection of environmental service fees	Quantitative – interview (n=790)
(King et al., 2021a)	Livelihood Resilience	Southeast Sulawesi Tenggara Province	Governance structure; tourism development	Tourism supports social-ecological resilience and livelihood change, encouraging foreign operators to follow local operators.	Qualitative – interview (n=50) and focus group discussion
(Eider et al., 2023a)	Stakeholder theory	West Nusa Tenggara Province	Social-ecological network	Social cooperation networks; reef use pattern	Mix method – interview (n=37), secondary data,
(Mustika et al., 2020a)	Purchasing Power Parity	Bali, East Nusa Tenggara, North Maluku, North Sulawesi, West Nusa Tenggara, East Kalimantan Province	Shark and ray tourism; marine tourism development	Estimated economic value of shark and ray tourism; tourism encourages conservation	Mix method – questionnaire (n=365), literature study

Concentration on sustainability is also supported using Planned Behavior and Resources-based theory (Ajzen, 2011; Kozlenkova et al., 2014), which is closer to encouraging individual responsibility and resource utilization. The previous works of literature use the Ecosystem Service concept (Hølleland et al., 2017), Ecological Resilience (Chambers et al., 2019), Cultural Ecosystem Service (Fish et al., 2016), and Livelihood Resilience (Kuipers & de Jong, 2023) indicate increasing attention to the ecological and social sustainability of communities. Academics' attention employed those concepts, for example Kurniawan et al. (2016b) regarding the level of vulnerability of conservation areas and Banarsyadhimi et al., (2022b) tourism management in protected areas. Zamzami et al. (2021b) employed the Ecosystem Service concept to explore sustainability issues in the socioeconomic dimensions of fishermen affected by MTD. These researchers' theoretical framework illustrated the conceptual evolution in understanding tourism development. Furthermore, theories related to MTD also frequently use the theoretical frameworks of institutions, actors, and networks. Those studies predominantly explore influence, involvement, decision-making, economic sharing, and controlling potential conflicts, social and organizational systems, institutional evolution and performance, which are juxtaposed with Stakeholder theory (Parmar et al., 2010), Institutional theory (Risi et al., 2023), Evolutionary Governance theory (Assche et al., 2014), Social Network Theory (Krause et al., 2007), Environmental Governance Networks theory (Chaffin et al., 2024) dan theory of Collaborative Governance

(McIvor, 2020). Previous research on stakeholders and institutions provides conceptual meaning for understanding the work patterns of stakeholders and institutions and managing shared interests (Charlie et al., 2013b; Partelow & Nelson, 2020b).

Context of the Studies

The 58-marine tourism research (MTR) referred to, the research context was carried out in 21 provinces out of 38 provinces in Indonesia, with four articles across regions. MTR mostly focuses on the context of West Nusa Tenggara (15 of 58, 25.86%), followed by Bali (10, 17.24%) and Central Java Province (4, 90%). Other studies were conducted in East Java Province, West Sumatra Province, Special Province of Jakarta, West Papua Province (3 of 58, 5.17% each), Central Sulawesi Province, South Sulawesi Province, North Sulawesi Province, North Maluku Province, Riau Island Province, East Nusa Tenggara, Southeast Sulawesi Province, and Lampung Province (2, 3.45% respectively). Lastly, the research was conducted in West Java Province, Aceh, Maluku, Gorontalo, East Kalimantan Province, Belitung Island Province, and Central Papua, and one Indonesian in general (1, 1.72%) (Table 1).

Our findings confirmed how MTRs have focused on West Nusa Tenggara and Bali. In West Nusa Tenggara, studies were concentrated on the Gili Matra destination (Trawangan, Air, and Meno Island), with analysis centres on the environment, management, and stakeholders. Previous literature provides a meaningful understanding of Gili Matra conservation management (Banarsyahimi et al., 2022c; Sukuryadi et al., 2021b). Furthermore, a study on Gili Matra discussed stakeholder networks (Partelow & Nelson, 2020c), stakeholder interest in developing ecotourism (Chen et al., 2021b), mapping stakeholders based on independence and influence (Solihin et al., 2020b), and community resilience influenced by tourism operator (King et al., 2021b). Outside the Gili Matra area, research conducted by Sukuryadi et al. (2021c) and Booth et al. (2022b) reviewed mangrove ecosystems from collaborative tourism management and willingness to pay for conservation.

MTRs in Bali were mainly conducted in the Buleleng area (4 articles) and Nusa Penida (2 articles). Several review studies and previous research have mostly reviewed conservation, management, and stakeholders. Conservation reviews, for example, emphasize conservation education (Nurhayati et al., 2022b), the sustainability of dolphin watching and the economic value of sharks (Mustika et al., 2013b, 2020b) mangrove forest conservation and the resulting economic impact (Vipriyanti et al., 2024b). Concerning management, previous research explored the active participation of communities in site management (Lukman, 2020b), marine conservation management (Bottema & Bush, 2012b), and marine debris (Suteja et al., 2021b). Furthermore, MTR examines stakeholders, emphasises stakeholders' characteristics and network pattern and scuba diving operator challenges for sustainability (Gerungan & Chia, 2020c).

Other provinces, MTR tended to be viewed from the same perspective as research conducted in Bali and West Nusa Tenggara. Abidin et al. (2022b) explored marine tourism management after COVID-19 in East Java Province. Nuraini et al. (2021b) and Atmodjo et al. (2017b) discuss ecotourism management and management of entry fees in Raja Ampat, West Papua, and Towner, (2016b) researched surf management from a stakeholder perspective in West Sumatra Province. Research related to marine conservation was also carried out by (Insafitri et al., 2020b) in East Java Province and (Atmodjo et al., 2020b) in West Papua Province. We confirm the majority of MT literature in Indonesia has focused on the context of ecology and conservation, stakeholders and institutions, and management. However, few articles comprehensively reviewed the economic value of each destination. We found two studies that reviewed economic value, specifically in single destinations in West Sumatra and Central Java Province (Anna & Saputra, 2017b; Zamzami et al., 2021c).

Antecedents of the Studies

In this section, we presented the antecedents that are the focus of MTR in Indonesia. The results of our review regarding antecedents emphasize stakeholders, institutions, and management (33.59%), socio-economic and cultural (31.25%), environment and conservation (27.34%), and others (7.83%) (Table 1).

Stakeholders, institutions and management: these findings showed academic attention regarding MTD was more directed at institutions, the role of actors, and tourism management models. The academics preferred to observe the institutions and management, although it relies primarily on natural beauty and other attractions, stakeholders in forming networks and determining management models play a crucial role. Understanding stakeholders, institutions, and management is important in providing services, controlling conflict and risk, encouraging collaboration, and creating a more sustainable tourism climate. The literature in the study has provided insights into understanding the critical role of tourism governance, collaborative management, and performance institutions in creating major contributions to tourism (Atmodjo et al., 2020c; Solihin et al., 2020c).

Social, culture, and economics: Those antecedents explored changes in livelihoods and economic improvement, encouragement of tourism business development, and changes in social and cultural attitudes of the community. For example, in tourism business development, this factor has contributed positively to increasing alternative income and encouraging conservation awareness in local communities (Bottema & Bush, 2012c). Tourism business can lead to better quality tourism because it takes actors responsibility for developing quality tourism. Furthermore, social factors such as community participation, community empowerment, and quality of human resources play an important role in the sustainable tourism agenda. Widespread community involvement increases positive perceptions, responsibility, and ownership of the community regarding tourism development. Active community involvement in tourism is an opportunity for innovation, economic independence and cultural preservation (Kurniawati et al., 2022b; Lukman, 2020c), and culture is an important variable in shaping tourism quality (Mulyadi, 2019b).

Environmental and conservation: regarding environmental factors in tourism, many studies noticed this as the main attraction. Researchers highlight environmental and conservation antecedents, ecological sustainability, ecological carrying capacity, tourism waste, and conservation of marine animals such as rays, sharks and dolphins, and coral reefs. For example, a maintained beach environment and adequate environmental carrying capacity are the main reasons tourists visit

destinations. The beauty of underwater attractions has attracted tourists to various activities, such as diving and snorkelling. The availability of coral reefs and the presence of rays, sharks, and dolphins add to the value of MT. In this regard, many tourists are willing to pay more value for preservation and sustainability (Anna & Saputra, 2017c; Insafitri et al., 2020c). Consideration of the important role of ecology and conservation has received much attention from academics as the main factor in the sustainability of MT (Charlie et al., 2013c; Nurhayati et al., 2022c). In short, reference literature has contributed to understanding several important variables in MTD. The literature emphasizes factors such as stakeholders, institutions, management, social, cultural, economic, environmental, and conservation as crucial variables for maintaining and improving the quality of MT services. Other antecedents, such as policies and regulations to increase the effectiveness of tourism management (Hengky & Kikvidze, 2021b), are not widely explored as determining factors in the treasures of MT in Indonesia.

Output of the Studies

In this section, we mapped the MTR output variables into three categories. We group the study's output into categories related to the institution, stakeholder, and development model (25.58%), social, cultural, and economic (40.70%), and environmental and conservation (32.94%).

Institution, stakeholder, and development model: The research used as a reference in this study provides an important understanding of institutional output, stakeholders, and MTD models in Indonesia. For example, institutional readiness, community-based ecotourism development models, and stakeholder collaboration are outputs of the transformation of tourism development. Increasing community participation allows them to formulate development models based on the social structure of society and culture. The demand for increased transparency, participation, and changes in management patterns was a form of tourism transformation that encouraged institutional readiness and regulation, stakeholder participation, and tourism development models (Atmodjo et al., 2017c). Furthermore, developing conservation institutions and conservation networks between actors was an effort to maintain tourism sustainability (Charlie et al., 2013d; Naja et al., 2021b). However, the literature reports negative output regarding disharmonious relationships between stakeholders, resulting in a loss of tourism economic potential and difficulties in making joint decisions (Gerungan & Chia, 2020d; Towner, 2016c).

Social, culture, and economics: The output variables related to socio-cultural, and economics were significant for reviewing MTD. The output variable that stands out is the impact of tourism development, which leads to improving education and health and strengthening local identity and prosperity. However, this also impacts changes in attitudes towards established local values (Kinseng et al., 2018c). Tourism and local culture integration positively impact preservation (Lukman et al., 2022b). Economic output, most studies revealed economic potential and business development. However, tourism development can pose a new threat to the sustainability of the local community's economic aspects; tourism changes the livelihoods of local communities and creates dependency on the vulnerability of the tourism economy (Lasso & Dahles, 2018c).

Environmental and conservation: A beautiful environment and natural landscapes are important for tourism development. However, environmental damage due to excessive natural exploration has received much attention from academic circles. MTD leads to an unsustainable environment, coral reef degradation, the threat of damage to the marine environment, the accumulation of tourism waste, a decrease in water quality, and the shrinking of the coastline around the destination. However, these are accompanied by efforts to improve awareness and sustainable practices. Host participation and tourist awareness to preserve the environment and improve the quality of marine destinations create encouragement for marine wildlife conservation, reduction in turtle consumption, tourists' willingness to pay more value for conservation, and coral reef cultivation (Eider et al., 2023b; Mustika et al., 2020c). Reviews of the MT environment in scientific literature provide a meaningful understanding of creating attractive, sustainable tourism.

METHOD

The methodological review of the analyzed literature focused on quantitative methods (32.76%), qualitative (36.21%), mixed methods (27.59%), and several articles using other methods (Table 1). Our findings showed that quantitative methods are most often used to understand issues of sustainability, the amount of waste, conservation, perception, carrying capacity, socio-culture, and tourism, as well as the issue of tourists' willingness to pay. This method was often combined with data collection instruments such as questionnaires, followed by interviews and secondary data. Because of the quantities tested, the involvement of participants with this method is at least 50 and 790 participants. Qualitative methods emphasized interviews as the main data collection approach. Our findings showed that almost all qualitative research uses interviews, observation, and document studies. Since in-depth information was the main concern, the researchers only involved 10-50 participants.

Mix-method methodological reviews combined interview and questionnaire approaches, and some studies combined observation and secondary data or literature studies. This research approach involved diverse participants ranging from 15 to 365 participants. Most of the previous research has advantages in data collection because most of them do not use a single data collection instrument, so they can minimize limitations. However, the results of our review found that focus group-based data collection methods, both qualitative, quantitative, and mixed methods, are not very popular among researchers. We also assess research trends separating local communities, stakeholders, and tourists in research. The integration of local communities and tourists simultaneously is still a matter of little concern. Longitudinal and experimental research designs are still minimal. This is important for testing causal relationships of MTD.

Thematic analysis based on co-occurrence network

Utilizing the Vosviewer, a thematic analysis was carried out on data concerning co-occurrence networks within MTR (Figure 2). The thematic analysis aimed to identify and interpret key themes within the gathered data, providing a deep contextual understanding of various issues across different disciplines, including MT. We classified and categorized these

keywords, visually depicting their significance and connections on an automated map. The coloured dots' size in this figure indicates the significance of literary topics, while the lines connecting them represent the relationships between identified themes.

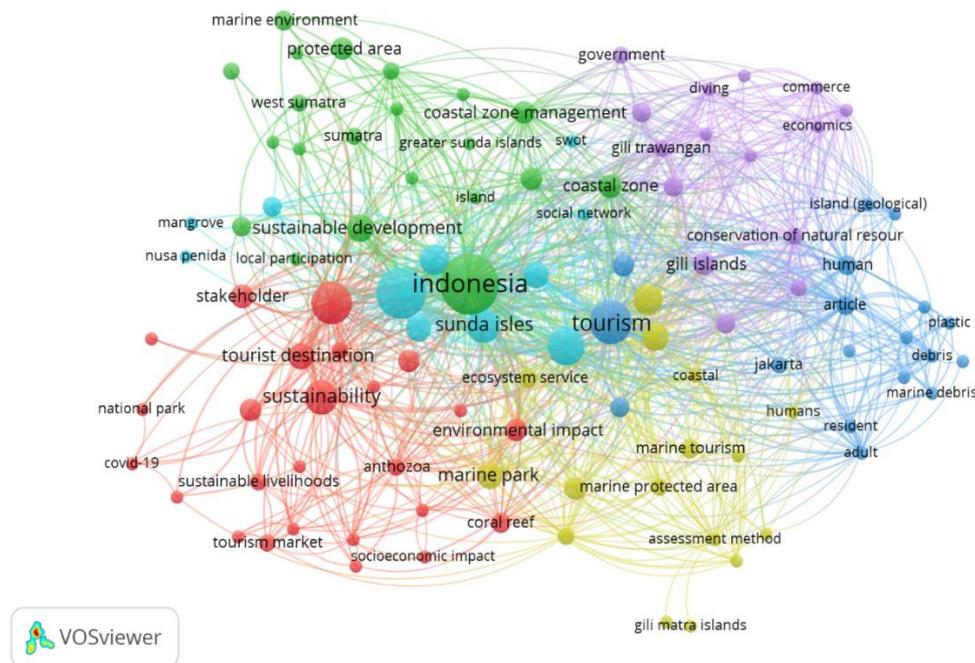


Figure 2. Network visualization of word co-occurrence of MT. Legend: Nodes: represent keywords (the node's size represents the frequency of the keywords); Links: represent relations between keywords; Link Thickness: represents the words' strength. Note: clusters are formed based on three parameters in VosViewer software (clusters resolution 1.00, minimum cluster size 1, and merge small clusters)—type of analysis: co-occurrence, unit of analysis: all keywords, number of occurrences: 2

Theme 1 focused on “environment.” The items included in this theme are Indonesia, islands, Sunda Islands, marine environment, coastal zone, Sumatra, West Sumatra, Greater Sunda Islands, Gili Islands, Gili Trawangan, Gili Matra Islands, Nusa Penida, Jakarta, Marine Park, national parks, coastal, tourist destinations, and mangroves (Figure 2). Articles related to this theme generally explored caring capacity, waste issues, and environmental sustainability of tourism destinations in several regions in Indonesia. For example, Dodds et al. (2010c) explored motivation, perception, awareness, role, and willingness of tourists to pay for environmental protection tourism on small islands in West Nusa Tenggara, and Nelson et al. (2021b) reviewed tourists' willingness to pay for environmentally friendly and responsible hotel certification. These three articles exemplified research that aligns with theme 1. Theme 2 focused on “conservation and sustainability.” The items included in this theme are sustainability, sustainable livelihoods, sustainable development, protected area, marine protected area, conservation, natural resource, debris, marine debris, plastic, coral reef, ecosystem service, environmental impact, and Anthozoa. Articles related to this theme generally explored conservation efforts towards an MT destination and mapping of sustainable MT destinations. Vipriyanti et al. (2024c) analyzed the benefits of tourism and the conservation of mangrove forests, and Insafitri et al. (2020d) conducted a study focusing on coral reef conservation through visitors' willingness to pay in East Java Province. These three articles exemplified research that aligns with theme 2. Theme 3 focused on “management and stakeholder.” The items included in this theme are Government, social networks, humans, residents, assessment methods, stakeholders, local participation, swot, and coastal zone management. Articles related to this theme generally explored the management of a tourist destination and the role of tourism stakeholders in a destination. For example, Phelan et al. (2020b) explored the ecosystem services approach for community-based ecotourism, and Towner (2016d) explored surfing tourism management in the Mentawai Islands, Indonesia. Meanwhile, in terms of stakeholders, Chen et al. (2021c) measured the relationship among stakeholders from value-satisfaction-demand in the development of ecotourism in the Marine Park Area, and Nelson et al. (2019b) measured the visitor donation behavior for coastal conservation.

Theme 4 focused on “economics.” The items included in this theme are economics, the tourism market, and socioeconomic impact. Articles related to this theme generally explored local income and economic development concerning the presence of MT destinations. For example, Anna & Saputra (2017d) conducted research that aims to measure the economic value and environmental services of whale shark tourism, and (Mustika et al., 2020d) aimed to measure the economic value of shark and ray tourism using analysis of tourist preferences and local community perceptions to predict future tourism and conservation agendas. Furthermore, Zamzami et al. (2021d) analyzed the socioeconomic impacts of tourism and understanding of fishing communities in Ampiang Parak Village, West Sumatra Province.

Factors influencing marine tourism sustainable development

We highlighted prominent points in the literature used as a reference: stakeholder, management, culture, socio-economic, environment, and conservation. Understanding these dimensions through existing literature helps identify issues

and the urgency of further research to explore each dimension in detail and comprehensively. It should be noted that we conceptualize the factors that influence sustainable tourism based on our findings in the literature review.

Stakeholder: Part of this mission has been assigned to stakeholders in the sustainable tourism agenda. Understanding and involvement of stakeholders in applying the concept of sustainability is one of the keys to success. Academic attention on sustainable MT has been directed at stakeholder involvement and actor collaboration networks. Sukuryadi et al. (2021d) employed Stakeholder theory as a theoretical framework to explore the collaborative management model between actors in developing mangrove ecotourism. Through the lens of institutional theory, Nuraini et al. (2021c) found that institutional performance creates the right social and ecological conditions for tourism development. However, internal stakeholder conflicts triggered by personal interests can impact the loss of the essence and make tourism conditions unsustainable (Gerungan & Chia, 2020e). The role of actors in carrying out sustainable tourism is very crucial and complex; they must be able to unite common interests in careful planning to produce long-term positive impacts.

Management: management in the sustainable MT segment has received intensive attention from academic circles. Proper tourism management is one of the crucial steps in forming a tourism image. This should include tourism development planning, tourist destination management, and crisis management. For example, improving the management of entry fees in the Raja Ampat destination positively impacts transparency, community participation, and sustainability (Atmodjo et al., 2017d). On the other hand, MT management is still an issue that threatens the sustainability of destinations. A lack of integrated tourism waste management systems threatens sustainability, reducing visits and tourist satisfaction. However, regarding residents' and tourists' feedback, MT management must be further explored. Management systems based on the Internet of Things for easy access and mobility are rarely discussed in scientific literature. The use of appropriate technology in waste management, such as wastewater management for reuse and recycling of solid waste so that it does not cause harm to the community, is still rarely explored.

Social, economic, and cultural: Socio-economic and cultural sustainability issues in a sustainable context were highlighted through livelihoods, welfare, education, economic impacts, social and cultural changes, and the potential for MT business development. These dimensions tend to be explored more as they impact tourism development. According to Lasso & Dahles (2018d), tourism development has an impact on stopping people's livelihoods through fishermen and depending on the tourism economy by selling souvenirs and creating negative behavior. However, a more comprehensive reciprocal relationship between tourism and fishermen needs to be given more attention to how livelihoods shift, how communities adapt to tourism, and how the perceived benefits compare. The socio-economic and cultural consequences are also explored by Kinseng et al. (2018d) and Bakri et al. (2023b) regarding the benefits of tourism in encouraging local economic improvement and increasing access to education, health, and protection of cultural heritage. A central socio-economic and cultural analysis as a subject that influences tourism needs to be carried out for further review. For example, how local culture influences the MTD and how society's social and economic forces develop MT. Emphasizing these dimensions as influencing variables is useful for strengthening the community's position in tourism development.

Environment and conservation: in the context of the environmental sustainability of MT, research has been preoccupied with environmental impacts that drive conservation agendas and increase environmental awareness among communities and tourists. Several studies describe how coral reef degradation and coastline changes indicate damage due to tourism activities (Kurniawan et al., 2016c). The conservation agenda and increasing environmental awareness are among the issues that are often raised in several studies (Nelson et al., 2021c; Praptiwi et al., 2021b). Studies on the environmental impacts of MT concentrate on recurring issues. Attention to issues related to technology in upholding environmental sustainability, tourism wastewater, tourist welfare and satisfaction from environmental quality, and animal sustainability still needs to be a future research plan for academics.

Future Marine Tourism Research Agenda

Theoretical future research direction: Our review indicated the need for theoretical development in a comprehensive understanding of MTR. Most research used sustainable development and stakeholder theory, which focuses on environmental, social, and economic factors and the role of stakeholders in developing marine destinations. Our observed, none of the research has comprehensively reviewed the life cycle of the MT industry, innovation and new ideas in tourism development, and how MTD shapes tourist experiences through social interactions, policies and regulations on tourism development. To examine related issues, we recommend future research explore the Tourism Area Life Cycle to predict destination life phases as a step towards renewal. The theories of diffusion of innovation, dependency, social interaction, and combined theories can also be applied to understand the impact of MT more comprehensively.

Future research for geographical context: Our findings confirmed that MT studies in Indonesia have been explored in 21 out of 38 provinces, mostly in West Nusa Tenggara and Bali provinces (43.10%). Furthermore, these studies focused on one destination; research in West Nusa Tenggara focused on Gili Matra, and several other destinations were the national government's focus. We have concerns about generalizing how maritime tourism is developing in Indonesia. Considering the geographical context, future MTR needs to highlight tourism potential and the main focus of Indonesian tourism development to provide a comprehensive understanding. Strategic areas such as the southern part of Lombok Island, Tambora Island, Natuna Sea, Bunaken, and Wakatobi, which are on the national strategic tourism development agenda, and Likupang and Mandalika as super priority destinations for tourism development have not been explored much.

Future research for policy and regulation context: reference literature has focused on stakeholder studies and MT management. These two things are closely related to policies and regulations in implementing tourism development. However, academic attention is currently lacking in measuring policy and regulation on the impact of tourism. Scientific

literature for future research needs to go deeper than what appears on the surface to guide development implementation. Protection of the environment, cultural heritage, spatial planning, and development should not only be reviewed from the impacts caused. However, a comprehensive review of established policies and regulations is required. Careful policies, regulations, and development planning are crucial to maintaining ecosystem balance and promoting long-term sustainability.

Future research for technological and innovation context: in various parts of the country, especially developed countries, along with the rapid development of technology, innovation has been made in tourism. The emergence of technology and innovation in tourism impacts improving service quality, ease of sharing information and promotion, creation of experiences, and sustainability. Meanwhile, this topic seems to be rarely studied by tourism academics. Technological developments in tourism are important for achieving sustainable destinations, recycling waste, improving waste management, and managing potential crises. Innovation in tourism plays an important role in understanding the behavior, mobility, and changes in tourist preferences so that they can provide the best version of quality tourism services. In this regard, we recommend that future research explore technological developments and innovation in tourism.

Sustainable marine tourism development: As tourism's negative impacts worsen, scholars increasingly highlight sustainable ideas. Sustainable tourism carries responsibility for the environment, improving the local economic, cultural, and social preservation. Previous research has discussed environmental sustainability through carrying capacity and waste management, economics through business potential and new alternative livelihoods, social sustainability through increasing access to education and health, and changes in community attitudes resulting from tourism development. The research emphasizes the social dimension as the object affected. However, there is still little research on the dimensions of sustainability that measures the economic impact of tourism through statistical calculations on local communities in a comprehensive manner. Future research also needs to emphasize the role of the established socio-culture of local communities in shaping tourism, especially in coastal areas and small islands with traditional lifestyles and unique cultures. Tourism is a link between hosts and tourists who influence each other, so the review needs to be done from two sides. In terms of the environment, future researchers need to review environmental changes periodically over a certain duration.

Methodological future research direction: methodological exploration in MTR has provided significant results in understanding the industry. Research tends to use one direction of information sources rather than combining, for example, tourists. Few studies use cross-source or multi-source information. For the benefit of future research, we recommend that researchers expand information sources such as tourists, communities, workers, and stakeholders for a broader understanding. However, longitudinal and experimental research methods can also be applied to examine changes over time in the causes and effects of long-term tourism development and this is a recommendation for future research.

CONCLUSION

Research on MT is an important part of the agenda to provide an in-depth understanding of the contributions and impacts produced. Tourists' high interest in spending their time exploring MT attractions is a challenge for academics to conduct further research. We have not found systematic literature research that examines this topic comprehensively to stimulate further research. We conducted a rigorous and transparent review of 58 literature using the recommended SPAR-4-SLR protocol (Paul et al., 2021c). Our findings highlighted the urgency of further research regarding geographical context, policy and regulation, socio-economic, culture and environment, tourist perception and perceived benefit, technology-based management, and technological innovation. Since this study relies on a systematic literature review (SLR), its findings are inherently constrained by the existing research's availability and scope. Furthermore, the study's focus on Indonesian marine tourism may limit the generalizability of its conclusions to other regions with differing socio-economic and environmental contexts. While the study emphasizes the importance of collaborative efforts to establish sustainable tourism policies, it may lack a detailed analysis of the practical steps and potential barriers to policy implementation. By acknowledging these limitations, future research could build on this study's findings by incorporating more comprehensive methodologies, empirical research, and comparative analyses across different regions and contexts.

Furthermore, future research needs to combine theories and expand the research context to the main destinations for MTD in Indonesia. Regarding methodology, we suggest involving more diverse participants, testing cause-effect relationships, and experimental and longitudinal research. For sustainable MT, future research needs to measure the economic effect, explore the feedback of residents and tourists in tourism management, and examine the role of socio-culture in tourism, not just the objects that are influenced. Regarding environmental sustainability, environment effect, integrating technological support for sustainability, tourism wastewater management, tourist welfare and satisfaction from environmental quality, and animal sustainability still needs to be a future research plan for academics.

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