A systematic review of tourism disaster management: insights from Indonesian’s journey

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Abstract. The aims of this study are to reconstruct pre-existing frameworks and thereafter modify them by incorporating insights gained from the occurrence of disasters in Indonesia. There is a pressing need for developing a new model that can effectively and efficiently assist the management of tourism-related disasters, incorporating robust resilience measures to enhance overall outcomes. This research employs a comprehensive literature review approach by examining 68 articles from the Scopus database about tourism disaster management, with a specific focus on Indonesia. The research findings indicate a novel framework of four distinct phases that have been developed, incorporating strategic aspects and fundamental reactions to manage tourism disasters. These stages encompass pre-disaster, disaster, post-disaster, and future views of disasters to provide a comprehensive of the responsible players involved, and potential solutions for effectively managing future tourism disasters. In order to enhance the capacity of these actors to devise more adaptable and effective strategies for predicting and mitigating the impacts of tourism, it is imperative to foster their ability to produce flexible and efficient solutions. Moreover, the utilization of research findings as a point of reference for establishing new policies is applicable to nations with relevance, developmental similarities, or geographical proximity to Indonesia.

1 Introduction

Tourism is widely acknowledged as a significant trigger of revenue and employment in emerging economies, exerting a substantial impact on socio-economic development and the well-being of individuals [1]. There is an undeniable correlation between tourism and its potential impact on several sectors, such as commerce and markets [2], as well as the socio-economic structure of both urban and rural communities in developing nations [3, 4].

Tourism management requires appropriate methods and approaches to identify interrelated patterns between stakeholders and tourism systems [5, 6]. Appropriate methods and approaches have made significant progress in forging tourism collaborations in which research on tourism management has been conducted to understand trends in tourism management practices. However, it mostly follows an assessment of tourism policies [7, 8], networks [9], community-based tourism management [10], physical distancing tourism, and environmental sector life [11] and socio-economic tourism [12]. Based on previous research results and their approaches, researchers designed a research approach to find a new framework for tourism disaster management that refers to policy conditions in Indonesia. Researchers also explain a series of prerequisites and principles for effective tourism disaster management planning.

From the standpoint of catastrophe assistance and recovery in the tourism sector, some disasters such as the COVID-19 pandemic, tsunami, and earthquake incidents have presented exceptional circumstances characterized by considerable uncertainty about the extent of resolving the economic crisis in tourism. The consideration of public-private partnerships [13], subsidy-based recovery [2], approaches to creativity and the role of local communities [14–16], government capabilities and flexibility through financial assistance and other alternatives [17–19], and stratified tourism policies based on government authority should be taken into account by the tourism industry [20].

Hence, there is a pressing need to comprehend the strategy of tourism disaster management to facilitate the recovery of the tourism business among the most impacted demographics. When examining the most recent developments in disaster management, it is crucial to carefully evaluate the optimal approach for mitigating the significant impacts on the sustainability of the tourism industry. To establish a novel framework that exhibits enhanced resilience in future tourism disaster management, it is necessary to undertake specific measures.

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Sustainable tourism is seen as a normative perspective that seeks to regulate visitors’ behavior to promote sustainable growth in the tourism industry [21]. Interactions between different tourism sites are integral to implementing sustainable tourism practices and are increasingly essential for effective tourism operations [22]. The concept of sustainable world tourism includes consideration of environmental values and cultural preservation. Cultural and ecological conservation seeks to reduce the negative impacts of tourism activities [23], including waste accumulation, environmental degradation, sanitation issues, and ethical considerations in the tourism industry [24]. Achieving sustainable tourism growth is critical to protect the ecological, socio-cultural, and economic context while prioritizing the well-being of local communities [25]. The importance of sustainable development in tourism development cannot be overstated; sustainable tourism thrives when it effectively safeguards and prioritizes natural resources or the environment, human resources, and culture.

According to the United Nations World Tourism Organization (UNWTO), a tourism crisis is an unforeseen incident that affects visitors’ confidence in a destination, thereby hampering economic turnover and related business operations [26]. This evaluation focuses on the vulnerability of the tourism sector to disasters that often occur unexpectedly. As in Indonesia, common disasters such as earthquakes, forest fires, landslides, and volcanoes raise security concerns.

The main focus is how the implemented policy reforms align with security priorities rather than vigilance. This study provides a comprehensive review of a new framework for tourism disaster management to increase understanding and adoption of sustainable tourism practices. This analysis focuses specifically on Indonesia’s experience in disaster tourism management, highlighting its potential to drive economic growth, inclusive resilience, and long-term sustainability. These findings are based on a thorough review of the relevant scientific literature.

2 Method

This study provides an in-depth analysis and elaboration of Indonesia’s tourism disaster management transformation. Systematic analysis of literature studies is used as a vital component in categorizing data and providing representative summaries. It is a valuable strategy for examining results and study features [27, 28]. This study examined 68 Scopus-indexed papers on the frameworks of “Tourism Framework" AND "Tourism Management" AND "Tourism Disaster" AND "Tourism Disaster Management in Indonesia".

The Scopus database (scopus.com) is used for finding and filtering publications. It is a database system that uses automatic and manual models to reject topic selections. The manual approach is used to assess and validate the relevance of keywords, topics, abstracts, and research findings directly related to Indonesia’s disaster tourism management. The researcher then performed mapping and analysis to determine the main topic, clusterization, correlation, and network visualization. Based on the papers examined, this research seeks to develop a framework for analyzing tourist disaster management in Indonesia.

The author evaluates the research discipline in terms of metrics and descriptive in the field of research and policy research theory, and similar methods are used in reviewing the literature on the science of tourism sustainability, evaluating tourism products and tourism activities, and attempting to generate new ideas for the tourism sector in the future. The final step of the systematic review is by displaying the network on a density map based on keyword occurrence. The number of times words appear together in a batch of posts is represented by co-occurrence analysis [29]. Each point on the item density display shows the consistency of the item at that location; the bigger the number of elements around a point and the greater the weight of neighboring elements, the greater the influence on the surrounding points [30].

As a result, this study created a framework in the form of a table (table 2) that is thought to be capable of serving as a new reference in developing a framework for disaster tourism management that is wiser, more responsible, considers the entire community, and has sustainable values.

3 Finding and discussion

3.1 Researchers’ response to tourism disaster management framework

Tourism growth in Indonesia is sometimes hampered by mitigation techniques and the prediction of increasing catastrophes (earthquakes, floods, storms, landslides, forest fires, social conflicts, and volcanoes) [31–33]. As a result, economic activity is hampered, and economic costs to destinations, local communities, and victims escalate. Aside from natural disasters, it is required to develop preparation plans, strategic policies, cross-actor collaboration, and strong motivation and involvement [34, 35].

Bill Faulkner created a generic valuable framework for a tourism disaster management strategy, which included the reactions generated and the key component in implementing a tourism disaster management strategy [34]. Pre-event (prevention/mitigation); prodromal (imminent); emergency level (actions-plans); recovery (intermediate); long-term recovery (reconstruction-reassessment); and resolution (ongoing reviews) are the steps in disaster strategic management. The established technique is a framework that may be utilized as a reference for predicting hurricanes and storm catastrophes that frequently occur in Florida and other American locations. It is important to emphasize how this applies to locations with varying geographical circumstances or areas prone to earthquakes, tsunamis, forest fires, landslides, floods, disease outbreaks, and other natural disasters.

The initial evaluation focuses on who is accountable for mobilizing or commanding within the framework,
whom to collaborate or partner with, and how engagement, communication, and outreach are carried out for framework implementation. This approach can potentially encourage interested parties to consider components of prevention rather than catastrophe forecasting and response.

Table 1. Components of Tourism Disaster Strategies Management.

<table>
<thead>
<tr>
<th>Phases</th>
<th>Responses (√) and Strategies</th>
<th>Stakeholder Collaboration Building</th>
<th>Stakeholder Collaboration Operation</th>
<th>Stages</th>
<th>Response</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>prevent: pre-event or mitigate the effects of potential disasters</td>
<td>precursors &gt; risk assessment</td>
<td>facilitating factors: nature of necessity; good prior partnership and relationship</td>
<td>consistent, communication; trust building; relationship; coordination and planning; shared vision and goals; good leadership</td>
<td>pre-disaster: mitigate effects; disaster potential; capability building</td>
<td>pre-assessment; single or multiactor; leadership impact</td>
<td>building a strategies; increasing facilities; consistent; sharing motivation</td>
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<tr>
<td>prodromal: apparent a disaster is imminent</td>
<td>mobilization (warning, system facilities) &gt; disaster contingency plans</td>
<td>motivations: information and capability sharing; financial support; network; effective outcome through coordination</td>
<td>faces of the challenges: competing interests and demands; weak coordination; weak relations; lack of local and regional planning; lack of consistency; market and money oriented</td>
<td>disaster: collaboratio n (hierarchical, market, network), sharing information; financial support.</td>
<td>emergency; competing interests and/or donation needed; a lot of people implement an individual disaster plans; update tourists condition and situation</td>
<td>communications; coordination and collaboration; based on disaster task; remove individual plans; network expansion and support; sharing motivation</td>
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<tr>
<td>emergency: effect disaster is felt and action is necessary to protect people and property</td>
<td>action (rescue-evacuation, monitoring) &gt; disaster contingency plans</td>
<td>impeding factors: poor relationships; negative past experience; lack of experience and knowledge; personalities and attitudes</td>
<td>post-disaster: prioritize public service; public health and mental; re-organizing structure based on emergency</td>
<td>fulfillment of primary needs; prioritize to disability, communit, elderly, children</td>
<td>network expansion and support; capability building; knowledge; recovery; reconstruction; re-assessment; future disaster plans; sharing motivation</td>
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<tr>
<td>intermediate: main focus on activity is to restore services</td>
<td>recovery (clean-up, media communication strategy) &gt; disaster contingency plans</td>
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<tr>
<td>long-term (recovery)</td>
<td>reconstruction and re-assessment &gt; disaster contingency plans</td>
<td></td>
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<tr>
<td>resolution</td>
<td>review &gt; renewable policy</td>
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</table>

Crisis-induced chaos may be transformed into a creative process, allowing new inventive structures to emerge from adversity. Crises can be the foundation for a more resilient and flexible tourist business [36]. Following an event, recovery actions produce extra resources committed to tourist development in impacted areas, such as new and natural habitats [37]. Following the essential element, the constructed framework must pay attention to the complexity of interaction and communication so that many possible dangers may be mitigated due to the plan's quick reaction [31].
Furthermore, the framework model established in 2017 by Yawei Jiang and Brent W. Ritchie stresses factors of teamwork and motivation in improving disaster tourism management success. Previously, they determined a gap in catastrophe management due to the collaborative structure, which altered the incentive for actor participation. As a result, they developed a new framework for collaboration-based catastrophe management, anchored on the frameworks of "stakeholder collaboration building" and "stakeholder collaboration operations." This notion integrates variables that are ordered systematically, such as the actor participation framework [38], the cooperation framework employed [39, 40], internal and external communication, trust [41], commitment [7], and clear leadership [42], to achieve an intelligent outcome [25, 43], so that the execution arranges their respective responsibilities. As previously stated, Bill Faulkner has developed a basic framework for tourism disaster management plans and responses, albeit there is a lack of interaction and a defined implementation structure. Yawei Jiang and Brent W. Ritchie created another transparent model of implementation based on a cooperation framework. The primary components of each model identified by the researcher in table 1 (blue) demonstrate the direction of the two components that contribute to tourism disaster management and are welcomed by many nations. Bill Faulkner stresses the process as a part of a good strategy. In contrast, Yawei Jiang and Brent W. Ritchie emphasize a systematic framework built around the power of actor engagement or the reaction required to cope with emergencies.

Another approach aims to implement the Indonesian tourism disaster framework for COVID-19 by conducting an assessment using quantitative calculation techniques on the involvement of stakeholders and the participatory level of each actor (academia, business, community, government, media) [9], socialization aspects, and communication to identify stakeholders who play a significant role. This estimate is reasonably accurate in identifying the number of participation roles and understanding the cooperation network on the impact of catastrophes and their derivative elements. As in the disastrous practice, Indonesian tourism is less envisioned, with private/business players dominating (28.31%). Indices of economic reaction, employment, tourism movement, and tourist health determine this. Meanwhile, the government via favorable policies and large-scale social restrictions (PSBB) that encompass all areas of emergency in catastrophes (27.88%) [4], government actors control a broader spectrum of professions; they are not centered on the tourism industry.After summarizing and integrating previous studies' findings, we discovered results adopted by many nations in disaster foresight and response planning to tourist vulnerability (table 1). Tourism is praised as a leading sector with cheap capital and relatively low risk due to its significant contribution to the country's foreign exchange. On the other hand, it is susceptible to calamities and internal and external pressures.

The specifics in the section (table 1: jointly implemented framework) have been widely explored. However, the framework's justification is based on a few fundamental principles that need a focus on specific crisis points as they synthesize the main findings of the research and emphasize crucial implications for disaster preparedness in the tourism sector in the future, such as sustainability and environmental friendliness, creative awareness-raising, and disaster facility preference for impaired individuals.

### 3.2 A New framework for tourism disaster management based on Indonesian’s journey

Previous investigations used a variety of methodologies, resulting in extensive works and the development of a new systematic framework of thought. It is feasible to redesign with a fresh approach through detailed and concentrated literature research on a subject. As a result, a framework is developed consistent with geographical characteristics, climate, and statistical data on catastrophes in a particular location [40]. Even if catastrophes occur concurrently in this term, it is conceivable to develop a new framework that is more systematic, adaptable, and flexible in dealing with several disasters in Indonesia [42]. Reflecting on prior catastrophe experiences, the implicitly derived policy demonstrates that an event generates crisis circumstances, and the objective of recovery is to return a disaster area's state to its former condition (before the disaster happened). As a result, no knowledge of future natural and non-natural calamities or parts of sustainability is excluded.

It is noteworthy to acknowledge that Indonesia has recurring natural disasters, including earthquakes, forest fires, landslides, floods, global warming, climate change, and volcanic eruptions on an annual basis. Similar to seismic events, which occurred on over 119 occasions between 2015 and 2022 [44], forest fires included an area of 4.4 million hectares, accounting for about 18% of the total number of fires [45]. Frequent occurrences of this tragedy have a lasting influence.

Disaster policies are commonly categorized into three distinct phases, namely pre-disaster, disaster, and post-disaster. This research summary is founded upon the framework established by numerous authors who have made significant contributions. The amalgamation of their contributions yields insights derived from the extensive body of literature on the response to tourism disasters and ongoing crises, as well as perspectives on the anticipation of future tourism disasters.

Many efforts have been undertaken to improve the quality of disaster tourism management, using a vertical model that relies on policymaker instructions. The destination framework method investigates a top-down strategy that focuses on the roles and interactions of key stakeholders (hierarchies) and how business-private tourism roles see their contributions throughout the catastrophe phase (market). On the other hand, horizontal techniques and collaboration systems are extensively used to take equal contribution steps by incorporating all stakeholders. For improved response management, a collaboration transition from a public-private partnership
from the public in disaster mitigation, recovery, and response, particularly in the tourism industry [46, 47].

As a result, the framework proposed in this study (table 2) is more detailed, describes the stages of each actor's engagement in tourism disaster management, offers organized roles, and provides a future vision in tourism disaster management. It is critical to remember that each crisis and its consequences are unique; therefore, destinations must tailor their reaction to each tragedy. As a result, the established framework has adaptable and flexible features and high effectiveness and efficiency. It is organized into four stages that are sequentially structured.

The newly developed framework for disaster management has been created to facilitate the various phases of involvement for each participant in the implementation and development of a tourism disaster management plan. Competition and conflicts among players, institutions, and organizations involved in tourism disaster management are frequently seen, which hinders collaboration, trust, and the overall effectiveness of plans [13,35].

<table>
<thead>
<tr>
<th>Stages</th>
<th>Principal Responses Disaster Tourism</th>
<th>Elements Strategies</th>
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<tbody>
<tr>
<td>Pre-Disaster</td>
<td>Build a disaster-adaptive policy based on previous policy</td>
<td>Network scheme: enabler; communication-data set trust building; preparing accommodations; commitment; improve disaster facilities at destinations; disaster accessibility; evacuation line; shelter prepared; transparency; posters; sharing risk flow;</td>
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<tr>
<td>Disaster</td>
<td>Related stakeholders: based on the scheme of triple, quadruple or penta helixes; etc;</td>
<td>Emergancy and panic attacked solution; establish command centre; tracking mobilization; identification disaster impact on destinations; secure facilities; build an evaluation scenario; tourist information line; periodic update on tourist and destination situation.</td>
</tr>
<tr>
<td>Post-Disaster</td>
<td>Recovery; The community's short and medium-term requirements must be identified and met quickly; the primary objective of the action is subsequently to return services, mental health, and community trauma to normal; destination recovery needs to be carried out in stages; continuation of the previous phase, but items that could not be attended to quickly are attended to at this stage.</td>
<td>Local, NGO, regional, national</td>
</tr>
<tr>
<td>Future Outlook</td>
<td>Related stakeholders: based on the scheme of triple, quadruple or penta helixes; additional collaboration and participation and etc.</td>
<td>Review disasters; building a resolution plans on disaster plans; assign key tasks according to expertise on each actor's involvement for future disasters; bottom-up and interactive strategic management; Established a capacity building center; results-oriented financial management system that is oriented towards information exchange and consolidation according to policy portfolios; inter-institutional and organizational learning; procedural instruments regarding and reviews; re-development or updating evacuation line; encourage and build a disable evacuation; tourism destination based on environmental ethic; green tourism concepts.</td>
</tr>
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</table>

Tourism disaster management involves diverse stakeholders, owing to the industry's fragmented and welcoming character. Every individual, business, organization, and institution interested in tourism development must participate in disaster preparation. This framework brings together the best local, NGO, regional, national, and even worldwide structural stakeholders to organize the responses to potential emergencies. As a result, adaptability and flexibility are included in the new structure. All stakeholders shall participate to the fullest
extent possible in tourism disaster management. This study also alludes to the views of Bill Faulkner, Ritchie, Almeida, Yawei Jiang, Marcus Foth, Chien Herlin, and Filimonau, who discovered that the tourist industry does not actively adopt disaster management measures in their company. In contrast, the tourism sector relies exclusively on the notion that the duty for disaster emergency planning lies with the government or other relevant authorities.

This problem is especially prevalent among small enterprises, who believe they have no responsibility in all stages of crisis management. The results of disaster preparedness in tourism, from significant sectors with official plans to minor sectors with informal strategies, are supported by the absence of involvement in tourism disaster management [48]. Furthermore, tourism marketing and promotion organizations should assist during catastrophes and take the lead following disasters to ensure that tourism destinations recover quickly.

Major disasters require adaptive, flexible responses, additional capacities, accommodation, and substantial supplies. This stage is grounded in the pre-disaster phase, whereby it is advised that stakeholders engage in the process of reassembling their records from past calamitous occurrences [11], analyzing data, evaluating, and making preparations for protective requirements [25].

Moreover, the responsibilities of local and regional tourism organizations have consistently extended beyond their traditional roles, encompassing the facilitation and promotion of disaster preparedness in the tourism sector. The facilitation of interaction between enterprises and emergency planners has the potential to enhance the dissemination of knowledge within the tourism sector about disaster management. This includes educating industry stakeholders on proactive measures that may be taken prior to, during, and following a crisis event, as well as fostering a sense of preparedness. It is important to bear in mind that a deficiency in education and knowledge hinders the establishment of an effective disaster management plan. Currently, it is imperative for the tourist industry to communicate without taking into consideration conflicting interests. This study suggests the comprehensiveness of disaster mitigation and communication protocols in effectively disseminating information to the general public on pre-disaster, during-disaster, post-disaster, and future perspective strategies. Additionally, it finds any specific or atypical challenges that may develop in the implementation of those protocols.

4 Conclusion

The study's findings are limited by the focus on the impact of disasters on the tourist industry in Indonesia, specifically in terms of disaster management. The scope of the study include the involvement of many stakeholders, as well as the strategies and protocols employed for post-disaster recovery. Each geographical area exhibits unique strategies, strategic plans, institutional frameworks for handling catastrophes, governing bodies, political contexts, and emergency response mechanisms, which are influenced by diverse environmental and geographical factors. As a result, it may be enhanced using the knowledge gained from other examples that have successfully identified stakeholders, gaps in collaborative motivation, and variables influencing catastrophe management and recovery in the tourism sector. This study offers more developed recommendations for future research based on existing research findings. Collaboration, communication, trust, dedication, and consistency are vital characteristics in tourism disaster management.

Furthermore, network analysis may show how participation levels aid in efficient stakeholder cooperation and integration. As a result, as experience continues to occur in Indonesia, insights must be strengthened with an emphasis on regional and national regional tourism disaster management.

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References

17. V. Filimonau and D. De Coteau, Int. J. Tour. Res. 22, 135 (2001)