

Unlocking the Value of Indonesia's Underwater Cultural Heritage: A Value Chain Approach to Sustainable Dive Tourism

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Abstract

Indonesia's vast underwater cultural heritage—comprising shipwrecks, submerged trade routes, and relics of maritime history—represents a unique but underutilised asset within the country's sustainable tourism agenda. This study examines the development of heritage dive tourism in Indonesia, utilising a Value Chain Analysis (VCA) framework to assess how value is created, distributed, and constrained across the sector. Drawing on qualitative data from case studies in the Gaspar Strait, Banda Sea, and North Sulawesi, the research identifies structural gaps in legal protection, site infrastructure, stakeholder coordination, and interpretive engagement. Despite these challenges, emerging community-based initiatives demonstrate the potential for inclusive, conservation-oriented tourism models. Key leverage points were found in the areas of heritage interpretation, community formalisation, and digital promotion. The results underscore the need for an integrated governance model that incorporates local participation at every level of the tourism value chain and aligns with the principles of the Blue Economy. This study presents a strategic framework for promoting sustainable, culturally rich marine tourism in emerging maritime economies by utilizing the VCA approach to examine underwater cultural heritage.

Keywords: Underwater Cultural Heritage; Heritage Dive Tourism; Value Chain Analysis; Sustainable Tourism; Blue Economy

INTRODUCTION

By combining cultural education, environmental conservation, and local economic empowerment through immersive experiences that foster a deeper understanding of the underwater world, underwater cultural heritage tourism has emerged as a promising subset of sustainable tourism. Underwater ruins, shipwrecks, and abandoned trade routes all offer historically rich stories that encourage conservation and community involvement, while also enhancing visitor engagement and appreciation. Both heritage preservation and socio-economic development have been emphasized by international frameworks, especially the UNESCO Convention on the Protection of the Underwater Cultural Heritage (Lupia et al., 2023; Perasso et al., 2022). In line with the Blue Economy paradigm, which promotes the equitable and sustainable use of marine resources, case studies show that underwater museums and participatory tourism models can successfully boost local economies and increase stakeholder ownership (Gizzi et al., 2024; Siregar & Lindawati, 2023). However, due to governance gaps, inadequate infrastructure, and a lack of conservation monitoring, implementation remains uneven across regions (Benzaken et al., 2022; Lupia et al., 2023).

As the largest archipelagic state in the world, Indonesia has a wealth of underwater cultural heritage, including shipwrecks from World War II, colonial times, and ancient trade, especially in areas like the Java Trench, Banda Sea, and Gaspar Strait (Nur et al., 2023; Nurhayati et al., 2023). Indonesia lags behind countries like Malta, Greece, and Australia in developing organized and sustainable underwater tourism offerings, despite its considerable maritime wealth. A lack of unified value-generation strategies, disjointed policy support,

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and inadequate infrastructure are just a few of the many obstacles (Amrullah et al., 2023; Macella et al., 2023). However, heritage dive tourism holds immense potential to support Indonesia's ambition as a global maritime hub while promoting economic revitalisation, cultural pride, and environmental awareness (Amanda et al., 2024; Fatimah et al., 2024). Realising this potential requires not only physical access and legal protection but also integrated governance that includes educational and interpretive efforts to foster heritage appreciation (Awaloedin et al., 2024; Dewi et al., 2024; Herlambang et al., 2022).

Key systemic challenges persist, hindering progress. Indonesia's legal frameworks for underwater cultural assets remain weak, infrastructure at key sites is underdeveloped, and there is a shortage of trained local guides equipped to deliver historically and ecologically rich interpretations (Kawuryan et al., 2022; Wibowo & Hariadi, 2022). Tourism initiatives are often fragmented, focusing either solely on ecological conservation or archaeological preservation, which leads to disconnected efforts that fail to create a resilient tourism ecosystem (Lesfandra, 2024; Supheni et al., 2023; Titaley, 2023). Additionally, insufficient collaboration among government agencies, private sectors, and local communities limits the ability to scale up sustainable practices and tourism benefits (Brian et al., 2024; Bruyn et al., 2023). Indonesia could miss a significant opportunity to take the lead in the growth of heritage-based marine tourism if it does not adopt a comprehensive, multi-stakeholder approach.

Value Chain Analysis (VCA) fills these gaps by offering a thorough framework for tracking the creation, improvement, and distribution of value throughout the heritage dive tourism ecosystem, from site selection and legal protection to visitor experience and community involvement (Thaha et al., 2022). Despite its successful application in beach and rural tourism, VCA is still not widely used in underwater heritage contexts, particularly in developing nations like Indonesia (Cavallini et al., 2023). Both ecological sustainability and visitor satisfaction can be further supported by incorporating impact management frameworks into this strategy (Nababan, 2023; Simarankir et al., 2022; Sumanapala et al., 2022). Stronger stakeholder collaboration and conservation goals can be achieved through a value-based, systemic model (Wailmi et al., 2024). Thus, by identifying strategic leverage points and coordinating multi-stakeholder efforts toward a sustainable and inclusive future for maritime tourism, this study seeks to develop a VCA-based roadmap for Indonesia's heritage dive tourism.

LITERATURE REVIEW

Underwater Cultural Heritage and Tourism Integration

The historical and scientific value of underwater cultural heritage, which encompasses shipwrecks, submerged ruins, and other maritime archaeological artifacts, has been recognized, as has its potential to promote cultural preservation and economic revitalization through tourism. These locations provide immersive visitor experiences, such as underwater museums and dive tours, that can boost local economies and increase public interest in the past (Gizzi et al., 2024). However, there are difficulties in incorporating heritage into tourism, particularly in striking a balance between accessibility and preservation. Fragile underwater environments are at risk of degradation due to unregulated tourism and inadequate site protection, underscoring the need for sustainable and well-managed development strategies.

By mapping the entire heritage tourism process—from site identification and legal protection to infrastructure, visitor engagement, and local economic involvement—Value Chain Analysis (VCA) has emerged as a promising framework for addressing these issues. VCA offers a strategic lens to identify intervention leverage points and promote collaboration among various stakeholders, including local communities, government agencies, tourism businesses, and conservationists (Mulyani, 2023; Thaha et al., 2022). VCA promotes an integrated model that synchronizes preservation with value creation throughout the tourism system, in contrast to the frequently disjointed development strategies that concentrate either on ecological protection or tourism promotion.

VCA's versatility and potential to improve sustainability and performance are demonstrated by its success in other tourism industries, such as beach and rural tourism (Ekka, 2023; Thaha et al., 2022). Its use concerning Indonesia's underwater cultural heritage is still lacking. According to academics, to address the unique qualities of submerged heritage and promote significant community involvement, customized approaches are necessary (Matus et al., 2024; Ramanayaka, 2024). The adoption of digital technologies, such as real-time monitoring platforms and virtual reality, may offer innovative ways to safeguard sensitive sites and promote accessibility (Vlachos et al., 2023). Ultimately, Indonesia may be able to realize its full maritime tourism potential while preserving its cultural heritage for future generations by leveraging underwater heritage tourism through a value chain approach.

Sustainable Tourism and the Blue Economy Framework

As sustainable tourism has evolved, it has been increasingly applied in coastal and marine environments, where it is now regarded as a strategic tool to support long-term economic viability, community empowerment, and environmental preservation. Through ecologically conscious practices, tourism enhances local livelihoods and supports the management of marine resources within the framework of the Blue Economy (Ahmadi et al., 2024; Wishanesta et al., 2024). Due to its emphasis on local ownership, cultural continuity, and participatory ecological stewardship, community-based marine tourism has gained popularity among these practices. This model promotes more inclusive and sustainable results by putting communities at the center of tourism planning and management.

However, there are still obstacles to overcome before community-based marine tourism can reach its full potential. To support mechanisms that minimize environmental degradation and ensure local stakeholders receive an equitable share of tourism benefits, effective governance structures are essential (Wishanesta et al., 2024). Furthermore, enabling communities to independently and sustainably manage tourism requires long-term capacity-building. This encompasses opportunities for livelihood diversification in marine-based economies, as well as training and access to resources (Ahmadi et al., 2024). Community involvement runs the risk of becoming shallow in the absence of these institutional and educational resources, which would restrict the transformative potential of sustainable marine tourism.

Innovative governance strategies that incorporate ecological, economic, and cultural factors are necessary to strike a balance between protecting marine ecosystems and facilitating access for tourism. For example, marine protected areas have demonstrated efficacy in managing tourism while providing opportunities for conservation and education (Ahmadi et al., 2024; Utama et al., 2023). Furthermore, to guarantee the sustainable use of marine resources within the Blue Economy agenda, integrated policy strategies must align the tourism, energy, and fisheries sectors (Ahmadi et al., 2024; Wishanesta et al., 2024). The ability of sustainable tourism to foster collaboration among stakeholders while preserving biodiversity and improving the quality of life for coastal communities is ultimately what will determine its success in coastal and marine contexts.

Challenges in Indonesian Underwater Tourism Development

Underwater cultural heritage tourism has enormous potential in Indonesia, the world's largest archipelagic state, with a rich maritime history. This includes diverse assets, such as shipwrecks, submerged ruins, and relics of historical maritime activity, that can generate both cultural and economic value. However, progress in this sector remains constrained by several systemic challenges. Chief among them is the limited and inconsistently enforced legal protection for underwater heritage. The current regulatory framework offers insufficient safeguards against looting, environmental damage, and exploitation of submerged cultural sites (Looram & Lindley, 2024). While the UNESCO Convention on the Protection of the Underwater Cultural Heritage serves as a global reference, integrating its principles into national legal instruments has been slow and uneven (Omel'chenko, 2023).

In addition to legal gaps, inadequate infrastructure significantly hampers the development of tourism around these sites. Many potential dive destinations in Indonesia lack essential facilities, such as safe access points, diving centres, signage, and visitor interpretation centres, thereby limiting both accessibility and the quality of the visitor experience (Pandya & Sanghani, 2024). These deficiencies not only hinder the economic viability of underwater tourism initiatives but also restrict local communities from fully participating in and benefiting from tourism-based activities. Compounding this issue is the shortage of exceptionally skilled local guides with both historical knowledge and diving expertise, who can effectively interpret underwater sites to enhance tourist engagement and conservation awareness (Pérez-Álvarez, 2023; Ricca et al., 2023).

Additionally, Indonesia's fragmented governance structure is impeding the growth of underwater heritage tourism. Central and local governments, travel agencies, and community organizations often fail to coordinate effectively, resulting in fragmented planning and execution (Looram & Lindley, 2024). This lack of integration hampers attempts to create an inclusive and sustainable tourism model. The significance of collaborative governance frameworks that bring together various stakeholders to manage tourism and conservation priorities jointly is emphasized by scholars (Omel'chenko, 2023; Ricca et al., 2023). These models could strengthen policy coherence, safeguard cultural assets at risk, and empower coastal communities by allowing them to participate more fairly in the growth of tourism.

Theoretical Foundations and Applications of Value Chain Analysis (VCA)

Value Chain Analysis (VCA) provides a strategic lens that enables a comprehensive examination of the composition and operation of the tourism service delivery industry. VCA assists stakeholders in identifying inefficiencies and locating strategic leverage points to maximize resource use and enhance sustainability outcomes by outlining the entire tourism activity sequence, from site preservation and infrastructure development to visitor engagement and community benefits (Xiong et al., 2022; Zeng et al., 2023). This framework has been useful in tourism studies for enhancing competitiveness and directing targeted interventions in various sectors.

VCA is essential in bridging the goals of heritage conservation and tourism development in the particular context of underwater cultural tourism. To align their interests toward a common vision of sustainable tourism, it promotes cooperation among local communities, tourism operators, and government agencies (Rahmiati & Yustina, 2022; Zeng et al., 2023). Despite its strategic importance, VCA is still not widely adopted in marine heritage tourism, especially in developing nations where issues such as fragmented governance and scarce resources frequently hinder integrated planning (Chiwariidzo, 2023; Klinsrisuk & Pechdin, 2022). In these situations, the VCA framework can serve as a guiding mechanism to enhance heritage site management and foster unity among stakeholders, in addition to its role as an assessment tool.

Empirical cases demonstrate the importance of VCA-driven tourism development. Thaha et al.'s Dato Beach case study, for example, demonstrates how sustainable operational frameworks based on VCA principles can significantly enhance a destination's appeal and benefit all parties involved (Thaha et al., 2022). Although further empirical research is required, the use of cutting-edge technologies, such as blockchain in tourism logistics, has been suggested to enhance sustainability and transparency, in addition to operational efficiency (Prados-Castillo et al., 2023). Furthermore, it has been shown that integrating the tourism and cultural sectors along the value chain—especially through community-based tourism models—supports heritage preservation and economic advancement, particularly in areas with a rich cultural heritage but limited financial resources (Giddy & Rogerson, 2023; Zeng et al., 2023).

METHODS

This study employs a qualitative descriptive research design to construct a strategic value chain model for underwater cultural heritage tourism in Indonesia. The research seeks to identify systemic gaps and strategic leverage points that can align conservation efforts with sustainable tourism development. The qualitative approach enables in-depth exploration of institutional dynamics, stakeholder perspectives, and policy frameworks that influence the tourism value chain. Data were collected through a combination of literature review, expert interviews, and document analysis. The literature review encompassed scholarly journals, UNESCO reports, and government policy documents relating to marine heritage tourism, the Blue Economy, and value chain development. Semi-structured interviews were conducted with key stakeholders, including local government officials, tourism operators, marine archaeologists, and community representatives. These interviews focused on identifying practical challenges and opportunities within the heritage tourism value chain. Additional data were gathered from regulatory documents, national tourism strategies, and reports from Indonesia's Ministry of Tourism.

Purposive sampling was employed to select case study regions with significant potential for the development of underwater cultural tourism. Selected regions included the Gaspar Strait, Banda Sea, and North Sulawesi, based on criteria such as heritage density, diving infrastructure, community involvement, and tourism readiness. These sites offer varied conditions and represent the diversity of Indonesia's underwater heritage assets. Each case was analysed to identify how value is generated across stages and to determine which actors contribute to or hinder sustainable outcomes. The primary analytical framework employed is Value Chain Analysis (VCA), which maps the whole process of tourism service delivery across the heritage sector. The VCA framework includes components such as heritage resource identification, legal protection, infrastructure provision, interpretation and marketing, visitor experience, and benefit distribution to local communities. Data analysis was conducted using thematic coding, informed by Miles and Huberman's interactive model of qualitative data reduction, display, and conclusion drawing. Cross-case synthesis was also applied to identify common patterns, differences, and best practices across regions.

To ensure validity, data triangulation was employed across multiple sources, including literature, interviews, and official reports. Member checking was used with selected interviewees to verify interpretations. However, the study acknowledges several limitations, including regional specificity, the absence of quantitative performance data, and limited generalizability beyond the Indonesian context. Future research

could complement this work by incorporating economic modeling or visitor satisfaction metrics to deepen the understanding of impact and scalability further.

RESULTS AND DISCUSSION

Identification of Core Value Chain Components

The analysis of heritage dive tourism in Indonesia revealed a fragmented but emerging value chain, comprising several key components that span from site identification to community benefit distribution. Using the Value Chain Analysis (VCA) framework, the study mapped out the significant stages of tourism value generation as observed across the three case study regions: the Gaspar Strait, the Banda Sea, and North Sulawesi. These stages include: (1) heritage resource identification and validation; (2) legal and institutional regulation; (3) conservation and site readiness; (4) infrastructure and accessibility; (5) interpretation and tourist engagement; (6) marketing and promotion; and (7) benefit distribution and community involvement.

Field data and stakeholder interviews show that each region exhibits different levels of maturity across these stages. For instance, heritage identification is generally robust, supported by academic surveys and historical records. However, significant weaknesses appear in legal protection, interpretation services, and consistent site maintenance. In many cases, conservation efforts are either reactive or ad hoc, with limited integration into tourism planning and management. Infrastructure, such as access piers, signage, or dive safety systems, remains underdeveloped, particularly in the Banda Sea and rural North Sulawesi, limiting tourism scalability.

A key insight is the identification of "missing links" within the value chain. Specifically, the stages of interpretation and marketing are underperforming across all cases. This includes a lack of trained guides, the absence of narrative storytelling, minimal use of digital platforms, and inadequate branding of underwater heritage as a unique selling point. Community involvement, although evident in informal roles (e.g., boat services, local food vendors), is rarely formalised within tourism governance structures, thereby weakening local ownership and long-term commitment to conservation. To synthesise the findings, the following table provides a comparative snapshot of the value chain component readiness across the three sites, rated on a qualitative scale from Low to High:

Table 1. Comparative Readiness of Heritage Dive Tourism Value Chain Components Across Case Study Sites

Value Chain Component	Gaspar Strait	Banda Sea	North Sulawesi
Site Identification	High	High	Medium
Legal & Institutional Support	Medium	Low	Medium
Conservation Readiness	Medium	Low	Medium
Infrastructure & Accessibility	Medium	Low	Medium
Interpretation & Engagement	Low	Low	Low
Marketing & Promotion	Low	Low	Low
Community Involvement	Medium	Medium	Medium

Source: Research data, 2025

The table illustrates that while the heritage assets themselves are well-recognised and hold historical depth, the supporting structures necessary to transform them into sustainable tourism products remain weak or inconsistent. The analysis highlights the importance of holistic, multi-stakeholder planning that encompasses not only conservation and access, but also storytelling, promotion, and local empowerment—key components that ultimately determine whether cultural heritage generates long-term value.

Stakeholder Roles and Gaps

The effectiveness of heritage dive tourism in Indonesia is closely tied to the coordination and engagement of multiple stakeholders across the value chain. Field findings reveal that stakeholder roles—ranging from government institutions and tourism operators to local communities and conservation agencies—are currently fragmented, with overlapping responsibilities and limited collaborative planning mechanisms in place. While government bodies typically dominate the regulatory space, their efforts are often siloed, leading to disjointed policy execution at both national and regional levels. For instance, tourism planning often proceeds independently of heritage conservation, despite their inherent interdependence in the underwater context. At the local level, community involvement is informal and mainly driven by economic necessity rather than structured engagement. Residents often provide boat transportation, food services, or informal guiding, but their inclusion in decision-making or benefit-sharing schemes remains minimal. This restricts the sustainability of tourism projects as well as the perceived ownership of heritage resources. Community voices

are often absent from tourism forums in places like the Banda Sea, which fosters mistrust and a lack of local stewardship of underwater sites. On the other hand, although they are not yet linked to official plans for tourism development, Gaspar Strait offers new examples of informal diver cooperatives and community homestay networks.

Tourist access is greatly aided by private sector players, such as dive tour companies and hotel investors, but their operations frequently conflict with conservation goals and long-term cultural preservation. Frequently, dive tourism is driven more by consumer demand than by cultural significance, leading to the commercialization of locations without proper interpretation or adequate safeguards in place. Concerns regarding the absence of formal certification programs and organized collaborations with governmental or historical organizations are also raised by interviews conducted with local diving clubs. Crucially, these gaps are exacerbated by the absence of an integrated governance model. Collaboration between the public and private sectors, as well as among ministries (such as tourism, maritime affairs, and culture), is not facilitated by a specific platform. Initiatives consequently frequently compete rather than converge, resulting in inefficiencies and missed opportunities to create shared value. Coherent policies on site protection, investment incentives, capacity-building, and promotion strategies are also hampered by the absence of coordination mechanisms.

Legal-Institutional and Infrastructure Challenges

Unclear regulations and inadequate infrastructure severely hamper the growth of Indonesia's underwater cultural heritage tourism industry. Stakeholders consistently emphasized the need for a comprehensive legal framework that clearly outlines the custodianship, usage rights, and conservation obligations for submerged cultural sites across all case study regions. Despite being a signatory to international agreements, such as the UNESCO Convention on the Protection of the Underwater Cultural Heritage, Indonesia's national and local legal systems only partially and inconsistently operationalize these principles. Long-term planning and private-public cooperation are ultimately hindered by the uncertainty this legal void creates for local stakeholders, conservationists, and potential investors.

Many underwater locations remain vulnerable to looting, destructive diving practices, and unregulated tourism activities due to the lack of robust legal protection. Several instances of historically significant shipwrecks being damaged or salvaged without supervision were disclosed in interviews with local stakeholders. Regional authorities often lack the enforcement capabilities and clear jurisdictional boundaries necessary to prevent such infractions. Furthermore, underwater resources typically receive only a secondary level of attention in regulatory planning, with cultural heritage laws favoring terrestrial monuments. Because of this, heritage sites below sea level are frequently handled more like tourist commodities than as historically significant assets that need to be preserved."

In most research areas, the physical infrastructure for dive tourism is still woefully inadequate, in addition to legal issues. Particularly in the Banda Sea and certain areas of North Sulawesi, basic facilities such as jetty access, signage, safety stations, and visitor centers are often absent or in poor condition. Even high-potential heritage sites struggle to attract and retain visitors without these fundamental resources. The ecological integrity of these delicate marine ecosystems is also seriously threatened by inadequate waste management systems and a lack of environmental monitoring at dive sites. The shortage of qualified technical staff and inadequate institutional coordination among the ministries of environment, tourism, and marine affairs exacerbate the situation.

Best Practices and Community Participation

Several encouraging practices have surfaced throughout the study sites despite the structural issues mentioned in earlier sections, highlighting the potential of community-based models in heritage dive tourism. For instance, unofficial dive guide cooperatives and locally run homestays have started to emerge in the Gaspar Strait region as depicted in Figure 1. Despite their small scale, these grassroots efforts have strengthened local management of underwater heritage resources. Participants in these programs, often in partnership with educational institutions or non-governmental organizations, not only assist with logistics such as boat rentals and lodging but also participate in coral restoration and basic site monitoring.

These local models' emphasis on narrative ownership—a community's capacity to understand and disseminate the stories woven throughout their maritime environment—is one of their main advantages. On Celagen Island, young people from the area, who have received training as "heritage storytellers," lead tourists through the historical significance of neighboring wreck sites, connecting them to larger cultural narratives and fostering a sense of community. Although it has not yet been institutionalized, this interpretive method

enhances the visitor experience by adding depth to the emotional and educational aspects of diving, which are often absent from commercial operations. The literature's emphasis on the value of immersive and participatory tourism in enhancing site appreciation and conservation awareness is also reflected in it.

Digital advancements have also started to promote local visibility and engagement. Several community organizations in North Sulawesi have utilized social media and virtual tour platforms to promote lesser-known dive sites, offering video walkthroughs that showcase local culture and marine biodiversity. These programs, frequently led by young locals, have demonstrated promise in raising site awareness and attracting independent divers while avoiding the expensive marketing techniques typically employed by larger operators.

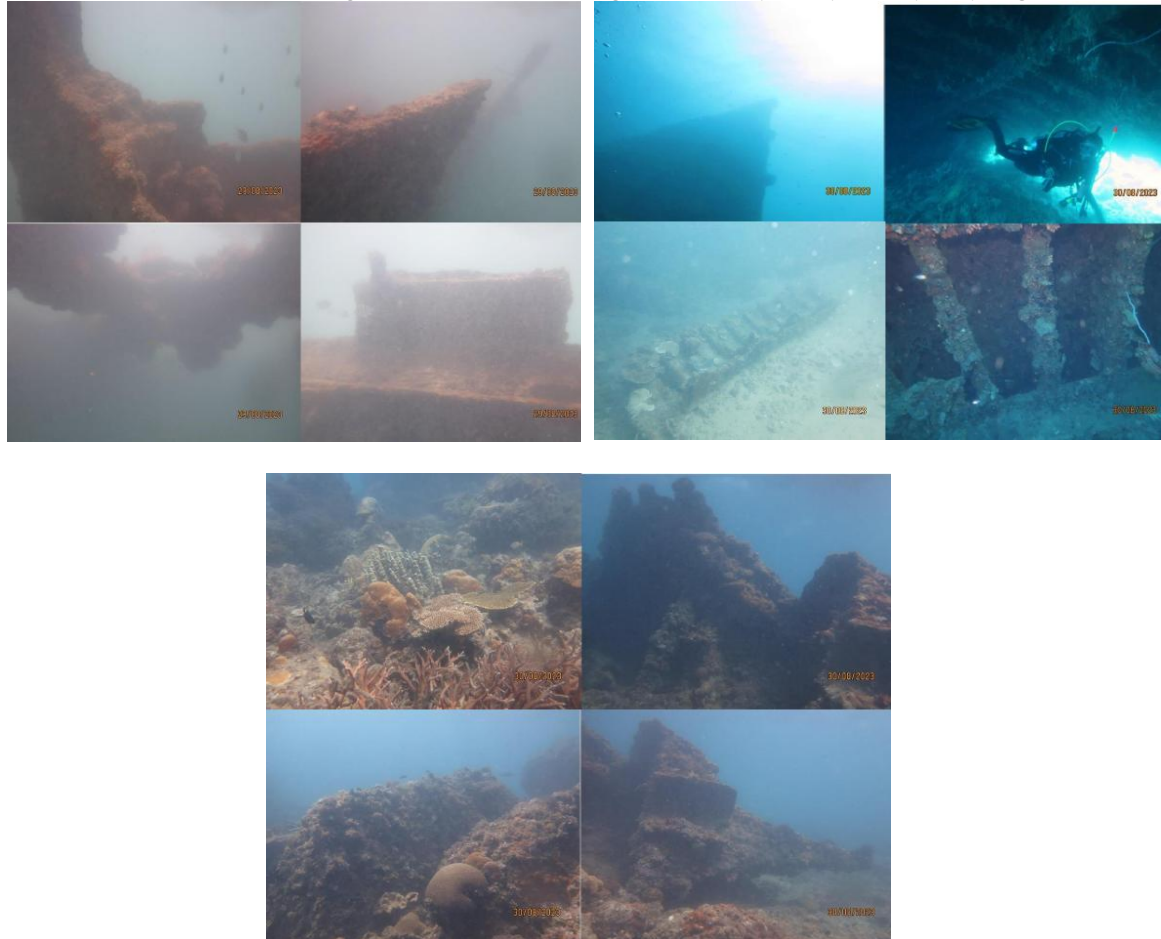


Figure 1. Surrounding Ecosystem and Environmental Impacts of Gaspar Strait Shipwreck Tourism

Source: Research data, 2025

Despite their achievements, these best practices remain dispersed and receive limited support from official frameworks for tourism development. Most do not have access to standardized training, long-term funding, or inclusion in destination management strategies. However, their influence demonstrates how communities can be transformed through underwater heritage tourism if they are provided with the right resources, recognition, and autonomy. By establishing these models through collaborations, certification schemes, and policy incorporation, their influence could be amplified, and local communities would be recognized as co-owners of Indonesia's maritime cultural heritage in addition to service providers.

Strategic Leverage Points in the Value Chain

In Indonesia's heritage dive tourism value chain, the synthesis of findings from various sites reveals several crucial leverage points where strategic intervention can yield disproportionately high returns in terms of sustainability, cultural preservation, and economic inclusion. Interpretation and storytelling are two of the most underdeveloped yet highly promising segments, consistently falling short throughout the case study regions. Although there are historically significant wrecks and submerged heritage sites, most places lack robust interpretive frameworks. There are fewer opportunities for deeper engagement, repeat visits, or cultural

education because tourists are rarely provided with the contextual narratives, historical context, or guided experiences that enable them to connect with the underwater heritage fully. Visitors' perceptions of value and commitment to conservation could be significantly raised by strengthening this segment through training, digital media, and heritage-based storytelling.

Formally incorporating community-based tourism models into the institutional framework of heritage site management is another important leverage point. As demonstrated in regions like the Gaspar Strait and Celagen, local actors can play transformative roles when empowered with resources and recognition. However, most current initiatives are informal and lack scalability. Providing formal pathways for community certification (e.g., local guide training, eco-dive standards, heritage interpreter badges) and embedding them into regional tourism strategies would increase legitimacy, ensure quality, and foster inclusive value distribution. This aligns closely with the Blue Economy philosophy, which emphasizes ecosystem stewardship and local benefit-sharing. Another fundamental leverage point is legal and regulatory reform. Although there is broad theoretical support for the protection of heritage sites, many underwater assets remain vulnerable due to the lack of specific operational policies, such as zoning regulations, dive site procedures, and prohibitions on salvage. It would be possible to reduce conflicts, clarify stakeholder roles, and facilitate long-term planning by establishing enforceable legal instruments that are modeled after the UNESCO framework and tailored to Indonesian maritime governance. These legal foundations are also essential for luring moral investment and cross-border cooperation.

Last but not least, the value chain's most overlooked link, digital marketing and promotion, provides an affordable and easily accessible solution. Virtual dives, interactive maps, heritage documentaries, and community-generated content can all enhance Indonesia's underwater tourism appeal without requiring a substantial initial investment of funds. Repositioning Indonesia as a top destination for sustainable heritage dive tourism may be possible with targeted capacity-building in digital skills and collaborations with the academic and creative sectors. These leverage points work together to create the framework for a value chain that is more equitable and integrated. To ensure that Indonesia's underwater cultural heritage is not only preserved but also positioned as a catalyst for sustainable blue growth, its identification provides a roadmap for policy reform, investment prioritization, and effective stakeholder coordination.

Discussion

The study's findings highlight the importance of integrated value chain thinking in resolving Indonesia's fragmented underwater cultural heritage tourism industry. Indonesia has a rich maritime heritage, as determined by site-level analyses and stakeholder interviews. However, structural inefficiencies and policy discontinuities primarily prevent these submerged assets from reaching their full potential. This reinforces existing literature that has highlighted the tension between heritage preservation and tourism commercialisation, particularly in developing countries where regulatory frameworks and institutional capacities are still in development (Lupia et al., 2023; Omel'chenko, 2023).

The application of Value Chain Analysis (VCA) in this context has revealed strategic leverage points that are both underdeveloped and highly influential. Interpretation and community engagement emerged as critical yet neglected components. This finding aligns with earlier studies, which emphasise that tourism value is not solely created through physical access to heritage sites, but also through the quality of narratives, educational content, and cultural meaning delivered to the visitor (Gizzi et al., 2024; Pérez-Álvarez, 2023). The lack of formal storytelling mechanisms or heritage-based interpretation diminishes not only the tourist experience but also the socio-cultural ownership that communities might otherwise feel toward these sites.

Community-based tourism, as demonstrated in select cases like the Gaspar Strait, presents a replicable model for inclusive and sustainable development. These findings reinforce the argument that community participation enhances the effectiveness of conservation and facilitates socio-economic returns in heritage tourism systems (Ahmadi et al., 2024; Giddy & Rogerson, 2023). However, the study also shows that without formal inclusion—such as certification, policy recognition, and shared governance—these grassroots initiatives remain vulnerable to co-option or marginalisation. From a governance perspective, the research identifies a pronounced lack of horizontal and vertical coordination across stakeholder groups. Ministries operate in parallel silos, while community actors are excluded from formal planning structures. This discrepancy aligns with the existing literature, which emphasizes the importance of collaborative governance models that empower local actors and transcend institutional boundaries (Ricca et al., 2023; Zeng et al., 2023). Underwater cultural heritage must be protected and effectively incorporated into Indonesia's tourism development strategy, which requires strengthening institutional ties and defining stakeholder roles through legally binding frameworks.

Lastly, by demonstrating that VCA is relevant not only for supply-side efficiency but also for cultural sustainability, stakeholder empowerment, and destination resilience, this study contributes to the theoretical discussion on the topic. It expands the use of VCA beyond conventional tourism services to intricate heritage systems with a variety of, occasionally contradictory, values and interests. This creates a path for further study to improve value chain models that are more equity-driven, culturally embedded, and consistent with the principles of the blue economy.

CONCLUSION

This study employed Value Chain Analysis (VCA) to examine the strategic growth of Indonesian underwater cultural heritage tourism, identifying key structural flaws and opportunities for leverage throughout the travel industry. Indonesia still faces significant obstacles to realizing the full potential of heritage dive tourism, despite its rich maritime history and diverse submerged cultural assets. These issues, which impede inclusive benefit distribution and sustainable growth, include weak legal frameworks, disjointed stakeholder coordination, inadequate infrastructure, and little interpretive engagement. The application of VCA enabled a comprehensive mapping of heritage tourism activities, revealing not only critical bottlenecks but also opportunities for targeted intervention. Key leverage points identified include strengthening legal and institutional support, formalising community-based tourism roles, investing in interpretation and storytelling, and harnessing digital platforms for promotion. These interventions, if strategically implemented, can enhance both the cultural and economic value of underwater sites while ensuring their long-term preservation and conservation.

Furthermore, the study contributes to the growing discourse on the intersection of sustainable tourism, the Blue Economy, and heritage management. It highlights the need for integrated governance models that prioritise community empowerment, environmental stewardship, and intersectoral collaboration. By bridging the gap between conservation and tourism, Indonesia has the opportunity to position itself as a global leader in maritime heritage tourism. Ultimately, this research calls for a reimagining of underwater tourism not merely as an economic venture but as a platform for cultural dialogue, ecological responsibility, and community regeneration. Future work should explore the scalability of localised best practices, integrate quantitative impact assessments, and pilot policy innovations that embed value chain thinking into national tourism and heritage agendas.

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