

SUSTAINABLE DEVELOPMENT CHALLENGES IN ISLAND TOURISM: A CASE STUDY OF LAYANG-LAYANG ISLAND RESORT

Arny Azryanna Binti Poniran, Arif @ Kamisan Pusiran, Andi Tamsang Andi Kele
Faculty of Business, Economics and Accountancy
University Malaysia Sabah 88450 Kota Kinabalu, Sabah Malaysia

*Corresponding author's email:
Arnyazryanna933@ums.edu.my

Received Date: 30 December 2024

Revised Date: 6 July 2025

Accepted Date: 24 September 2025

Published Date: 31 December 2025

DOI: <https://doi.org/10.51200/mjbe.v12i2.7166>

Keywords: Sustainable Tourism,
Island Resorts, Operational
Challenges, Economic Viability,
Environmental Pressures, Political
Factors, Layang-Layang Island.

ABSTRACT

This study examined the sustainable development challenges faced by Layang-Layang Island Resort within the context of island tourism. The research investigated key operational, economic, environmental, and political factors affecting sustainability and explores strategies to enhance the resort's competitive advantage. Using a qualitative approach, data were collected from 55 tourist reviews and in-depth interviews were conducted with resort employees. Findings revealed that there were significant challenges in the context of sustainability, including limited recreational offerings, environmental pressures, operational constraints, and regulatory uncertainties. The study concluded with recommendations for improving sustainability and enhancing visitor engagement, highlighting the interconnectedness of these challenges and the need for a holistic approach for sustainability in island tourism.

INTRODUCTION

Background of the Study

Background of the Study

Layang-Layang Island, located approximately 290 kilometres northwest of Sabah in the South China Sea, illustrates these tensions in a compelling and under-researched context. Rising nearly 2,000 metres from the ocean floor, the island is part of the Spratly Islands a geopolitically sensitive and ecologically rich region comprising more than 600 reefs, shoals, and islets. Known for its clear waters, unspoiled coral reefs, and seasonal hammerhead shark sightings, Layang-Layang has become a niche destination for dive tourism, attracting eco-conscious travellers seeking remote and pristine environments. Politically, it holds strategic value for Malaysia, having been formally claimed following a government official's visit and declaration of sovereignty (Musa et al., 2006).



Tourism development on the island began modestly. Once merely a sandbank, Layang-Layang was transformed through extensive land reclamation between 1985 and 1994. The island now measures approximately 1.2 kilometres by 200 metres and is surrounded by 13 interconnected coral reefs, which together form a shallow lagoon with two main sea channels and a dramatic 2,000-metre drop-off into open ocean. The tropical waters ranging from

22°C to 32°C, offer exceptional visibility and support a diverse range of marine life, including Napoleon Wrasse, Manta Rays, Dogtooth Tuna, Hawksbill Turtles, and multiple shark species. The island also serves as a stopover point for migratory birds, further enhancing its ecological value.

Layang-Layang Island Resort, established in 1991, remains the only accommodation and dive operator on the island. Initially featuring just 15 rooms, it has since expanded to 86 rooms and four suites, offering a range of modern amenities while preserving a traditional longhouse-style design. Despite its appeal, operating in such an isolated setting presents considerable challenges. Seasonal closures during the northeast monsoon, fluctuating tourist numbers, high transportation costs, and limited regulatory clarity all contribute to the fragility of its operations. While the resort has implemented environmentally conscious practices such as enforcing a Reef Conservation Pledge among divers and adhering to marine protection protocols these efforts may not be sufficient to address broader, structural sustainability concerns.

Yet, despite the uniqueness of Layang-Layang's setting and the complexity of its tourism dynamics, little academic attention has been directed toward understanding the sustainability challenges facing this type of remote, single-operator island destination. Much of the existing literature on island tourism in Malaysia focuses on more accessible or populated islands, often overlooking locations where infrastructure is minimal, governance is fragmented, and operational risks are intensified by distance and isolation.

RESEARCH QUESTION

The research question of the study are as follows:

RQ1. How do tourists view the sustainability of tourism on Layang-Layang Island?

RQ2. What are the internal challenges to sustainable tourism, as seen by former resort staff?

To address the first question, the study adopts a qualitative case study approach that explores external perspectives through user-generated content (UGC), such as online reviews, photographs, and videos. UGC is increasingly recognised in tourism research for offering authentic, unsolicited insights into visitor experiences (Hausman et al., 2018; Brochado et al., 2019). Analysing these materials provides valuable information on how tourists interpret the island's environmental conditions, service quality, and perceived sustainability efforts, revealing patterns of satisfaction and concern that might otherwise remain undocumented.

To address the second question, the study incorporates internal perspectives through in-depth interviews with former resort staff. These interviews delve into operational realities, development trajectories, and institutional or contextual barriers that hinder sustainable tourism practices on the island. In-depth interviews are particularly suited for small-scale tourism contexts, as they uncover grounded and nuanced experiences (Graci, 2013). Participants offered insight into the logistical, managerial, and ecological challenges that complicate long-term sustainability planning. They also reflected on the

history of development and shared ideas for how the sustainability agenda might be advanced in such a remote and fragile setting.

By integrating these two vantage points which is tourist perceptions and staff insights this study offers a holistic understanding of the sustainability challenges facing by Layang-Layang Island Resort. More broadly, it contributes to ongoing discussions about sustainable tourism in remote island destinations, where environmental vulnerability, infrastructure constraints, and governance gaps often intersect in complex ways.

LITERATURE REVIEW

Small Island Tourism and Sustainability Challenges

Small Island Developing States (SIDS) and other remote islands often depend heavily on tourism as a key economic sector, but this reliance also increases their vulnerability to external shocks, seasonality, and ecological degradation (Scheyvens & Momsen, 2008). Small island tourism is typically characterised by limited land space, fragile ecosystems, dependence on imported goods, and high sensitivity to climate change (Hampton & Jeyacheya, 2015). While the isolation of small islands offers unique tourism appeal, it also presents governance, infrastructure, and sustainability challenges that require locally tailored solutions.

Sustainable development in these settings requires an integrated approach that balances economic growth, environmental conservation, and social inclusion. Due to the limited carrying capacity and ecological sensitivity of

island environments, sustainability strategies must be context-specific and long-term in vision (Gössling, 2003; Baldacchino, 2006). In destinations like Layang Layang Island Resort, where remoteness amplifies logistical and environmental challenges, sustainable tourism is both necessary and difficult to achieve.

As Scheyvens and Momsen (2008) argue, for small island tourism to be truly sustainable, development strategies must address not only economic performance but also the equitable distribution of tourism benefits and the inclusion of local communities in decision-making processes. Such approaches help ensure that tourism contributes to poverty alleviation, cultural preservation, and ecosystem protection rather than exacerbating socio-environmental.

A comparable example to Layang-Layang Island Bonaire, a Caribbean Island known for its strong commitment to sustainable marine tourism. Bonaire has implemented a well-structured marine park management system and visitor fee policy, which supports coral reef conservation and community-based tourism initiatives (Thur, 2010). This stands in contrast to Layang- Layang's limited infrastructure and lack of permanent community structures.

Similarly, Palau, a Pacific Island nation, offers insights into policy-driven sustainability. It introduced the Palau Pledge, requiring all visitors to commit to environmentally responsible behaviour, reflecting national efforts to preserve fragile ecosystems through education and strict environmental guidelines (Fiske, 2019). Unlike Layang-

Layang, which is managed through a resort and military presence, Palau's integrated government and community approach has allowed broader participation in environmental governance.

These examples underscore how different island contexts shape sustainability efforts. While Layang-Layang operates in a niche tourism space with limited governance actors and no residential population, destinations like Bonaire and Palau illustrate the importance of broader stakeholder inclusion, environmental regulation, and long-term planning in achieving sustainable island tourism.

Sustainability Challenges in the Layang-Layang Island Resort

Preserving biodiversity is fundamental to island sustainability, especially in tourism settings where natural beauty is the primary attraction. On Couran Cove Island, for example, sustainable resort design and conservation protocols have successfully maintained environmental integrity while accommodating tourism flows (Lim & McAleer, 2003). Such practices are particularly relevant to destinations like Layang-Layang, which rely heavily on marine biodiversity to attract ecotourists. In addition to environmental concerns, the social and economic aspects of sustainability require careful attention. Effective community engagement enhances not only local ownership but also the long-term viability of tourism initiatives. The Krk Island case demonstrates how community partnerships and transparent communication can foster stronger environmental stewardship and social cohesion (Nižić et al., 2010). Strong governance is essential to

institutionalising sustainability in island tourism. As Hall (2011) highlights in the context of small island destinations, regulatory frameworks must support responsible tourism practices through planning controls, monitoring mechanisms, and enforcement. Performance-based models, such as those proposed by Moore (2012), also offer systematic approaches to evaluating and guiding sustainable development outcomes. Collaborative governance models like the multifunctional interactive process cycle stress the importance of stakeholder coordination including government bodies, the private sector, and local communities in achieving balanced outcomes (Lim & Cooper, 2009).

Tourist Experience in Remote Island Contexts

Tourist experiences in remote island destinations are often shaped by expectations of pristine environments, exclusivity, and opportunities for escape from urban life. Visitors are typically motivated by the desire for adventure, relaxation, and interaction with unique ecological settings such as coral reefs and marine biodiversity (Prayag & Ryan, 2011). In small island contexts, the quality of experience is closely tied to the natural environment, meaning that any ecological degradation directly affects tourist satisfaction and long-term destination competitiveness.

Studies highlight that tourists value environmental integrity and authenticity above all else. For example, Uyarra et al. (2005) found that visitors to Caribbean islands expressed strong preferences for healthy coral reefs, clear waters, and intact ecosystems, and

that degradation of these features significantly reduced their satisfaction. Similarly, Patterson and Pan (2019), in their systematic review of island tourism experiences, reported that visitor satisfaction is closely linked to the perceived environmental quality, safety, and availability of diverse recreational activities.

At the same time, remote island contexts bring operational and psychological dimensions to the tourist experience. Accessibility challenges, high costs, and limited infrastructure can negatively affect perceptions (Wang et al., 2018). However, such remoteness also enhances the appeal for niche markets like eco-tourists and divers, who often seek exclusivity and are more tolerant of logistical inconveniences (Hampton & Jeyacheya, 2015). This creates a paradox where isolation functions as both a constraint and a competitive advantage.

The tourist experience is also increasingly shaped by electronic word-of-mouth (e-WOM) and user-generated content. Online platforms such as TripAdvisor enable tourists to document their experiences, influencing the image and reputation of remote islands far beyond the destination itself (Munar & Jacobsen, 2014; Hausman et al., 2018). These digital narratives reveal both satisfaction and dissatisfaction, offering valuable insights into how tourists interpret environmental quality, service delivery, and the sustainability of remote islands.

Theoretical Lens: Resource-Based View

The Resource-Based View (RBV), introduced by Barney (1991), offers a valuable theoretical lens for understanding how island resorts can achieve competitive advantage through internal capabilities such as eco-friendly infrastructure, skilled personnel, and strong brand identity. In remote island contexts like Layang-Layang, where access to external support is limited, such internal resources become especially critical for sustaining tourism operations.

However, critics such as Mowforth and Munt (2015) argue that the RBV's inward orientation tends to overlook external pressures including climate change, geopolitical uncertainties, and shifting environmental regulations that are particularly acute in island environments. This critique underscores the importance of adopting more integrative approaches that consider both internal and external sustainability factors.

In response, this study adopts a dual-perspective framework: combining user-generated content to examine external perceptions (e.g. tourist views), with in-depth interviews to uncover internal operational realities (e.g. staff insight). This approach allows for a more balanced application of the RBV, acknowledging not only the resort's internal strengths and weaknesses but also the broader environmental and market challenges shaping its sustainability.

Identified Research Gaps

Despite the valuable insights provided by existing literature, several critical gaps remain. First, while environmental fragility is widely acknowledged, more empirical studies are needed to assess how island resorts successfully adapt to ecological stressors over time. Second, although economic diversification is frequently recommended, few studies evaluate the long-term sustainability of such approaches in resort-based island economies. Third, the relationship between tourism operators, local communities, and state governance structures remains underexplored particularly in contexts where private operators dominate the tourism landscape.

This study contributes to filling these gaps by examining the sustainability dynamics of Layang-Layang Island Resort, a remote marine tourism destination with unique operational, environmental, and governance challenges. Through a combination of user-generated content and in-depth interviews, the research provides a holistic understanding of both external perceptions and internal constraints, offering insights relevant to broader island sustainability discourse.

METHODOLOGY

This study adopted a qualitative research design to gather in-depth insights into the sustainability challenges faced by Layang-Layang Island Resort. The qualitative approach was deemed appropriate given the complex nature of the research questions and the need to capture diverse perspectives. Data were collected using two primary methods: first, a set of 55 tourist reviews from TripAdvisor covering a five-year period

was analyzed to gain insights into visitor sentiments and experiences at the resort. This analysis provided valuable information on both positive aspects appreciated by guests and weaknesses highlighted in their feedback. Second, semi-structured interviews were conducted with resort employees to gather operational insights. These interviews offered a richer understanding of the daily challenges faced in providing quality guest experience and revealed important operational insights related to logistics and infrastructure. Thematic analysis was employed to identify key themes and patterns in the data collected from both tourist reviews and employee interviews. This triangulation of data sources enhanced the reliability and depth of the findings, allowing for a comprehensive view of the resort's sustainability challenges.

Online User-Generated Content and e-WOM in Tourism

User-generated content (UGC) and electronic word-of-mouth (e-WOM) have become influential tools in shaping tourist perceptions and decision-making. Reviews, photos, and videos posted online offer authentic insights into visitor experiences and can significantly affect destination image and competitiveness. In the context of remote islands, where marketing budgets may be limited, UGC can act as a powerful promotional tool as well as a feedback mechanism to improve services and sustainability practices (Munar & Jacobsen, 2014; Hausman et al., 2018).

Tourist feedback plays an important role in enhancing the tourism industry and tourist experiences (Brochado, 2019). Many tourists share their experiences on online platforms such as TripAdvisor, and these reviews provide valuable insights

into tourist satisfaction. Furthermore, electronic word-of-mouth (e-WOM) is defined by Litvin et al. (2008) as any informal, internet-based communication directed at consumers regarding the use or characteristics of services or experiences. Online reviews generated by internet users have become a vital source of information about tourism services and travel destinations (Patterson et al., 2007). Consequently, many tourists rely on these reviews when planning their trips, using them as references and seeking recommendations from others who have previously experienced the tourism product.

According to Richins (1983), word-of-mouth (WOM) involves the sharing of personal experiences and opinions among tourists about businesses, services, or products. These exchanges often have a strong impact on how tourists make decisions, especially in industries related to hospitality and tourism experiences. In today's digital era, electronic word-of-mouth (e-WOM) plays an even more influential role than its traditional counterpart. As explained by Hennig-Thurau et al. (2004), e-WOM refers to both positive and negative feedback shared online through various digital platforms such as reviews, comments, forums, emails, instant messaging, and chat rooms. This form of communication is especially powerful in the context of online social travel networks (Mauri & Minazzi, 2013), where tourists connect and exchange information.

Online travel-based social platforms like TripAdvisor allow users to actively participate by sharing reviews and feedback on accommodations and tourism-related products. TripAdvisor serves as a central hub where travel

companies and customers contribute information. Through this platform, users can leave reviews, share experiences, and rate services they've used, which in turn helps other travelers make more informed choices and narrow down travel destinations (Barreda & Bilgihan, 2013). Furthermore, TripAdvisor plays a crucial role as a platform for electronic word-of-mouth (e-WOM), offering up-to-date insights and opinions from global internet users (Hennig-Thurau et al., 2004)

FINDINGS

Findings for Research Question 1: How do tourists view the sustainability of tourism on Layang-Layang Island?

Tourist Demographics and Travel Groups

The analysis of user-generated content from TripAdvisor revealed patterns in tourist demographics that help understand how visitors experience Layang-Layang Island. As shown in Table 1, couples represent the majority of visitors (56.91%), followed by families (33.33%). Friends made up 7.32%, while solo and business travellers were minimal at 0.81% and 1.63%, respectively. These numbers suggest that the resort is primarily viewed as a romantic or family leisure destination, likely due to its remote and peaceful setting.

Table 1: Traveller Type to Layang-Layang Island Resort

Traveler Type	Frequency	Percentage (%)
Families	41	33.33%
Couples	70	56.91%
Solo	1	0.81%
Business	2	1.63%
Friends	9	7.32%
Total	123	100.00%

Source: TripAdvisor, 2025

Tourist Satisfaction and Experience

The reviews also provide insight into tourists' overall experience. Out of 43 reviews, 81.40% rated the resort as "Excellent", and 6.98% rated it as "Very Good". Only 2.33% gave an "Average" rating, while 9.30% rated their stay as "Terrible" (see Table 2). These figures reflect a generally high level of satisfaction among guests, particularly regarding the resort's natural beauty and diving experiences.

However, the negative reviews, though small, mentioned critical concerns such as unreliable infrastructure and lack of medical services. These issues are particularly relevant to sustainability, as they reflect operational weaknesses that may affect guests' perception of long-term viability.

Table 2: Traveler Rating on Layang-Layang Island Resort

Traveller Rating	Frequency	Percentage (%)
Excellent	35	81.40%
Very Good	3	6.98%
Average	1	2.33%
Poor	0	0.00%
Terrible	4	9.30%
Total	43	100.00%

Source: TripAdvisor, 2025

In summary, most tourists expressed high satisfaction with their experience at Layang-Layang Island Resort, particularly in terms of leisure activities and environmental appeal. The visitor demographic and review trends indicate that the resort is primarily perceived as a romantic and family-friendly destination. Still, concerns raised in a minority of reviews point to underlying infrastructure and safety challenges that may impact the resort's long-term sustainability image.

Findings for research question no 2: What are the internal challenges to sustainable tourism, as seen by former resort staff?

Table 3: The themes in line with Sustainable Challenges in Island Tourism

Category	Challenge	Implications
Environmental	Overuse of marine resources (e.g. coral degradation from diving)	Threatens biodiversity, undermines eco-tourism appeal
	Lack of effective regulations on marine protection	Increases ecosystem vulnerability and unsustainable usage
Economic	Seasonal tourism (high off-peak drop in occupancy)	Unstable income, inefficient resource allocation, financial planning issues
	Limited variety of recreational offerings	Reduced guest satisfaction, low competitiveness, poor retention
Operational	Inadequate infrastructure (power outages, water shortages)	Service disruption, increased costs, negative guest experience
	No on-site healthcare, dependence on Navy for emergencies	Health and safety risks, reputational impact
	Seasonal closure during	Loss of revenue, staff turnover,

	monsoon (Nov-Jan)	skill erosion, business continuity risk
Regulatory	Unclear and inconsistent environmental and operational regulations	Hinders sustainability efforts and long-term investments

Source: Derived by the Authors

The findings indicate several critical challenges that significantly impact the sustainability of Layang-Layang Island Resort, with a range of issues stemming from environmental, economic, operational, and regulatory factors. One of the key challenges lies in the resort's reliance on marine life, particularly for tourism activities such as diving and snorkelling, which were integral to the resort's appeal. While the region's rich biodiversity attracted eco-conscious tourists, there were growing concerns about the overexploitation of these resources. Staff reported that the absence of effective regulations on marine resource use has led to increasing pressure on local ecosystems. Specifically, the rise in diving activities has been linked to coral degradation, which threatened the very natural attractions that drew tourists to the island. Becken (2007) highlighted that unregulated and excessive use of marine resources can disrupt fragile ecosystems, undermine their long-term viability and diminish the resort's ability to attract eco-tourists in the future. This overuse of natural resources created a dilemma: since tourism is the lifeblood of the resort's economy, it simultaneously eroded the very assets that sustain it.

Another significant challenge identified was the seasonal nature of tourism at Layang-Layang Island Resort, which led to considerable economic instability. During

peak seasons, the resort experienced occupancy rates ranging from 50-60%, but during off-peak periods, occupancy can drop below 10% (Patterson & Pan, 2019). This stark fluctuation in visitor numbers complicated financial planning, making it difficult for the resort to manage staffing levels, resource allocation, and operational costs effectively. The inconsistency in business volumes created inefficiencies, as the resort must maintain high levels of infrastructure and staffing during slow periods, while simultaneously facing the pressure to scale up during peak seasons. This seasonal volatility further affects the resort's long-term economic stability, as the drop in visitor numbers during off-peak periods led to loss of income, reduced cash flow, and limited opportunities for growth. (Refer to Table 1).

Compounding the resort's economic challenges is the limited variety of recreational offerings available to guests. The resort primarily focuses on diving and snorkelling, which, although popular, limits its appeal to a narrower audience. As a result, guests seeking varied and diverse experiences during their stay found the resort's offerings insufficient. Staff noted that the lack of alternative activities, such as nature hikes, cultural experiences, or land-based leisure activities, often leads to guest dissatisfaction. This limitation not only affected guest retention and repeat business but also raised concerns about the resort's ability to compete with other destinations offering more comprehensive and diverse tourism experiences. The lack of variety may also undermine the resort's potential to attract tourists during the off-season when divers and snorkelers less likely to visit due to weather conditions or personal preferences. (Refer to Table 1).

Beyond these challenges, the resort faced significant operational difficulties related to inadequate infrastructure,

particularly in terms of electricity and water supply. Staff reported frequent power outages, which disrupt essential services such as lighting, air conditioning, and food storage. These outages were not only inconvenient for guests but also posted significant operational risks. Wang et al. (2018) described how such interruptions can severely impact the quality of service and guest comfort, which in turn affects overall guest satisfaction and can damage the resort's reputation. The lack of a stable and reliable water supply further complicated operations. The resort currently relied on a reverse osmosis system to meet water demands, which was often unable to provide sufficient water for both guests and staff. This shortage led to additional operational costs and impacted the resort's ability to offer consistent services, which was critical in maintaining high levels of guest satisfaction. (Refer to Table 1).

Healthcare access was another pressing concern at Layang-Layang Island Resort. The resort currently relied solely on the Navy for medical assistance, creating a precarious situation in the event of emergencies. There was no on-site healthcare facility, and any serious medical issue must be addressed by the Navy, which led to delays in urgent care. Klein et al. (2008) highlighted that the lack of accessible healthcare in remote tourist destinations can be a significant deterrent for potential visitors, particularly those with pre-existing health conditions or concerns. This reliance on external medical support not only presented risks to guest safety but could also negatively impacted the resort's reputation as a safe destination for tourists.

The resort's operation was further impacted by its seasonal closure during the monsoon months. From November to January, the resort shuts down due to harsh weather conditions, leading to a complete halt in operations. This seasonal closure results in loss of income,

economic instability, and challenges in maintaining staff morale and skill levels. Many employees seek alternative employment during the off-season, which led to turnover and a loss of institutional knowledge. Moreover, the seasonal shutdown added another layer of uncertainty to the resort's financial planning, as fixed costs and maintenance expenses continued to accumulate even when the resort was not operational. This closure also affected the resort's ability to attract repeat business, as returning guests may face disruptions to their future travel plans due to the resort's limited operating months. (Refer to Table 1).

Lastly, regulatory uncertainties posed a significant obstacle to the resort's sustainability initiatives. Staff expressed concerns about ambiguous and inconsistent regulations, which complicated efforts to comply with local environmental and operational standards. These regulatory challenges created barriers to the resort's ability to implement sustainable practices, such as adopting eco-friendly technologies, improving waste management, and investing in energy-efficient systems. Wheeler (2013) noted that such uncertainties can deter resorts from making long-term investments in sustainability, leaving them vulnerable to both environmental and economic risks. Without clear and consistent regulations, resorts like Layang-Layang were less likely to invest in practices that could enhance both their environmental performance and their overall competitiveness in the market. (Refer to Table 1)

In conclusion, Layang-Layang Island Resort faces a range of interrelated challenges that hinder its ability to achieve long-term sustainability. From environmental overexploitation and seasonal economic instability to inadequate infrastructure and regulatory uncertainties, the resort must address these issues through strategic planning,

improved resource management, and stronger policy alignment. Overcoming these challenges required concerted efforts from both the resort and local authorities to implement sustainable practices that protect the island's ecosystems while ensuring its economic viability. (Refer to Table 1)

RECOMMENDATION

The findings from Layang Layang Island Resort highlighted some of the most pressing challenges common to many island destinations, particularly those heavily reliant on tourism. The issue of over-reliance on marine-based activities like diving and snorkelling is a key concern. While these activities attract tourists, they also pose a significant risk to the very ecosystems that make the resort appealing. Without proper management or regulation, these resources can become overexploited, which ultimately damages the environment and diminishes the resort's attractiveness. Implementing stronger regulations and focusing on sustainable practices could help mitigate this issue, preserving the marine life that so many tourists come to see. One approach for the resort could be to implement visitor caps for diving and snorkelling activities to control the number of people participating in these potentially damaging activities. This would ensure that the marine ecosystem is not overburdened and that coral reefs and marine life can regenerate. Additionally, the resort could designate certain marine areas as protected zones where no diving or snorkelling is allowed, giving these areas a chance to recover. In addition to visitor caps, the resort could introduce environmental education programs aimed at guests, educating them on the importance of preserving marine life and adopting sustainable practices while visiting. For instance, resorts like those in the Great Barrier Reef have successfully implemented sustainable diving practices, where tourists are educated on reef protection, reducing the impact on

marine ecosystems while still offering the chance to explore. Similarly, the resort could offer guided eco-tours that emphasize the importance of marine conservation, further enhancing the experience for eco-conscious tourists.

The seasonal nature of tourism at the resort reflects a larger issue in island tourism, where many destinations are left vulnerable to fluctuating visitor numbers. While peak seasons may bring in a steady stream of income, off-peak periods create financial instability. This seasonality complicates financial planning and limits the resort's ability to make long-term investments in infrastructure or staff development. Diversifying tourism offerings beyond diving could be an effective way to appeal to a broader range of visitors and reduce reliance on peak seasons. The resort could consider introducing activities such as nature walks, bird watching, wellness retreats, or cultural experiences like cooking classes or local handicraft workshops, which could attract tourists throughout the year. For example, resorts in Bali have successfully diversified their offerings by adding yoga and wellness retreats, helping to attract tourists during both peak and off-peak seasons. Introducing more nature-based and cultural activities could not only provide an alternative for tourists who are not interested in diving but also promote the region's biodiversity and heritage. Furthermore, offering off-peak discounts, loyalty programs, or promotions aimed at attracting guests during quieter months could help maintain steady bookings throughout the year. The resort could market itself as an ideal off-season destination for relaxation and wellness, appealing to those seeking a peaceful retreat away from the crowds.

Another significant issue the resort faces is its lack of reliable infrastructure, particularly in terms of power and water supply. These operational challenges are

detrimental to guest satisfaction and can lead to reputational damage if not addressed. For the resort to maintain a competitive edge and attract repeat business, improving its infrastructure should be a top priority. Investing in renewable energy sources, such as solar power or wind energy, could provide long-term solutions to reduce the reliance on inconsistent or expensive external power sources. For example, the Soneva Fushi Resort in the Maldives has successfully integrated solar energy systems into its operations, dramatically reducing energy costs and environmental impact. Similarly, the resort could invest in water conservation technologies, such as rainwater harvesting or advanced desalination systems, to ensure a reliable supply of water throughout the year, especially during peak tourist seasons when demand may exceed local supply. The resort could also explore the use of energy-efficient technologies, such as LED lighting and energy-efficient air conditioning units, to reduce the overall environmental footprint. This approach would not only enhance the guest experience by providing a more stable and comfortable environment but also position the resort as a leader in sustainable practices, attracting eco-conscious visitors.

Additionally, the resort's reliance on external sources for healthcare services is a major concern. In the case of medical emergencies, this dependency could delay crucial treatment and deter potential visitors who are looking for destinations that prioritize guest safety and well-being. One possible solution would be for the resort to invest in an on-site medical facility or partner with nearby healthcare providers to establish a more immediate and accessible medical response system. This could be especially important for tourists who may have pre-existing health conditions or for elderly visitors who may require more immediate attention. Building an on-site medical facility or having a dedicated health and wellness team would not only reassure

guests but also enhance the resort's appeal, making it a more attractive destination for tourists seeking peace of mind in terms of health and safety.

Lastly, regulatory uncertainty appears to be a major barrier to the resort's sustainability initiatives. If the resort is unable to navigate local policies or make long-term investments due to shifting regulations, it may struggle to implement the kind of eco-friendly practices increasingly demanded by environmentally conscious tourists. To overcome this challenge, the resort could actively engage with local governments and tourism authorities to advocate for clear and consistent sustainability regulations that support eco-friendly practices and ensure long-term stability for the tourism industry. The resort could work alongside local authorities to ensure that tourism policies encourage eco-friendly technologies and practices, providing a more stable regulatory framework for long-term sustainability. By collaborating with other resorts and local stakeholders, the resort could also help shape a collective voice to influence policy changes that benefit the tourism sector.

Overall, Layang Layang Island Resort, like many island destinations, faces a complex web of challenges. However, with a more strategic approach to diversifying offerings, improving infrastructure, and addressing regulatory and environmental issues, the resort could enhance its long-term sustainability and remain competitive in an increasingly eco-conscious market. By implementing a more sustainable operational model, focusing on diversifying tourism products, and ensuring resilience in its infrastructure, the resort has the potential to thrive in a more sustainable and competitive tourism environment. Through a combination of responsible tourism practices, infrastructure investment,

and collaboration with local authorities, the resort can not only overcome its challenges but also emerge as a leader in sustainable island tourism.

CONCLUSION

This study aims to identify the challenges faced by the Layang-Layang Island towards sustainable development. The framework of the study was constructed based on Resource Based View Theory. The factors identified from the qualitative study using thematic approach on 55 online reviews and in depth interviews with the employees in Layang-Layang resort confirmed that environmental, operational, regulatory, and economics are the key drivers of challenge for sustainable practices in the island. The study concludes with recommendation on how to overcome the challenges based on each factors identified.

ACKNOWLEDGEMENT

This work is supported by the Universiti Malaysia Sabah under the Research Code TR@M001-2019 research grant titled *Sumber Semulajadi Dan Potensi Pembangunan Strategik Ekonomi Luar Pantai Malaysia: Pulau Layang-Layang*.

REFERENCES

Baldacchino, G. (2006). Islands, island studies, island studies journal. *Island Studies Journal*, 1(1), 3-18. <https://doi.org/10.24043/isj.186>

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>

Becken, S. (2007). Sustainability in tourism: A multidisciplinary perspective. *Journal of Sustainable Tourism*, 15(3), 244-259. <https://doi.org/10.2167/jost623.0>

Fiske, S. J. (2019). The Palau Pledge: Sustainable tourism innovation and responsibility. *Journal of Ecotourism*, 18(3), 259-275. <https://doi.org/10.1080/14724049.2019.1615402>

Hall, C. M. (2011). A typology of sustainability strategies for small island tourism destinations: Case studies from the Caribbean and the Mediterranean. *Journal of Sustainable Tourism*, 19(4-5), 641-657. <https://doi.org/10.1080/09669582.2011.563046>

Hampton, M. P., & Jeyacheya, J. (2015). Power, ownership and tourism in small islands: Evidence from Indonesia. *World Development*, 70, 481-495. <https://doi.org/10.1016/j.worlddev.2014.12.007>

Hennig-Thurau, T., Gwinner, K.P., Walsh, G., et al. (2004) Electronic Word-of-Mouth via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet?. *Journal of Interactive Marketing*, 18, 38-52.

Klein, R. J. T., Nicholls, R. J., & Thomalla, F. (2008). Climate change and island tourism: A strategic approach. *Tourism and Hospitality Research*, 8(2), 98-116. <https://doi.org/10.1057/thr.2008.7>

Krstinić Nižić, M., Ivanović, S., & Drpić, D. (2010). Challenges to sustainable development in island tourism. *South East European Journal of Economics and Business*, 5(2), 43-53. <https://doi.org/10.2478/v10033-010-0014-3>

Lim, C., & McAleer, M. (2003). Ecologically sustainable tourism management on Couran Cove Island Resort. *Journal of Sustainable Tourism*, 11(3), 202-221. <https://doi.org/10.1080/09669580308667204>

Lim, C., & Cooper, C. (2009). Beyond sustainability: Optimising island tourism development. *International Journal of Tourism Research*, 11(1), 89-103. <https://doi.org/10.1002/jtr.688>

Moore, S. A. (2012). A framework for evaluating sustainable tourism programs in small islands. *Tourism Management*, 33(5), 970-981. <https://doi.org/10.1016/j.tourman.2011.12.004>

Mowforth, M., & Munt, I. (2015). *Tourism and sustainability: Development, globalisation and new tourism in the third world* (4th ed.). Routledge.

Munar, A. M., & Jacobsen, J. K. S. (2014). Motivations for sharing tourism experiences through social media. *Tourism Management*, 43, 46-54. <https://doi.org/10.1016/j.tourman.2014.01.012>

Musa, G., Kaur, J., & Thirumoorthi, T. (2006). Layang Layang: An empirical study on scuba divers' satisfaction. *Tourism in Marine Environments*, 3(2),

89-102.

<https://doi.org/10.3727/154427306779435206>

Nižić, M. K., Ivanović, S., & Drpić, D. (2010). Environmental management in tourism: The case of Krk Island. *Tourism and Hospitality Management*, 16(2), 201-213.

<https://doi.org/10.20867/thm.16.2.1>

Patterson, I., & Pan, S. (2019). Visitor experience and satisfaction in island tourism: A systematic literature review. *Island Studies Journal*, 14(2), 283-300.

<https://doi.org/10.24043/isy.93>

Scheyvens, R., & Momsen, J. (2008). Tourism and poverty reduction: Issues for small island states. *Tourism Geographies*, 10(1), 22-41.

<https://doi.org/10.1080/14616680701825115>

Thur, S. M. (2010). User fees as sustainable financing mechanisms for marine protected areas: An application to the Bonaire National Marine Park. *Marine Policy*, 34(1), 63-69.

<https://doi.org/10.1016/j.marpol.2009.04.008>

Uyarra, M. C., Côté, I. M., Gill, J. A., Tinch, R. R. T., Viner, D., & Watkinson, A. R. (2005). Island-specific preferences of tourists for environmental features: Implications of climate change for tourism-dependent states. *Environmental Conservation*, 32(1), 11-19.

<https://doi.org/10.1017/S037689290501918>

Wang, Y., Li, X., & Xu, H. (2018). Logistical challenges in remote tourism destinations: An analysis of island tourism. *Journal of Sustainable Tourism*, 26(3), 379-396.

<https://doi.org/10.1080/09669582.2017.1349770>