Pinisi Discretion Review
Volume 5, Issue 1, September 2021 Page. 115-122
ISSN (Print): 2580-1309 and ISSN (Online): 2580-1317

Marine Ecotourism Architecture

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ABSTRACT

Tourism is the largest industry and the leading sector of multidimensional development that attracts attention to be developed by many archipelagic countries and regions. Marine ecotourism architecture is the right choice to be developed in an integrated manner based on its components in the form of attractions, accessibility, accommodation, amenities, and tourism, which is abbreviated as 5A tourism. This research article describes an architectural model prototype for marine ecotourism development based on Google SketchUp and Lumion Island Larea-rea as a marine tourism destination in the East Coast Region of South Sulawesi Province, Indonesia. This type of Research and Development applies the ADDIE (Analysis, Design, Development, Implementation, Evaluation) approach. Observation and interview techniques were used in field research to collect data and information which were analyzed descriptively. The results of the research in the form of a prototype architectural model design for developing Larea-rea Island tourism destinations based on 5A show natural and well-maintained ecological attractions because the white sand beaches have not been polluted with clear seawater and natural coral reefs. The architectural concept of marine ecotourism is a miniature island tourism destination that has an attraction in the form of a miniature mangrove forest to prevent beach abrasion and the local cultural theme amenity is reflected in the architecture of *"Rumah Sembilan"* where on the roof side adapts the design of the traditional Karampuang house. In other words, this marine ecotourism design applies the architectural theme of a recreational environment based on the micro-ecological concept as a building design, the marine adaptive micro-concept as the background, and the pragmatic micro-concept as a regional spatial layout.

Keywords: Architecture; marine ecotourism; microecology; micro adaptive; micro pragmatics.

INTRODUCTION

Marine ecotourism architecture is an ecotourism design theme with an architectural approach that is adaptive to the environment (Anderson, 2009; Iacobucci, 2006; Nurhayati et al., 2019; Prasetyo, 2019; Tuwo et al., 2021). This ecotourism architecture is a potential strategic value for the development of tourism destination competencies based on the harmonious relationship between architecture and the environment as its attractiveness (Anderson, 2009; Iacobucci, 2006; Nurhayati et al., 2019; Sciolli-Claverie, 2015). The development of marine ecotourism architecture is a source of sustainable competitive advantage for developing regions, in line with public understanding of tourism as a leading sector of economic development and

multidimensional development (Bare et al., 2020; Grenier et al., 1993; Nur et al., 2019; Said et al., 2017; Syam, 2021).

The marine ecotourism design of Pulau Sembilan as the name implies consists of nine islands in Sinjai Regency, Indonesia (Aliah et al., 2019; Alim, 2017; Nur et al., 2019; Syam, 2021), synergizes a prototype model of tourism destination design related to the theme of environmentally sound architecture to create regional economic added value that unites nine islands connected by the sea so that it is a miniature archipelago country from all aspects, both from the arrangement of the island group, form, and physical layout. Based on this reality, seen from the function of this virtual design, it is very important to make an architectural design for marine ecotourism that appreciates and articulates the potential of the surrounding environment because from the management aspect it needs a forum that is directly related to the approach to the theme of environmentally sound architecture.

The application of the architectural concept of Pulau Sembilan marine ecotourism in Sinjai Regency in the management of public spaces that have competitive value based on local competence is based on a combination design pattern and integration of radial and curvilinear circulation (Amrozi & Amiranti, 2012; Ratih & Widjajanti, 2020). The radial system is characterized by the presence of a center point that is used as the destination or origin of movement to and from one locus to another. While the curvilinear system is a combination of straight-line patterns and curved lines that utilize the topography of the archipelago (Nine islands) by adapting to the characteristics of the island.

METHOD

The architectural concept of marine ecotourism through an eco-design approach (Gaha et al., 2014; Tao et al., 2018) is the development of marine tourism destinations that utilize local competencies without any indication of environmental damage. The use of this approach is directly stakeholder together with tourists and local communities to be responsible for the preservation of nature and the environment by providing experiences and social learning to increase public awareness of the importance of the environment.

This architectural design process follows the stages introduced by Kelly & Duerk (2002), namely fact finding, theme determination, goal setting, display requirements in a design and concept generation. The fact finding is accumulated based on the phenomena seen in the Nine Islands as a group of islands to be designed as marine tourism destinations with ecological nuances. Determination of the architectural theme of marine ecotourism is focused on one island as the chosen representation, namely the island of Larea-rea. Based on the theme, the goal was set, namely the architectural design of marine ecotourism on Pulau Sembilan, Sinjai Regency, Indonesia in the form of an ecologically designed traditional house building where the building provides an architectural response that synergizes local cultural values with concern for the surrounding environment so as to provide attractions, access, accommodation and amenities for visiting tourists. Thus, a design concept was born in the form of a marine ecotourism development architecture based on Google SketchUp and Lumion Pulau Larea-rea. This type of research is Research and Development (Reinbold, 2013) by applying the ADDIE approach (Analysis, Design, Development, Implementation, Evaluation). Observation, interview and documentation techniques were used in field research to collect data and information which were analyzed descriptively.

RESULT AND DISCUSSION

Result

The results of this study present the planning and architectural design process of marine ecotourism starting from literature studies as a benchmark, then a study of the design location on Larea-rea Island, drafting design concepts, to a description of the results of the design concept for Pulau Sembilan Marine Eco-Tourism in Sinjai Regency, Indonesia. Based on the plan to develop a tourism destination based on 5A - attractions, accommodation, accessibility, amenities, and amenities (Aliah et al., 2019; Alim, 2017; Bare et al., 2020; Haedar, 2018) in the Nine Islands, which is centered on Larea-rea Island, the area is divided into two zones, namely for ecotourism and conservation zones.

This description of the architectural design concept of marine ecotourism on the island of Larea-rea is specified into three parts, namely: 1) the transformation of the design concept and land arrangement, 2) the transformation of the spatial design concept, and 3) the transformation of the design concept (Haedar, 2018). Meanwhile, the arrangement of the layout of the mass of the Rumah Sembilan applies the concept of landscape ecology (Grenier et al., 1993) which presents an area pattern based on the traditional house of Sinjai Regency, namely the Karampuang House. The regional pattern is used as a locus for the development of 5A-based tourism components according to the architectural characteristics of marine ecotourism that are maintained.

The building design strategy developed is to utilize the land for Rumah Sembilan. Based on the observations, it can be seen that the area used for the utilization of the Rumah Sembilan construction is the southern area of the Larea-rea island, as shown in Figure 1.

Figure 1
Land use area in the construction of Rumah Sembilan (Haedar, 2018)

In that area (south of Larea-rea Island) there is no development plan so the researchers took the initiative to develop Rumah Sembilan according to the name of the islands. The reason is that this part of the island has a strong foundation according to the rock texture of the island which is hard enough to be used as a foundation. At the same time, it was decided to make use of Mangrove

Plants. According to Haedar (2019) that to reduce and prevent coastal abrasion that occurs based on observations, researchers use the concept of a miniature mangrove forest that stretches from the west of the island to the northwest of the island of Larea-rea, as shown in Figure 2.

Figure 2
Mangrove forest land-use area (Haedar, 2018)

The concept of ecotourism architectural design is also used to develop marine tourism destinations, namely in addition to preventing coastal abrasion, it can also be a form of conservation of marine life around Larea-rea Island and as a form of developing attractive natural laboratories. Furthermore, based on the results of Haedar's thesis research (2018), it is understood that the concept of developing the architecture of Rumah Sembilan stems from an ontological view of life, namely how to understand the universe "universally". The philosophy of life of the Bugis-Makassar people is called *"Sulapa Appa"* (square) which shows an effort to "perfect oneself". This philosophy convinces us that all aspects of human life are only perfect if they are in the form of a "Four square". The following is a visualization of Rumah Sembilan as a reflection of the design strategy offered by Haedar (2018) researchers in the form of land use for the construction of Rumah Sembilan because it is hoped that the use of this land can increase the competitiveness of the tourism sector on the island of Larea-rea and become the center of the tourism economy in Sembilan District. Then, the use of Miniature Mangrove Forests which can be a form of conservation of marine life around Larea-rea Island and as a form of a natural laboratory, as well as becoming one of the mini icons of the Tongke-tongke Forest in Sinjai Regency, Indonesia (Aliah et al., 2019; Alim, 2017). Likewise, the use of unspoiled coral reefs can be a place for underwater diving and snorkeling.

Existing Condition **Design**

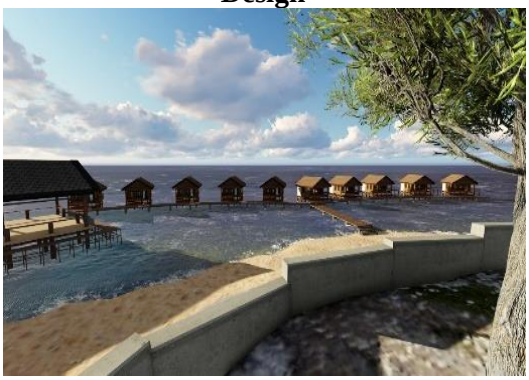

Figure 3
Rumah Sembilan of Larea-rea Island (Haedar, 2018)

Discussion

Based on the results of the analysis of the architecture of marine ecotourism in Sinjai Regency, it can be stated that the development of tourism components that are "friendly and adaptive to the environment" is by Fandeli's (2000) view that ecotourism is a form of tourism managed with a conservation approach.

In essence, the notion of ecotourism is a form of travel that is responsible for the preservation of nature that has a positive impact on local economic development and maintains cultural integrity for the community around the ecotourism area (Aliah et al., 2019; Anderson, 2009; Haedar, 2018; Harahab et al., 2021; Nur et al., 2019). Therefore, the results of previous research (Aliah et al., 2019; Alim, 2017; Haedar, 2018) recommend a concept that needs to be realized to develop marine ecotourism, namely conservation, where ecotourism development should adhere to the principle of conservation which is carried out to maintain, protect and contribute on the management and use of natural resources. Likewise, the development of marine ecotourism architecture adheres to the principle of community participation (Grenier et al., 1993; Iacobucci, 2006; Sciolli-Claverie, 2015; Supardjo, 2014; Syam, 2021), because it is based on deliberation and approval from community members which at the same time has a positive impact on increasing the competitiveness of the marine tourism sector based on local competencies.

Ecotourism development can run optimally due to three key factors, namely internal factors, external factors, and structural factors. The internal factors consist of regional potential, knowledge of tourist operators (travel agents), regional conditions both cultural and natural, as well as knowledge about environmental conservation and participation of the surrounding community in marine ecotourism management. Meanwhile, external factors are factors that come from the outside which include tourists' awareness of environmental sustainability and the surrounding community. The structural factors are factors that include institutions, policies, laws, and regulations on ecotourism management at the local, national, and international levels (Haedar, 2019).

These three elements should be considered carefully in the development of marine ecotourism areas from the aspect of planning and development. With its potential, marine ecotourism architecture becomes one of the primadonnas if the management system is carried out comprehensively while still guided by the preservation of the surrounding environment. In addition, the role of the private sector is quite important as a complement to translate the operational concepts of ecotourism itself into a more tangible form (Haedar, 2019).

The architectural concept of marine ecotourism (Alim, 2017; Kelly & Duerk, 2002; Syam, 2021; Townsel, 2016; Tuwo et al., 2021) is a miniature island tourism destination that has an attraction in the form of a miniature mangrove forest to prevent beach abrasion and the local cultural theme amenity is reflected in the architecture of "Rumah Sembilan" where on the roof side adapts the design of the traditional Karampuang house. In other words, this marine ecotourism design applies the architectural theme of a recreational environment based on the micro-ecological concept as a building design, the marine adaptive micro-concept as the background, and the pragmatic micro-concept as a regional spatial layout (Alim, 2017; Anderson, 2009; Feuerstein, 2002; Grenier et al., 1993; Hakim, 2013; Iacobucci, 2006; Kelly & Duerk, 2002; Nurhayati et al., 2019; Syam, 2021; Townsel, 2016; Tuwo et al., 2021). Thus, the development of ecotourism that is more directed to the development of sustainable marine ecotourism in terms of products can be carried out while still paying attention to environmental conservation, while in terms of Human Resources (HR) it is necessary to develop a marine ecotourism architecture based on local competence as a locus of community learning and a source of sustainable regional competitive advantage.

CONCLUSION

Planning and development of tourism destinations or tourist attraction objects (TAO) are directed at the application of environmentally sound architectural themes with the concept of harmonious, organized, and sustainable marine ecotourism. The concept of microecology is applied to land management in the form of Pulau Sembilan (Nine Islands). The micro-adaptive concept of the coast and the sea that connects the islands is adapted as a concept of building form, while the pragmatic micro-concept is adapted for the spatial layout of the archipelago as a locus for the development of marine tourism destinations that will be competitive based on 5A (attractions, accommodation, accessibility, amenities, ancillary). as a tourism component. This architectural design process is carried out through fact-finding, theme determination, goal setting, display requirements in a design, and concept creation so that the design concept is born in the form of marine ecotourism architecture based on local competence in Sinjai Regency, Indonesia.

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