



## Analysis and Design of Morotai Tourism Village Information System (SIDEWITA) Based on Local Wisdom of Tokuwela and Babari Tradition

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### Abstract

This study focuses on optimizing the management system of tourism villages in Indonesia through the development of a contextual and relevant information system that caters to users' needs. Specifically, the study targets the Morotai Island Regency, where the tourism village management requires a website-based system capable of providing comprehensive information on attractions, accessibility, accommodation, and ancillary services to a broader market. The study uses the Software Development Life Cycle (SDLC) with a Waterfall approach to design the system, with a focus on the actors involved in the system, including tourists and prospective tourists (users as tourists), administrators and community members (users as a community), and stakeholders such as entrepreneurs and formal organizations supporting tourism (users as stakeholders). The resulting system, SIDEWITA, is expected to optimize the management of tourist villages in Morotai Island Regency. However, the study is limited to the design phase using the Waterfall approach.

**Keywords:** Information System, Tourism Village, Tourism, Waterfall, SDLC, Morotai

### 1. INTRODUCTION

Developing tourism villages is an effective approach to promote economic development in rural areas while preserving local social and cultural values and the environment. According to [1], emphasizes the importance of adjusting tourism village development to local social interaction patterns and cultural values, ensuring the programs cater to local needs and allow community participation in each development stage. The highlights the critical role of community involvement in ensuring the sustainability of tourism villages [2]. Hence, developing a tourist village must be contextual and inclusive of various stakeholders, adapting to the local socio-cultural context.



To facilitate access to tourist information and optimize accommodation services, an information system for tourist village homestays is crucial [3]. Additionally, [4] highlights the significance of a tourism village accounting information system in making financial reports on tourism village management. Therefore, the design of a tourist village information system must cater to the needs of the system user, with actor characteristics playing a decisive role in the system's functions and features. Hence, identifying user needs and classifying system users are crucial in the information system design process.

Website-based digital information media is an effective tool for marketing tourist destinations, providing visitors with quality information and interactive services [5]. Compared to conventional marketing methods such as pamphlets and brochures, website-based marketing is more effective [6], impacting the sustainability of destination operations. To optimize the distribution of tourist destinations on Morotai Island, it is essential to design a Morotai Tourism Village Information System (SIDEWITA) that integrates stakeholders' interests and provides added value.

The design of SIDEWITA aims to connect individuals, communities, and stakeholders through website-based tourism activities. The relationships between these three groups form the foundation of SIDEWITA's design, emphasizing the Morotai people's philosophy of working together, as embodied in the tradition of "Babari" and the dance of "Tokuwela." This highlights the importance of "relationships" in the livelihoods of the Morotai people, with values and norms influencing individual and community behavior in the dynamics of social interaction. Therefore, SIDEWITA integrates the cultural dimension of the Morotai community, emphasizing the relationship between individuals, communities, and stakeholders through the development of tourist villages in the Morotai Island Regency.

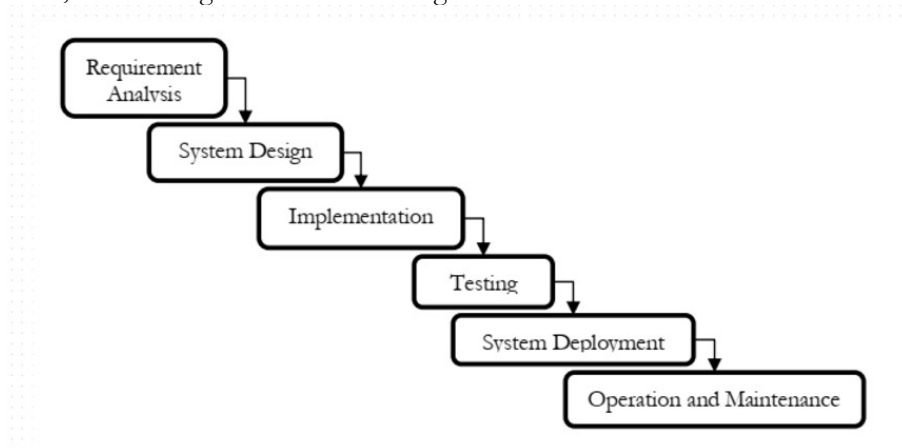
Research on the analysis and design of tourism information systems has mostly focused on meeting the needs of tourists as system users. The Waterfall model in the Software Development Life Cycle (SDLC) development method has been suggested as a suitable framework for designing tourism information systems due to its advantages in facilitating the identification of user needs and precise documentation. In contrast, the Agile model is repetitive and takes longer to reach the retrospective meeting stage. Therefore, the design of SIDEWITA will adopt the SDLC development method and the Waterfall model.

The design of SIDEWITA aims to connect individuals, communities, and stakeholders in each sub-district of Morotai Island Regency through a website-based platform that collects data on attractions, accommodations, and accessibility in each village. This information will be processed and published in the form of an annual events calendar. SIDEWITA is crucial for optimizing website-based

tourism village management in Morotai Island Regency due to several factors such as geographic location, road infrastructure, communication networks, and support for digital literacy. It integrates local wisdom, values of mutual aid, and stakeholder interests through a system that supports smart city, smart tourism, and smart tourism goals. Therefore, SIDEWITA has the potential to promote digital literacy and contribute to developing tourist villages in Morotai Island Regency.

## 2. METHODS

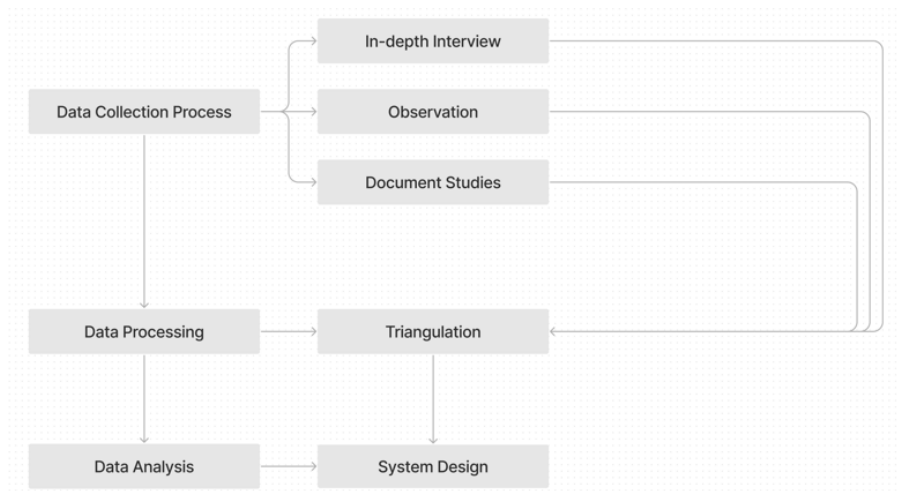
The design process of SIDEWITA adheres to the Software Development Life Cycle (SDLC) development method, specifically the waterfall model. According to [10], the waterfall model consists of five stages: (1) analyzing the needs of system users, (2) designing the system and software, (3) implementing and unit testing, (4) integrating and testing the system, and (5) operating and maintaining the system. In addition, [11] suggests that the requirement analysis stage in the waterfall model can be conducted using various techniques such as in-depth interviews, observations, and document studies to obtain a comprehensive understanding of the needs of system users. Therefore, in designing SIDEWITA as a website-based application, system designers can gather data using in-depth interview techniques, observations, and document studies and then triangulate to validate user needs. The use of the waterfall model allows for a systematic approach to identifying user needs, and the stages can be seen in Figure 1.



**Figure 1.** Model Waterfall

The Waterfall model, as seen in Figure 1, is comprised of several stages including analysis, system user needs, system and software design, implementation and testing, system integration and testing, and system operation and maintenance. However, it is important to note that this study has limitations as the discussion mainly focuses on the design stage of SIDEWITA. Several factors were considered during this stage, such as accommodating stakeholders in the tourism sector,

adjusting to the social and cultural values of the Morotai people, and maintaining connections among individuals, communities, and stakeholders. Therefore, the design process of SIDEWITA requires a comprehensive study to identify user needs and design the system accordingly. This research discussion primarily focuses on the design of SIDEWITA using the SDLC framework and Waterfall model, with emphasis on the flow of identifying user needs as shown in Figure 2.



**Figure 2.** The Process of Identifying System User Needs

Figure 2 illustrates how the SIDEWITA system's design is grounded in a comprehensive study of user needs. This involved a range of data collection techniques, such as in-depth interviews, observations, and document studies. The in-depth interviews were conducted with various stakeholders, including individuals, groups, village governments, and accommodation and transportation service providers. Observations were made in Kolorai Village and Buho-Buho Village, both of which have tourism potential. Finally, document studies were carried out to understand traveler preferences and demands, including their attraction to certain factors and drivers of travel decisions.

The data collection process was guided by the need to consider the socio-cultural, economic, and environmental context in Morotai Island Regency, as well as the preferences of travelers towards similar tourist villages. The results of the data collection process were used to inform the design of the SIDEWITA system. For instance, the in-depth interviews with the Second World War Museum Observer Group and the Manager of Buho-Buho Resort identified the need for stakeholder synergy to optimally facilitate visiting tourists, empower tour guides, and market the potential of Buho-Buho Village to local communities.

Meanwhile, the document study revealed that the diversity of tourism potential and the cultural value of Tokuwela and Babari are significant attractions for tourists. The results of the various data collection techniques were triangulated to obtain creative and innovative strategies for realizing stakeholder synergy in the tourism sector.

Based on the needs and availability of tourism resources, the SIDEWITA system was designed to accommodate the interests of individuals, groups, and formal organizations. For example, individuals can share their travel experiences through reviews and articles on the website, while groups can display creative works in the form of news or articles. Formal organizations and business people can also market superior products to provide financial benefits. The resulting prototype offers solutive solutions to the problems faced by individuals, groups, and formal organizations in the tourism sector of Morotai Island Regency.

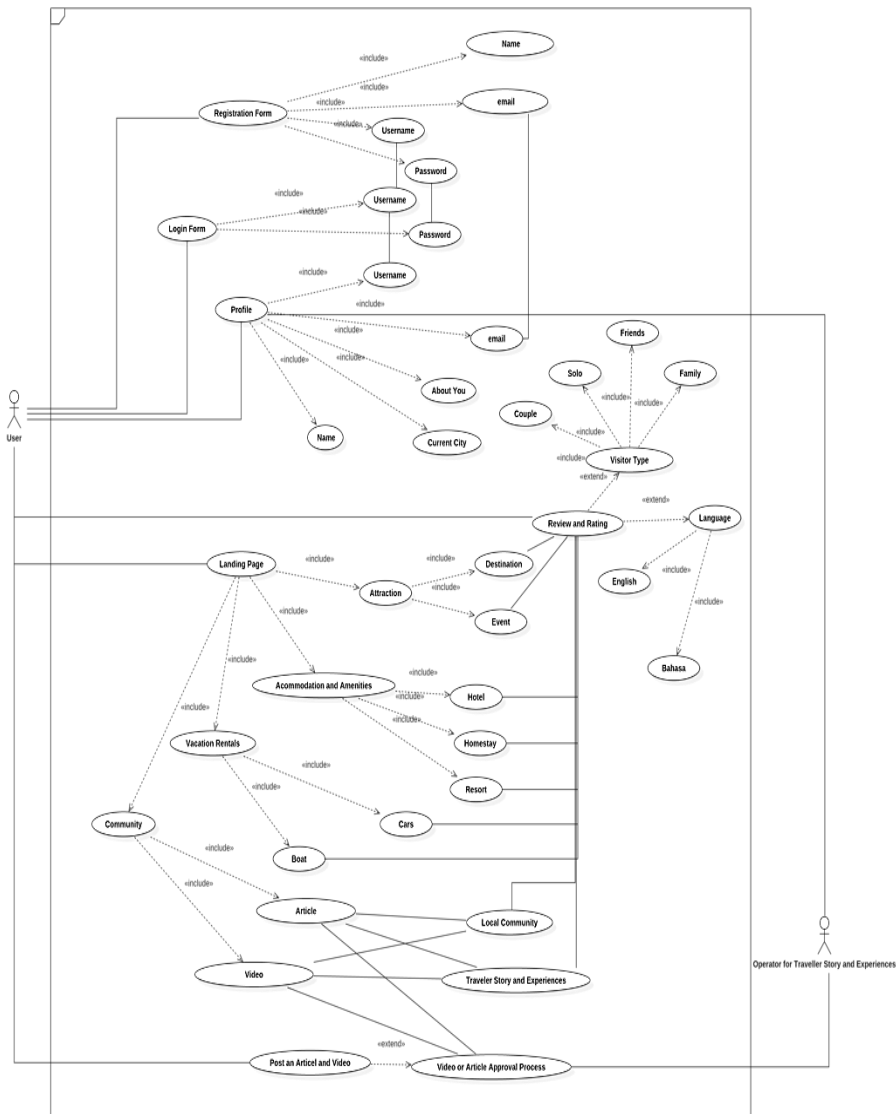
### 3. RESULTS AND DISCUSSION

After analyzing the interview data, observations, and document studies on tourism in Morotai Island Regency, SIDEWITA can be designed to connect three main actors - tourists, communities, and stakeholders - with three objectives - connecting people, communities, and stakeholders. The primary aim of SIDEWITA is to increase the involvement of individuals, communities, and related organizations in the development of tourism potential in Morotai Island Regency, particularly by utilizing website-based information technology.

In designing SIDEWITA, the following principles are considered: 1) to provide a platform for interaction between system users as tourists and potential tourists (connecting people); 2) to offer a forum for exchange between system users as a community (connecting community); and 3) to create a platform for interaction between system users as stakeholders (connecting stakeholders). These principles consider the primary actors involved in the strategic planning and design of the Morotai Tourism Village Information System (SIDEWITA), where the flow and function of the primary actors are based on the needs of system users as tourists (users as tourists), administrators and community members (user as community board and member), and stakeholders (user as stakeholders). Figure 3 below illustrates the flow and function of the system user as a tourist.

The use case of Figure 3 outlines the access and capabilities of SIDEWITA system users as tourists. Users can register an account, view personal activity history, and update personal information. They can also access and review content on attractions, accommodations, and vacation rentals pages. Additionally, tourists can contribute travel content through articles and videos and review products and services obtained during their travels. However, all content must be validated and

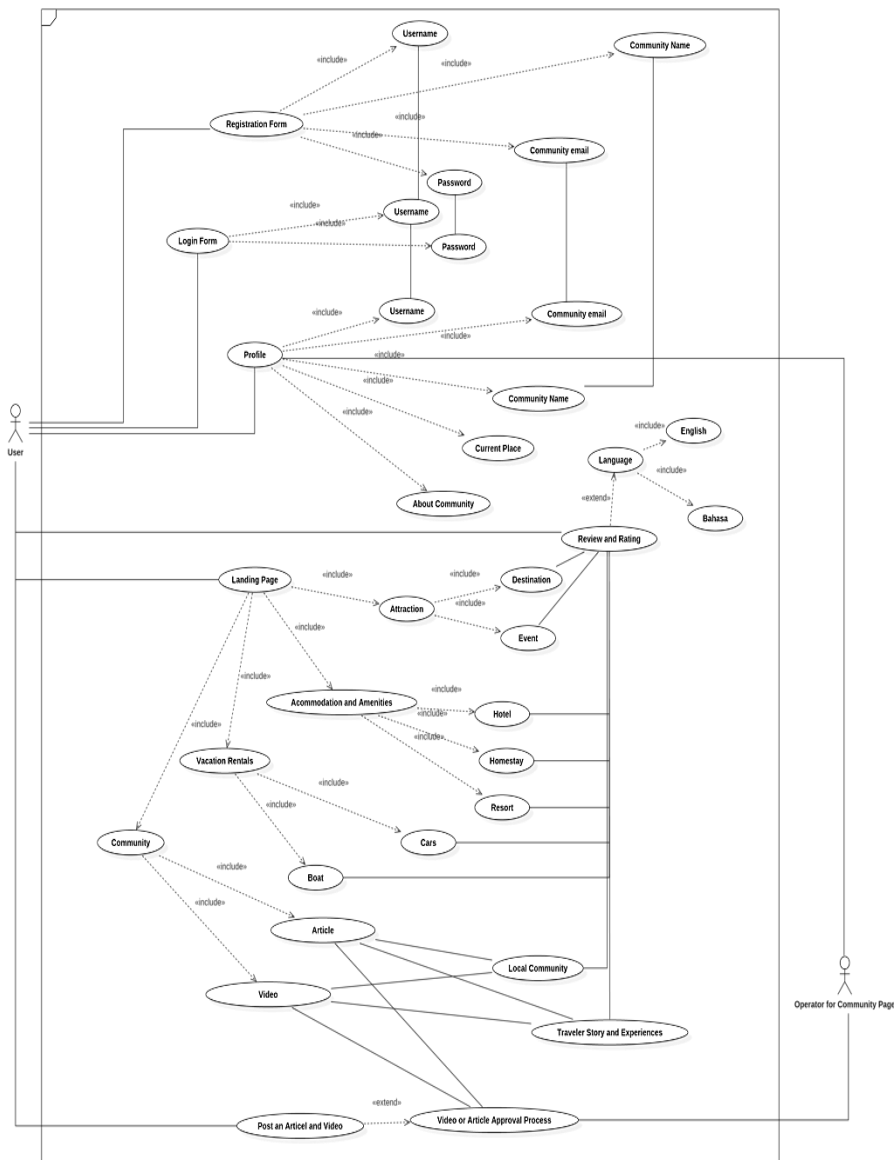
confirmed by travel story and experience operators before being published on the SIDEWITA website.



**Figure 3.** Usecase User as Tourist

To contribute content, tourists must provide travel information such as the type of visit (solo, with friends, with couples, or with family) and the date and year of their visit. They must also confirm that the provided information is accurate and not fabricated for specific purposes. It is worth noting that the use case of system

users as administrators and community members has its own unique flow and functions, which are shown in Figure 4.



**Figure 4.** Usecase User as Community Member

In Figure 4, the use case of system users as administrators and community members is presented. These users can access the SIDEWITA system by registering as a community and can perform the following tasks:

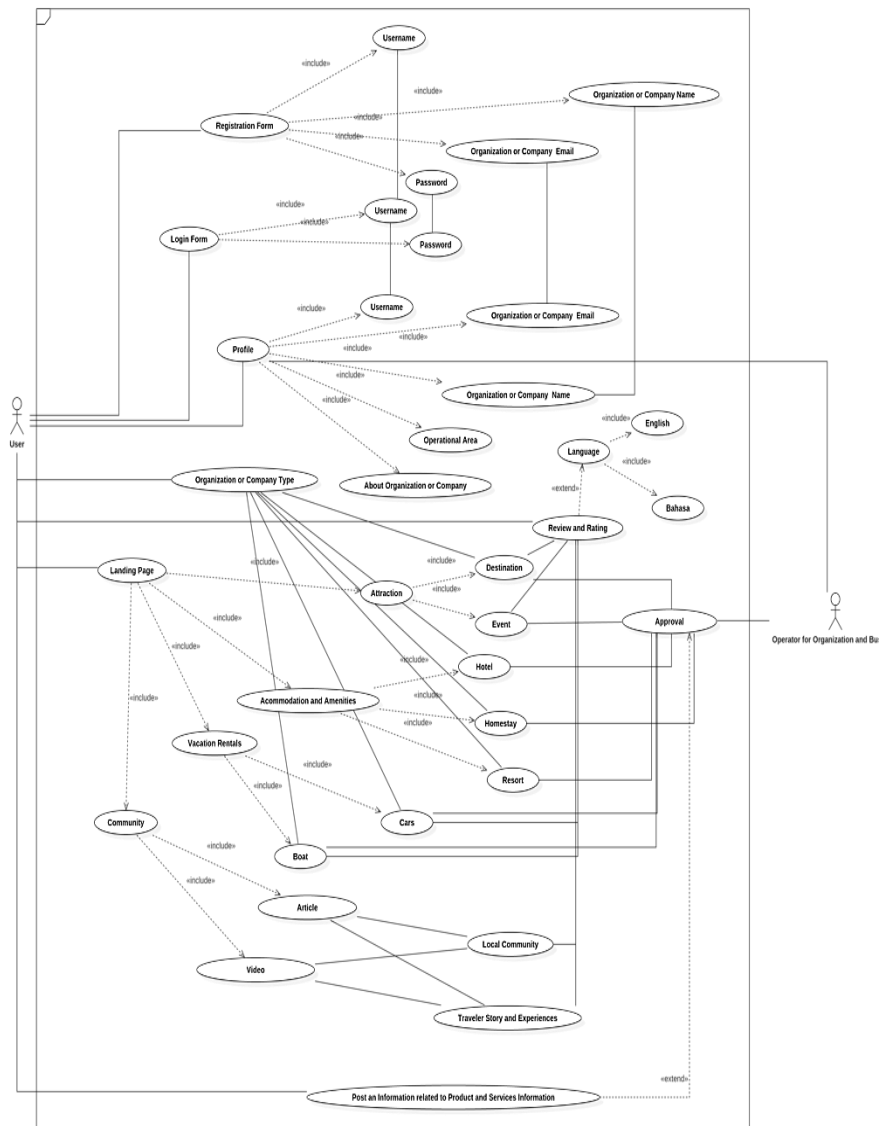
- a) View their community activity history and update their community information.
- b) Access and review the content on the attractions page for details about destinations and events.
- c) Access and check the content on the accommodation and amenity page for information about hotels, homestays, and resorts.
- d) Access and review the content on the Vacation Rentals page for car rental and sea transportation (speedboat) information.
- e) Pass and review the content on the community page for articles and videos.
- f) Write articles and upload short videos to display on the website.

As administrators and community members, they can contribute through local community activity content related to tourist activities or other supporting content. They can also take advantage of photo and video features to enrich content related to routine community activities in attracting tourists to the island of Morotai.

The key difference between system users as travelers and system users as members or administrators of the community is in the process of reviewing attractions, accommodations, amenities, and vacation rentals. Users of the system as members or administrators of the community only choose the language to provide reviews. Meanwhile, the content of the uploaded articles and videos will be validated or confirmed by the operator for the community page before publication. Lastly, system users as stakeholders also have their flow and functions, which are illustrated in Figure 5.

Figure 5 depicts the use case of system users as stakeholders who are entrepreneurs in the tourism industry and other formal organizations that support tourism. These users have the following access: first, they can register an account as a tourism business entrepreneur or a supporting legal organization. Second, they can enter the SIDEWITA system as a tourism business entrepreneur or a supporting legal organization. Third, they can view the activity history of their organization and update their organization's information on the platform. Fourth, they can access and review the content on the attractions page for details about destinations and events. Fifth, they can access and inspect the content on the accommodation and amenity page for information about hotels, homestays, and resorts. Sixth, they can critically review the content on the Vacation Rentals page for car rental and sea transportation (speedboat) information. Seventh, they can access and review the content on the community page for articles and videos. Lastly, they can upload information and promotional videos related to their tourism business or other formal organization to be displayed on the website.





**Figure 5.** Usecase User as Stakeholders

Entrepreneurs in the tourism business and other formal organizations can use the SIDEWITA system to upload information about tourism businesses, such as hotels, homestays, resorts, and vacation rentals, as well as destinations and events, based on their operational area. The uploaded data will undergo validation by the system operator before being displayed on the website. This allows stakeholders to promote their products and services related to attractions, accommodations,

amenities, and vacation rentals on Morotai Island. The goal of SIDEWITA is to encourage the participation of stakeholders, particularly Micro, Small, and Medium Enterprises (MSMEs) in Morotai Island Regency, North Maluku Province, Indonesia.

The development of SIDEWITA took into account the integration of tourism villages with the Business Model Canvas of tourism businesses, including hotels, homestays, resorts, and vacation rentals for cars and speedboats, as well as the use of a mixed marketing strategy to reach a broader market. Studies such as [12] have shown that website-based tourism information system planning can improve efficiency and effectiveness in regional tourism marketing strategies, while [13] demonstrates that regions adopting website-based information technology can expand their tourism market reach. Therefore, the SIDEWITA interface is designed to cater to the needs of users by analyzing their requirements and adjusting the marketing concept of tourist destinations.



Figure 6. User Interface SIDEWITA

Figure 6 provides an overview of SIDEWITA's User Interface (UI) on the main page, user profile page, and user review form page. The UI design of SIDEWITA has taken into account User Experience (UX) principles, ensuring that users can easily navigate the website and operate its features to achieve their goals. According to [14], website design should consider usability, information quality, and service interaction dimensions. Therefore, SIDEWITA has considered several aspects related to the usability dimension, including ease of operation, interaction, navigation, finding the website address, and an attractive appearance. Additionally, the quality of information provided to users is expected to be clear, trustworthy, up-to-date, relevant, easy to read and understand, and detailed. Furthermore, the SIDEWITA operators for the three actors have shown good performance, including maintaining the reputation of website management, being committed to maintaining user data security, and attracting user interest and attention for website development feedback.

#### 4. CONCLUSION

The success of tourism development in Morotai Island Regency relies on the integration of local socio-cultural values. The Tokuwela and Babari traditions,

which emphasize the importance of togetherness, can be utilized to encourage participation from individuals, communities, and supporting agencies. The Morotai Tourism Village Information System (SIDEWITA) is designed to connect these groups of stakeholders and facilitate the marketing of tourism products and services through a website-based platform. By utilizing SIDEWITA, local communities can have increased opportunities to reach wider markets and develop sustainable tourism practices, which will lead to a more prosperous future for Morotai Island Regency.

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