

Promotional Information System Development Based Tourism in The Sinai - Merauke Area Religious, Cultural and Natural

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ABSTRACT

Tourism is an industry that plays an important role in a country's economy. Tourism offers a variety of cultural, natural and scenic experiences that enhance knowledge and understanding of the world. To improve tourism promotion in the village, especially in Kawasan Sinai, the development of a tourism information system is a very important research focus. In the implementation section of this system, the system implementation process will be explained from all parts of the sub-system that have been planned previously. The documentation listed is the current documentation for Kawasan Sinai -Merauke Area Tourism Information System Based on Religion, Culture, and Nature Tourism. The results of all testing methods show a 100% success rate, in accordance with website development planning. Thus, it can be concluded that the tourism promotion information system for visitors on Kawasan Sinai website has met the feasibility standards to be implemented and is ready to be used by users. The success of this project had a positive impact in enhancing the reputation of the sinai region as a promotional destination, as well as providing a smooth and satisfying user experience.

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1. INTRODUCTION

Tourism is an industry that plays an important role in a country's economy. Tourism offers a variety of cultural, natural and scenic experiences that enhance knowledge and understanding of the world. In Indonesia, the tourism potential is huge with natural and cultural wealth. However, there are still many tourist attractions in Indonesia that have not been explored, thus providing a great opportunity for the development and improvement of the country's tourism industry[1].

One of the reasons why tourist destinations are not well known or less developed is because of ineffective promotion and marketing. Some places or tourist areas may have rich natural or cultural potential, but without proper promotion, many people are unaware of their existence. In addition, the lack of adequate infrastructure and facilities can also be a contributing factor to the low popularity of tourism in an area. If a destination does not have enough accommodation, places to eat, and other facilities that tourists need, it can reduce people's interest in visiting the place. To encourage the realization of tourism development in Papua, the Government through the Ministry of Tourism and Creative Economy encourages the strengthening of tourism promotion partnerships to improve the image of Indonesia's tourism and creative economy. With a strong partnership, the Ministry of Tourism and Creative Economy and business operators can promote Wonderful Indonesia which represents cultural and tourism richness. Through this program, it is expected to increase the number of visits by domestic tourists and foreign tourists and increase foreign exchange from the tourism sector[2].

Previously, a tourism promotion system was implemented in Papua Province so that information related to the existence of tourist attractions, tourist attractions, and the availability of tourism supporting infrastructure in all regions of Indonesia[3]. With rapid technological advances every day pushing the tourism industry to develop and change. Indonesia has 1,734 tourist villages, but only a few are properly maintained. Tourism villages are expected to provide economic growth for rural communities, in reality they only provide a few benefits and do not spread throughout the village area. Through a digital economy strategy, the government can monitor and control tourism activities, as well as promote tourism potential in villages[4].

Tourism in the Kawasan Sinai-Merauke, South Papua, despite having enormous potential, still lacks maximum promotion. The main obstacle is the lack of information accessible by prospective tourists about various tourist objects in this area. The main problem in the Sinai area regarding tourism is how to develop an effective promotional information system to increase the exposure and attractiveness of the Sinai-Merauke area. As a solution, the development of a tourism promotion information system based on religious, cultural, and natural tourism is proposed. This system is designed to provide comprehensive and interesting information about the tourism potential in the Kawasan Sinai-Merauke, and is equipped with features such as reservations and payments for visitors and also an admin system for managing tourist information for Sinai area tour managers. To improve tourism promotion in the village, especially in Kawasan Sinai, the development of a tourism information system is a very important research focus. This tourism information system acts as an important means to collect, store, and present information about tourist attractions in Sinai in a comprehensive manner. With this system, tourists will more easily access the latest information about attractions, accommodations, facilities, and various activities available in the region. In addition, the information system also provides guidance on travel routes, means of transportation, and tour guides, which will help visitors plan their trips more effectively. With the use of a sophisticated and user-friendly tourism information system, it is expected that Kawasan Sinai will become more attractive as a tourist destination, and the number of tourist visits to the area will increase [5]. In addition to having a positive impact on the local economy, the development of this tourism information system is also expected to open employment opportunities in the tourism sector and improve the welfare of the local community. Through the utilization of technology and the natural and cultural potential of Sinai, the development of this tourism information system is a very important strategic step to increase tourism promotion and attractiveness in the region.

2. METHOD

The application design includes data flow diagram, entity relationship diagram, and flowchart methods which are described in the following explanation:

2.1. Data Flow Diagram

The following is a system design plan described by Data Flow Diagram (DFD) :

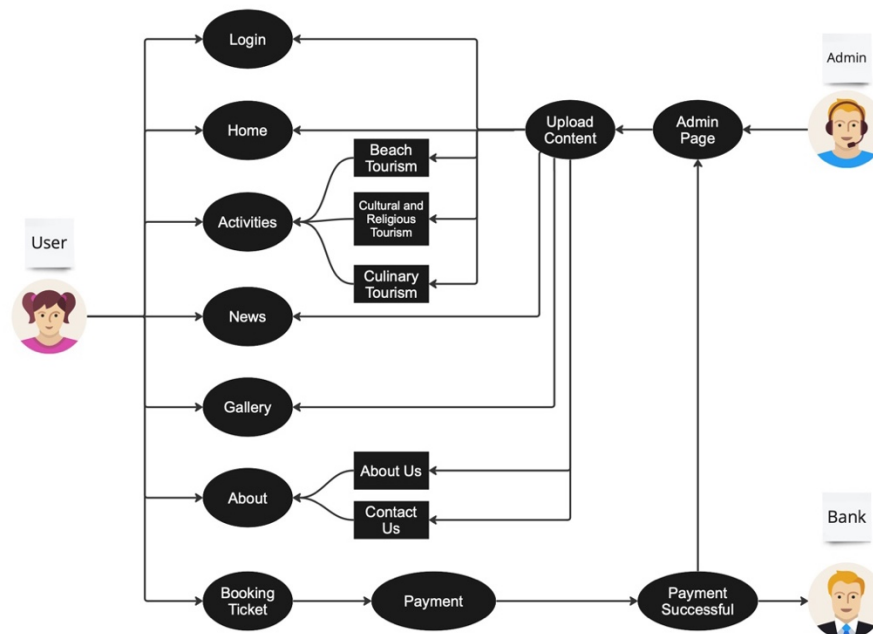


Figure 1. Data Flow Diagram of Kawasan Sinai Tourist

Based on Figure 1, the description of the tourism promotion information system that will be developed can be accessed by users who are website users who can register and log in as visitors. Users who have logged in as visitors can access special menus, namely reservations and reservation payments. Users who do not log in can access general menus such as news, activities, galleries, tourist information, and contact information listed on the website. This system will be equipped with an admin user who can configure the system and update the content that will be displayed to visitors. In addition, this system will also be equipped with a manual or automatic payment verification feature that will work with payment gateway providers[6].

2.2. Entity Relationship Diagram

The description of the database that will be implemented in the tourism promotion information system is as follows :

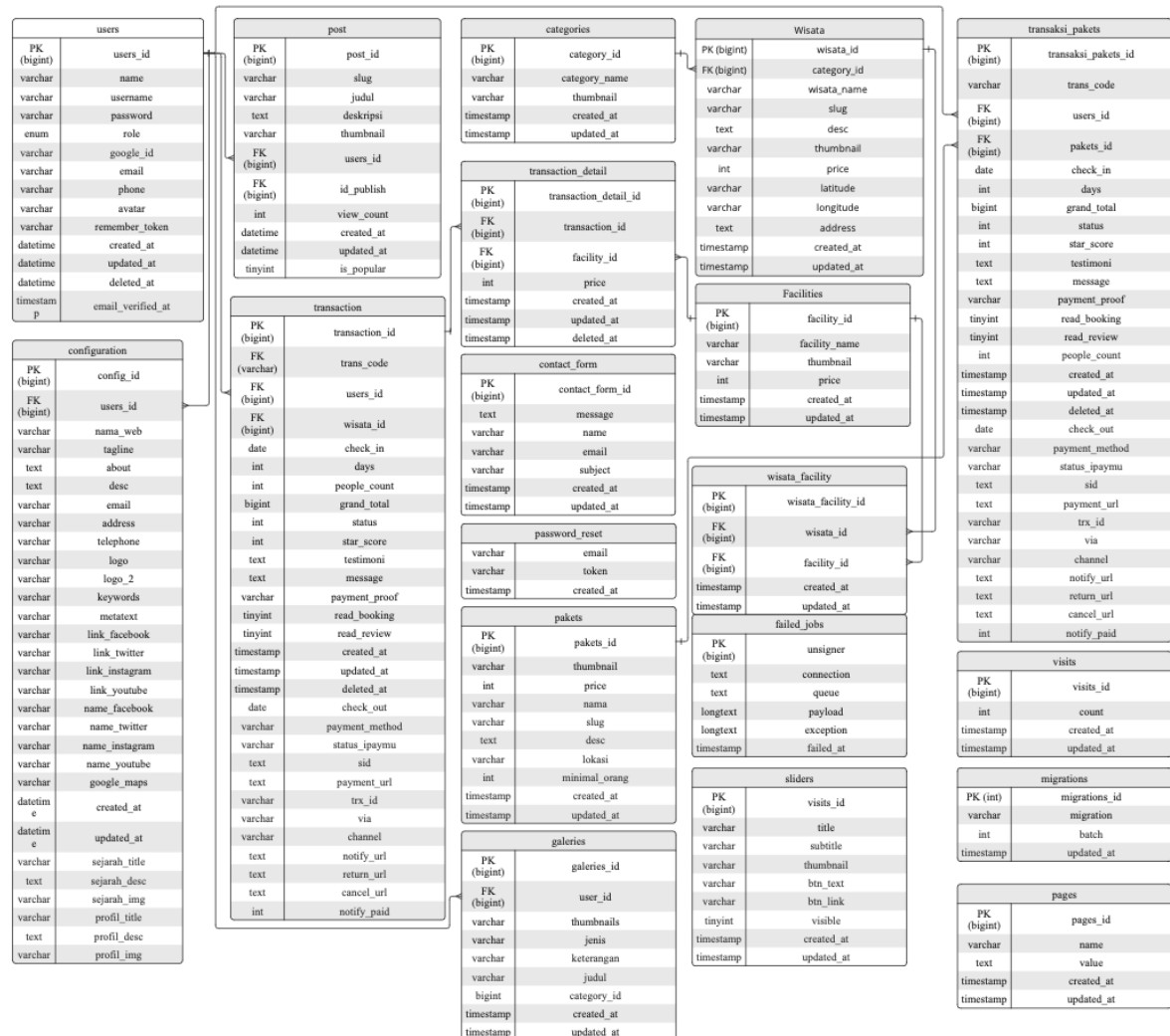


Figure 2. Entity Relational Database of a tourism promotion information system for visitors.

Based on Figure 2, Entity-Relationship Diagram (ERD) is a visual tool in the field of database design used to describe the structure of relationships between entities (objects) in an information system [7]. ERD helps illustrate how entities are interconnected and interact within a larger environment. It is an important tool in the database design stage as it allows developers to understand the data structure better before implementing it in the system. The ERD is based on the database requirements needed for system development.

2.3. Flowchart

The flowchart description that will be implemented in the tourism promotion information system is as follows:

2.3.1 Sub-system 1: Tourism Promotion Information System Website Development for Visitors

This section describes the Development of a Tourism Promotion Information System Website for Visitors. This section will explain how the sub-system works, implementation, and testing.

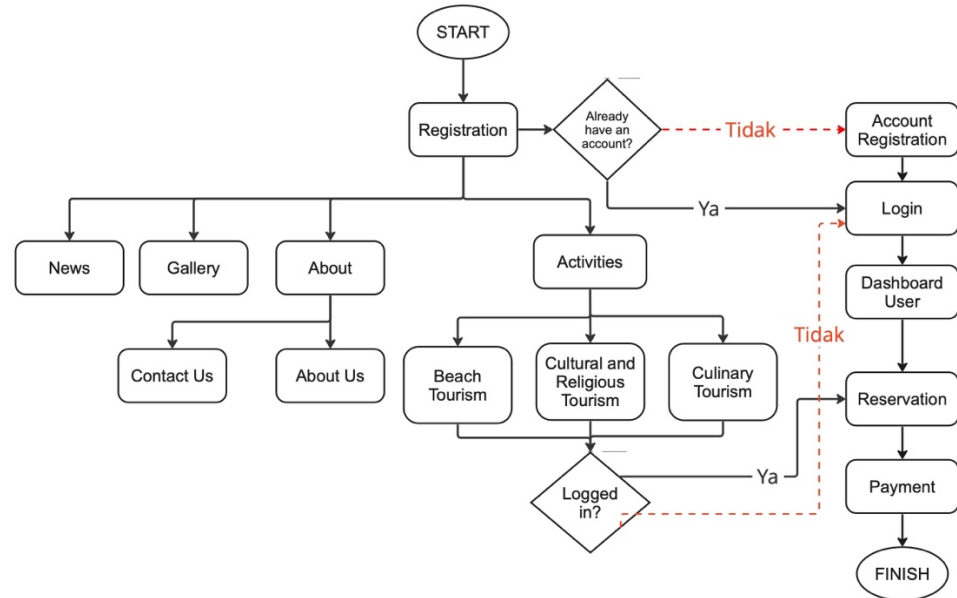


Figure 3. Flowchart for the visitor *role*.

Based on Figure 3, Development of a Tourism Promotion Information System Website for Visitors facilitating users (prospective tourists) to interact with the tourism promotion system through a website interface [8].

2.3.2 Sub-system 2: Development of a Tourism Promotion Information System for Admins

This section describes the Development of a Tourism Promotion Information System Website for Admins. This section will explain how the sub-system works, implementation, and testing.

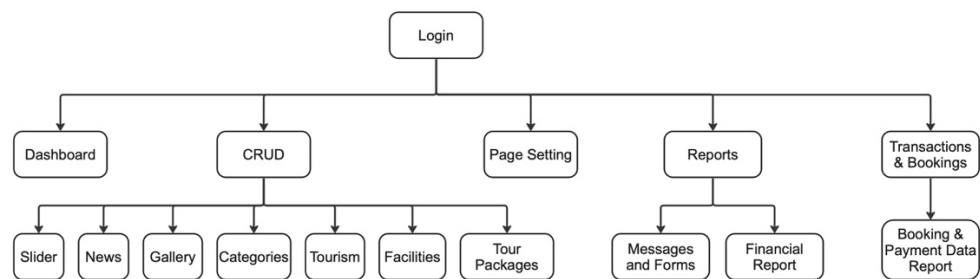


Figure 4. Organization of application modules for the admin *role*.

Based on Figure 4, The organization of application modules in the Tourism Promotion Information System Development for Admins enables administrators (officers) to configure tourism information systems for visitors.

2.3.3 Sub-system 3: Tour Package Reservation System

This section describes the Tour Package Reservation System. This section will explain how the sub-system works, implementation, and testing.

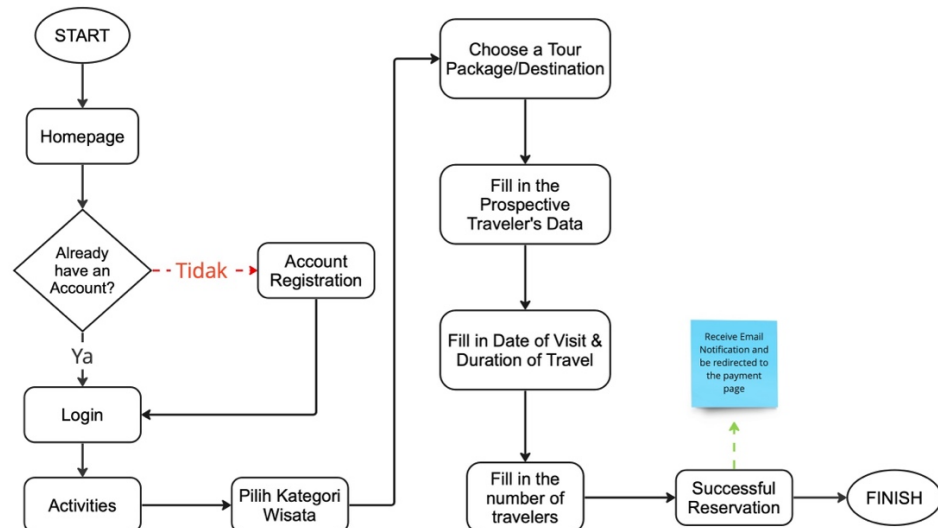


Figure 5. Flowchart for Tour package reservation system

Based on Figure 5, Development of a Tourism Promotion Information System Website for Visitors facilitating users (prospective tourists) to interact with the tourism promotion system through a website interface.

3. RESULTS AND DISCUSSION

3.1 System to Application Implementation

In the implementation section of this system, the system implementation process will be explained from all parts of the sub-system that have been planned previously. The documentation listed is the current documentation for Kawasan Sinai -Merauke Area Tourism Information System Based on Religion, Culture, and Nature Tourism.

In the development process, the sub-systems have been presented in detail. If there are improvements or iterations during the implementation process, they will be explained in the next version of the document. In each sub-system there is an explanation of how it works, implementation and testing. The workings of sub-systems, namely the workings of each part of a system and an activity that are interconnected, influence each other, and depend on one another in order to achieve a goal. Sub-system implementation involves the process of implementing the design into a computer program (coding) so that it becomes a real product that can be used to solve the problems previously described. Meanwhile, the testing section will explain the process and system testing plan carried out to test the functionality and performance of the system being developed. Testing is an important step to get validation from users (prospective tourists) and the results of an analysis of how well the performance of the developed system is from a technical point of view so that the developed system can be said to be feasible to use[9].

As a reference for system implementation, This section describes the research results which are presented in the form of the following figures and tables:



Figure 6a. Homepage

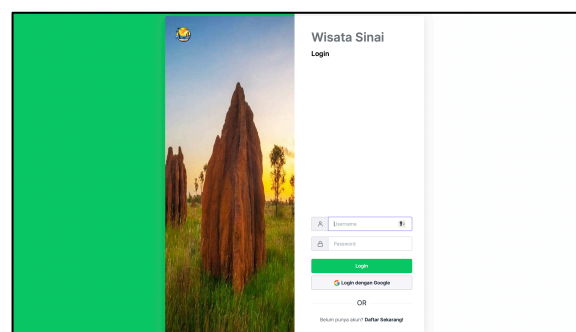


Figure 6b. Login



Figure 6c. Sinai Tourist Destinations

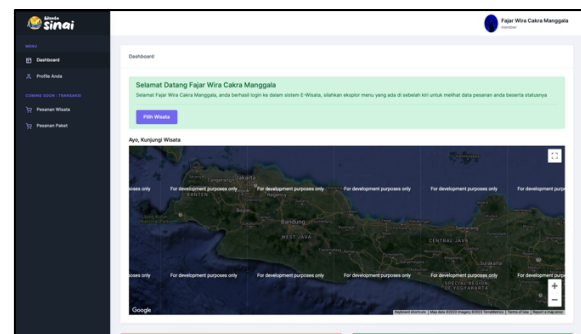


Figure 6d. Dashboard User

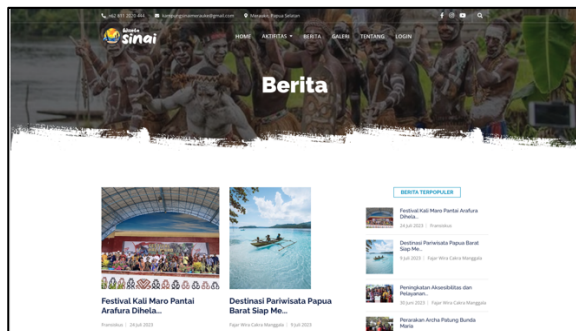


Figure 6e. News

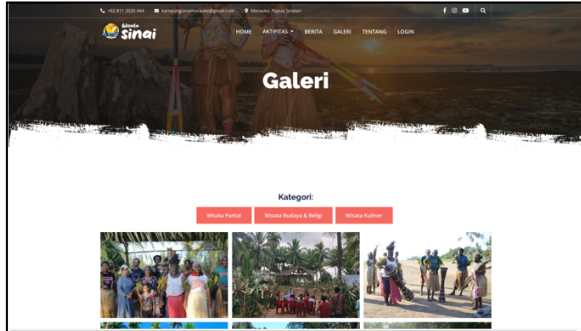


Figure 6f. Gallery

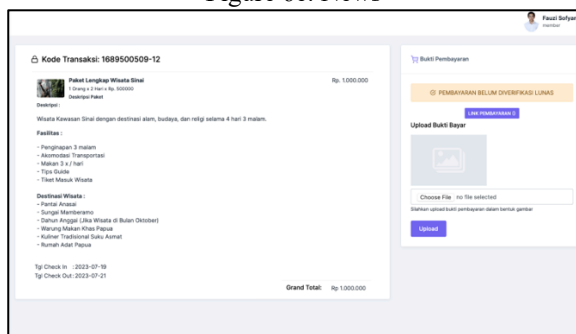


Figure 6g. Reservations

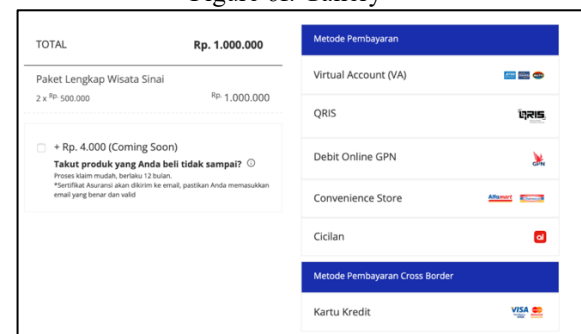


Figure 6h. Payment

Development of a Tourism Promotion Information System Website for Visitors facilitating users (prospective tourists) to interact with the tourism promotion system through a website interface. The workings of this sub-system are as follows:

1. Homepage
Based on Figure 6a, The *Homepage* menu displays promotional highlight information & information through dynamically configurable Sliders, displaying tourist destinations and tour packages, travel categories and news. This *Homepage* page aims to be an attraction for tourists to explore the website.
2. Login
Based on Figure 6b, The *Login* menu is a *login* access for prospective tourists who already have an account.
3. Sinai Tourist Destinations
Based on Figure 6c, This menu displays information about tourist activities in Kawasan Sinai, which consist of beach tourism, cultural & religious tourism, and culinary tourism. This activity page aims to introduce several tourist destinations in Kawasan Sinai to potential tourists.
4. News
Based on Figure 6d, The News menu displays a list of news published by the admin based on 2 categories, namely the latest news and favorite news. This news page aims to become a media publication for tourism in Kawasan Sinai so that it can be better known.
5. Gallery

Based on Figure 6e, The Gallery menu displays a list of pictures of Kawasan Sinai tourist activities & activities. This gallery page aims to be media. Documentation of several activities in Kawasan Sinai tourism so that potential tourists will be interested in visiting Kawasan Sinai tourism.

6. About

Based on Figure 6f, The About menu displays information about tourism in Kawasan Sinai which consists of information about Sinai tourism, history of Sinai tourism, advantages offered by Sinai tourism, partners and contacts.

7. Reservations

Based on Figure 6g, The Reservation Menu helps potential tourists to carry out the process travel bookings so that they can be recorded in the system. The reservation menu aims to make it easier for potential tourists to make reservations for the desired tourist destinations or tour packages.

8. Payment

Based on Figure 6h, The Payment menu helps potential tourists to process payments in order to get tickets or payment invoices. The payment menu aims to make it easier for potential tourists to make payments through various payment methods such as: manual transfers, virtual accounts, digital wallets, to *Quick Response Indonesian Standard (QRIS)*.

3.2 System Testing

All of the tests carried out on Kawasan Sinai promotion website, Merauke. Using alpha testing, beta testing, unit testing and load testing provide 100% accurate data. Based on the results of system testing conducted with Alpha testing, Beta testing, Unit testing, and Load testing, it was found that the results of Alpha testing with a total of 81 scenarios were successfully carried out with a success rate of 100%. The results of Beta testing with 30 respondents to each of the 10 statements from each specification yielded average results that each specification was easily found, easy to use, and useful for users (visitors & admin). The results of Load testing on specification 1 concluded that the system can run the system stably and optimally when the threads are 500 with a loop count of 30 and Ramp-up of Periods 10. The error rate that appears under these conditions is 5.85%. The final test, Unit testing, which was carried out on 14 features consisting of 55 functions, was successfully carried out with a success rate of 100%. With these results, the tourism promotion information system can be said to have met the developed specification criteria[10].

4. CONCLUSION

The creation of a website for the development of Kawasan Sinai promotion has been successfully implemented. With the application of alpha beta testing, the development team managed to identify and overcome various bugs and problems from the early stages of development. As a result, the website functioned optimally and stably when launched. In addition, load testing also provided impressive results, showing that the website was able to handle high user loads without experiencing degraded performance or system crashes. The success of this project is not only seen from the technical side, but also in achieving the goal of promoting the sinai region. The website provides tangible benefits in increasing the visibility and attractiveness of the sinai area as an attractive promotional destination.

The website for the development of Kawasan Sinai promotion is a clear example of the successful use of alpha beta testing and load testing in development projects. By early identification and addressing issues early on, the risk of failure and disruption at launch was avoided. The results of the load testing also proved the quality and robustness of the resulting website, giving confidence to the development team and relevant stakeholders. The success of this project had a positive impact in enhancing the reputation of the sinai region as a promotional destination, as well as providing a smooth and satisfying user experience.

REFERENCES

- [1] I. S. Tanjung, H. Tanjung, and S. Wibowo, "Development of Tourism Communication Model Based on Local Wisdom in Padangsidempuan", doi: 10.33258/birci.v4i4.3011.
- [2] S. Agustini, "Web Based Tourism Information System in Bintan Island," 2022.
- [3] O. O. Oswald Wambrau, "Tourism Digitalization Through the Implementation of National Tourism Information System 'Sisparnas' in Papua Province," *East Asian Journal of Multidisciplinary Research (EAJMR)*, vol. 2, no. 7, p. 2695, 2023, doi: 10.55927/eajmr.v2i7.5044.
- [4] R. Sari, H. Prabowo, F. L. Gaol, F. F. Hastiadi, and Meyliana, "Tourism digital economy model based on digital transformation concept for tourist village in Indonesia," *International Journal of Emerging Technology and Advanced Engineering*, vol. 11, no. 10, pp. 81–87, Oct. 2021, doi: 10.46338/IJETAE1021_10.

- [5] Y. A. Singgalen, "Analysis and Design of Regional Tourism Information System 'SIPARDA' of Morotai Island Regency," *Journal of Information Systems and Informatics*, vol. 4, no. 4, 2022, [Online]. Available: <http://journal-isi.org/index.php/isi>
- [6] M. I. Setiyawan, M. F. Ardiansyah, G. D. A. Ocktavia, R. M. A. A. H., and N. P. Siswandini, "My Journey: DFD (Data Flow Diagram) for Digital Planners and Travel Guide Applications in Indonesia," *GMPI Conference Series*, vol. 2, pp. 48–51, Jan. 2023, doi: 10.53889/gmpics.v2.172.
- [7] R. K. Mishra, H. Raj, S. Urolagin, J. A. A. Jothi, and N. Nawaz, "Cluster-Based Knowledge Graph and Entity-Relation Representation on Tourism Economical Sentiments," *Applied Sciences (Switzerland)*, vol. 12, no. 16, Aug. 2022, doi: 10.3390/app12168105.
- [8] D. Qian and W. Luo, "Design of Smart Tourism System in Urban Scenic Spots Based on Computer Virtual Reality Technology," *Comput Aided Des Appl*, vol. 20, pp. 86–96, 2022, doi: 10.14733/cadaps.2023.S1.86-96.
- [9] N. Chung, H. Lee, S. J. Lee, and C. Koo, "The influence of tourism website on tourists' behavior to determine destination selection: A case study of creative economy in Korea," *Technol Forecast Soc Change*, vol. 96, pp. 130–143, Nov. 2015, doi: 10.1016/j.techfore.2015.03.004.
- [10] Z. M. Jiang and A. E. Hassan, "A Survey on Load Testing of Large-Scale Software Systems," *IEEE Transactions on Software Engineering*, vol. 41, no. 11, pp. 1091–1118, Nov. 2015, doi: 10.1109/TSE.2015.2445340.