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Website-Based TIQ Application for Mangrove Tourism Entrance Tickets for Pari City Village

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ABSTRACT

This research aims to develop an entrance ticket application based on QR Code "TIQ" that can be used in Mangrove Tourism in Kota Pari Village. Kota Pari Village Mangrove Tourism is one of the popular tourist destinations that offers natural exploration and environmental education experiences. However, the admission system currently in use still uses manual methods that are prone to fraud and are time-consuming. Therefore, this research aims to introduce an efficient and safe QR Code-based admission ticket application. This research uses a software development method with the stages of needs analysis, system design, implementation, and testing. In the needs analysis stage, we conducted a survey of tourism visitors and management of Mangrove tourism in Pari City Village to understand the needs and obstacles that exist in the current entrance ticket system. Visitors can scan their QR Code when they arrive at the entrance, and the admission ticket information will be validated instantly by the system. The recorded entry ticket data will be stored in the database for monitoring and analysis purposes. The test results show that this QR Code-based admission ticket application can improve the efficiency and safety of the entrance ticket process at the Kota Pari Village Mangrove Tourism. Visitors can easily obtain their admission tickets and avoid long queues at the entrance. In addition, this system also reduces the potential for admission ticket fraud because each ticket has a unique code that is difficult to forge. This research contributes to the development of a technology-based admission ticket system in the tourism sector. This QR Code-based admission ticket application can be adopted by other tours to improve efficiency and visitor experience. In the end, it is hoped that this research can help improve the management and services in the Kota Pari Village Mangrove Tourism and provide better benefits for visitors and the local community.

Keyword : TIQ; Application; Entrance Ticket; Website-Based

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1.   INTRODUCTION

Tourism is one of the most important economic sectors in the development and growth of a region (Lubis et al., 2022; Wahyuni et al., 2021). Nature tourism, such as mangrove tourism, has its own appeal for tourists because it offers a unique and educational nature experience. Kota Pari Village, located around a beautiful mangrove tourist area, has become a popular tourist destination in recent years (Wahyuni & Marbun, 2020). With the increasing interest of tourists, effective and efficient management of mangrove tourism in Kota Pari Village is very important (Wahyuni, 2018; Wahyuni & Mesra, 2022; Wahyuni & Wadly, 2023).

One of the key aspects in tourism management is the entrance ticket system. Entrance tickets are not only an important source of income for tourism managers, but also a tool to control the number of visitors and maintain the sustainability of the fragile mangrove ecosystem. However, traditional admission management often tends to be inefficient, prone to counterfeiting, and can create long and inconvenient queues for visitors (Akbar et al., 2022; Marlina et al., 2023; Sulistianingsih et al., 2019).

In an effort to improve the management of mangrove tourism in Kota Pari Village, the use of the latest technology in the form of a QR Code-based admission ticket application has emerged as a promising solution. QR Codes are two-dimensional matrix codes that can be easily read by smartphone devices (Wahyuni et al., 2024). Implementing QR Codes for admission tickets can increase efficiency, reduce the chances of counterfeiting, and provide a smoother experience for visitors (Hermansyah et al., 2024).

In this context, this study aims to investigate the implementation and impact of the QR Code-based entrance ticket application in Mangrove Tourism in Kota Pari Village (Supiyandi et al., 2024). This research will evaluate how the application can improve the efficiency of admission ticket management, improve security, and affect the visitor experience. In addition, this research will also explore the potential for expanding the use of QR Codes in tourism management more broadly (Sumartono et al., 2022; Wadly & Fitriani, 2023a, 2023b). Thus, this research can provide valuable insights for tourism managers, local governments, and other researchers interested in sustainable and innovative tourism development (Hariyanto & Wahyuni, 2020; Wahyuni & Mesra, 2022; Wahyuni & Wadly, 2023).

Fig. 1. Mangrove Area Gate.

2. RESEARCH METHOD

A. Research Framework

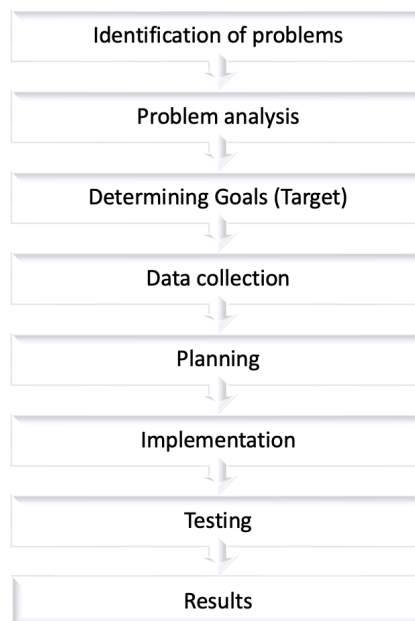The research framework carried out is as follows:

Fig 2. Research Framework

This research uses a Research and Development approach that is adapted to the latest technological developments. The stages of the research are:

1. Literature Study and System Requirements Analysis.
    a) Conduct a comprehensive literature review on best practices for mangrove monitoring using digital technologies.
    b) Identify the needs of users and stakeholders related to an efficient and easy-to-use mangrove monitoring system.
2. TIQ Application Architecture Design.
    a) Design a modular and scalable application architecture to ensure flexible development in the future.
    b) Adopt the latest material design concept and user experience principles to create an intuitive interface.
3. Flutter framework-based prototype development.
    a) Choosing the Flutter framework as the basis for development to ensure cross-platform compatibility (Android, iOS, Web).
    b) Take advantage of the latest libraries and tools in the Flutter ecosystem to bring you cutting-edge features.
4. Application of QR Code for Mangrove Tourism Entrance Tickets.
    a) Design a unique QR Code labeling system for each incoming Ticket.
    b) Integrate QR Code scanning technology with the TIQ application to facilitate the identification of the Admission Ticket database.
5. Application Function Testing and Validation.
    a) Conducting a series of tests, both unit testing, integration testing, and user acceptance testing.
    b) Make sure all features run as expected and meet mangrove monitoring needs.
6. Evaluation of the Adoption Rate and Impact of Community Implementation.
    a) Measuring the acceptance and adoption rate of the TIQ application by the people of Kota Pari Village.
    b) Assessing the impact of the use of applications on improving the technology of mangrove tourism application.

3. RESULTS AND DISCUSSION

A. Admin Page

Login page for staff and system administrators. The function of this page is to allow staff and system administrators to enter their credentials (username and password) in order to access the system. By entering valid credentials and pressing the "Sign in" button, staff and system administrators will be authenticated and granted access to features and functionality related to their role in the system
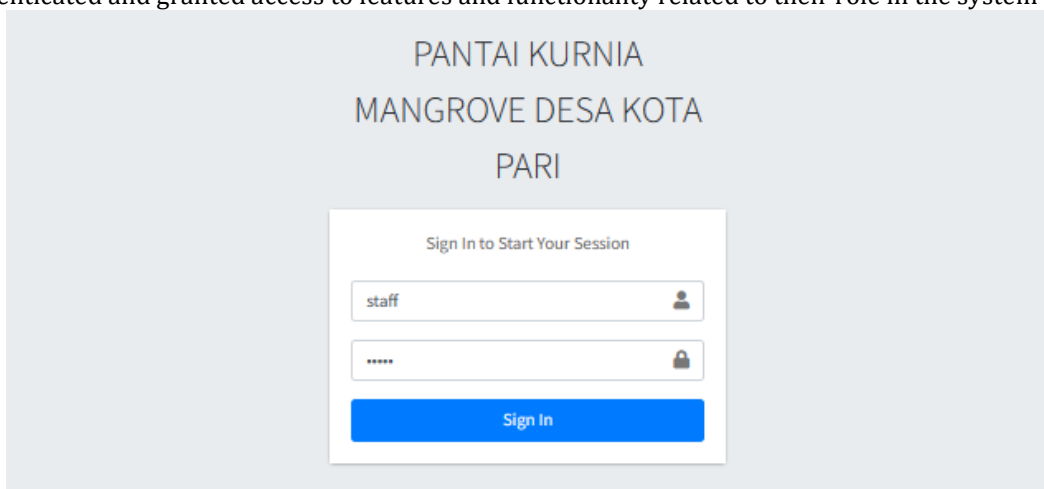

Figure 3. Login Page

The Admin Home Page has a function as a start page or *dashboard* for admins after successfully logging in to the system. On this page, admins can access various features and functionalities related to system management.
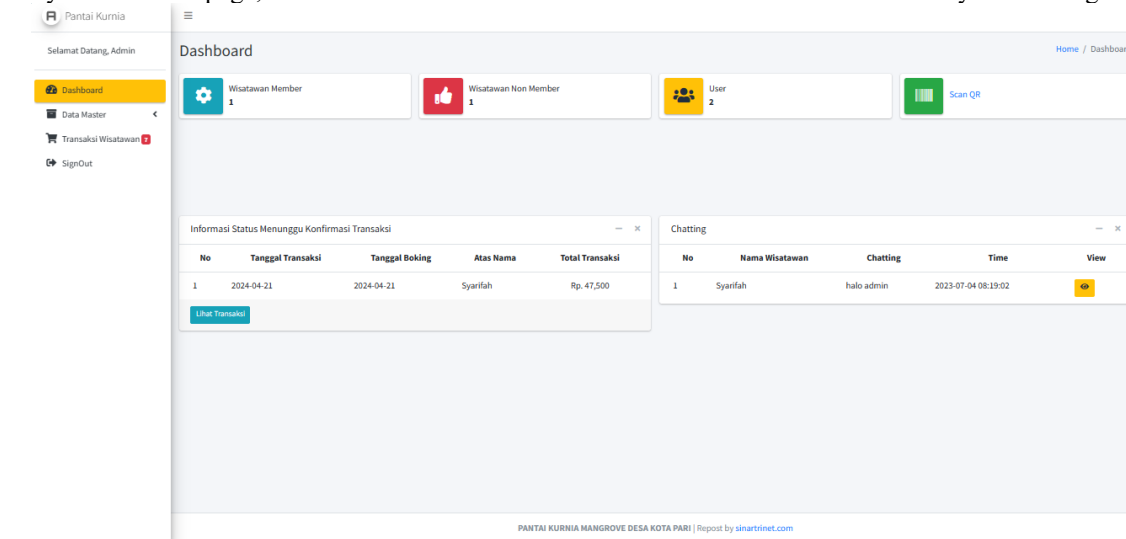

Figure 4. Admin Dashboard Page

The Admission Booking page is the page used to view bookings or ticket purchases. On this page, users get the information necessary for ticket transactions, such as the number of tickets, the date of visit, and the visitor's personal data
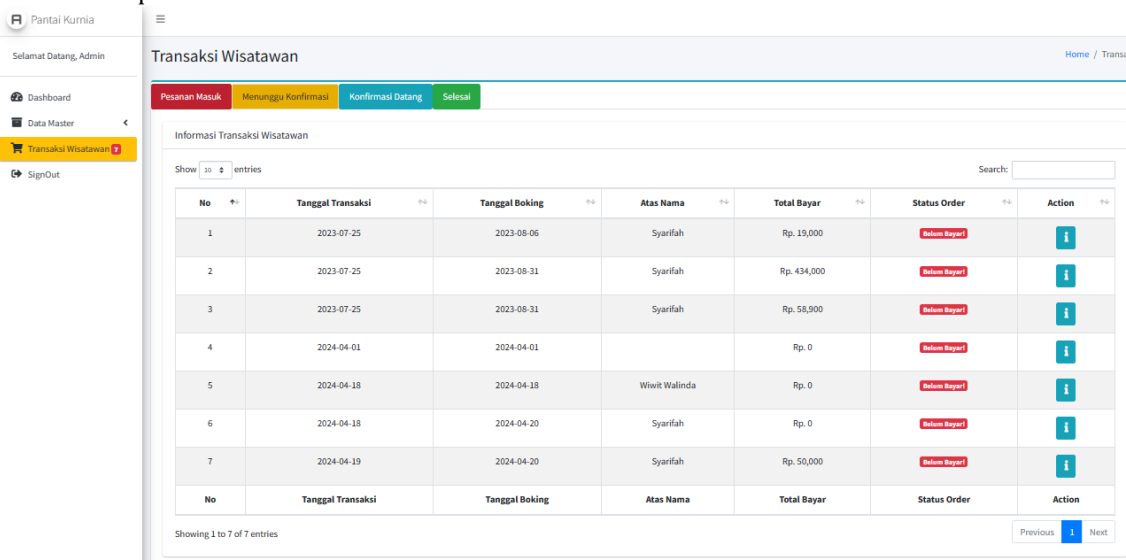

Figure 5. Admission Booking Page

The Payment Confirmation Page on the Admin Page has a function to verify and confirm payments made by users. On this page, admins can view the details of payments that have been made by the user, such as the payment amount, the payment method used, and other transaction details. Admins can also verify if the payment has been received correctly or if there are any issues that need to be addressed.
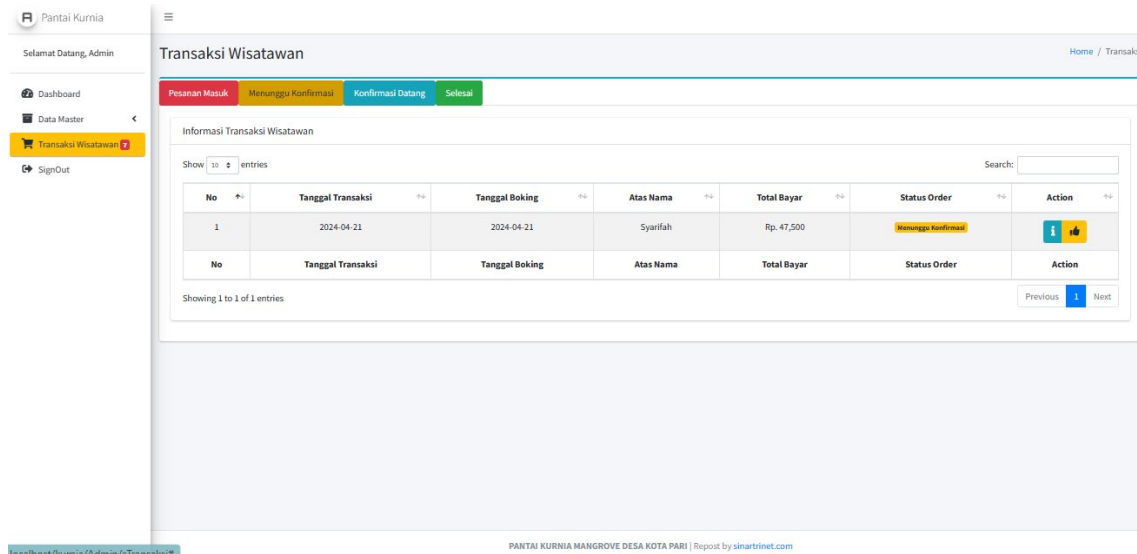
Fig 6. Payment Conformation Page

The Arrival Booking page has a function to manage and monitor reservations or bookings for mangrove tourism at Kurnia Beach. On this page, admins can view and manage all the details of reservations that have been made by visitors
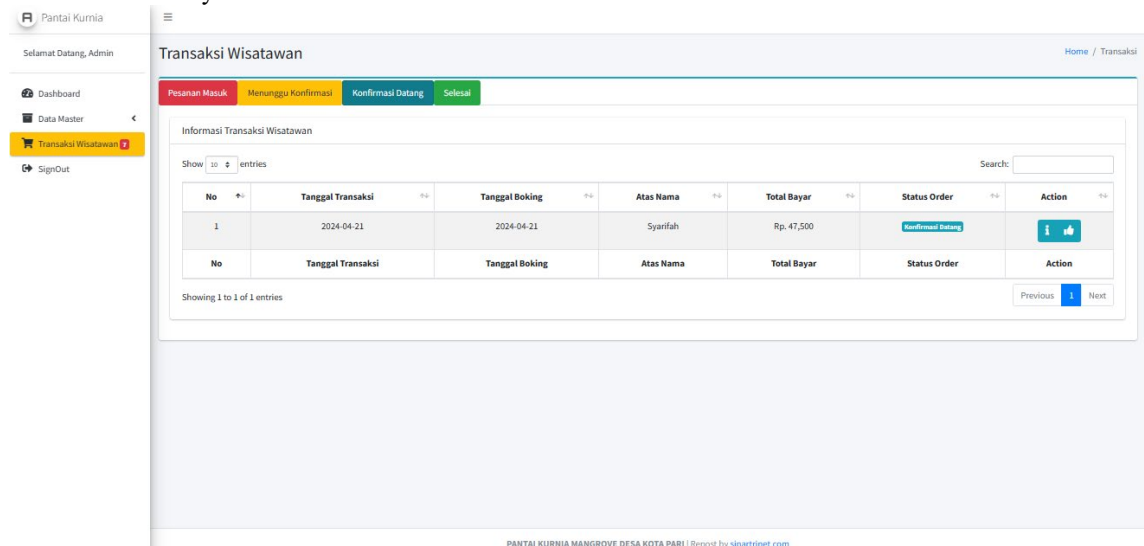

Figure 7. Arrival Booking Page

This page allows Admins to view the full list of completed transactions. The information displayed may include the transaction number, transaction date and time, payment amount, and other details depending on the system or platform used.
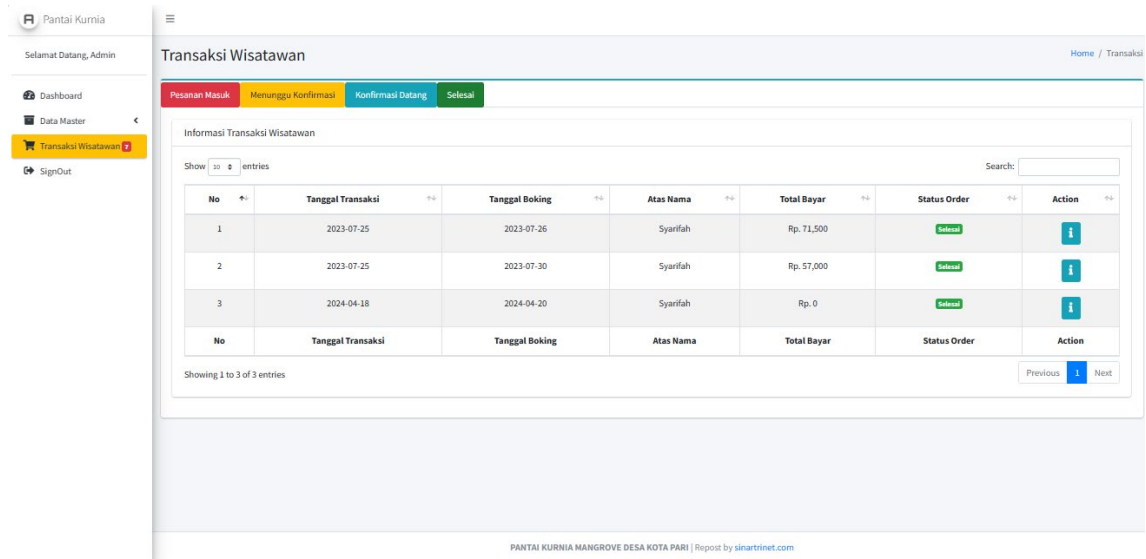
Figure 8. Arrival Booking Page

B. **Manager Page**

Managers can view the Daily, Monthly and Yearly Transaction Reports on this page.
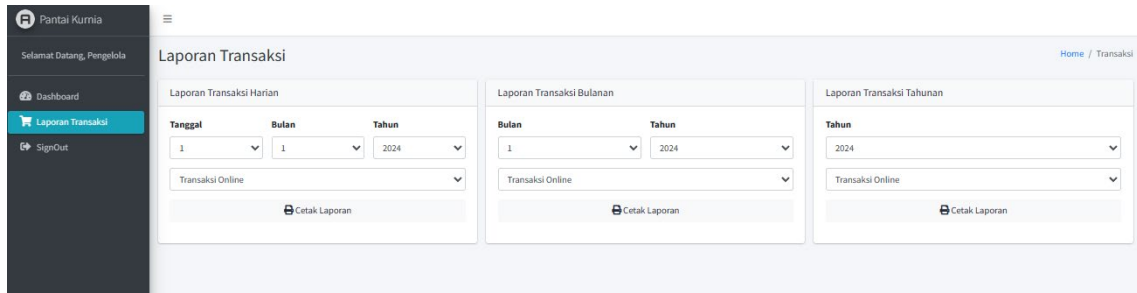

Figure 9. Dashboard Manager

C. **Traveller Page**

Traveler Login Page: This page allows travelers or visitors to log in to their account by entering the correct login information, such as a username and password. After logging in, travelers can access features that are only available to authenticated users
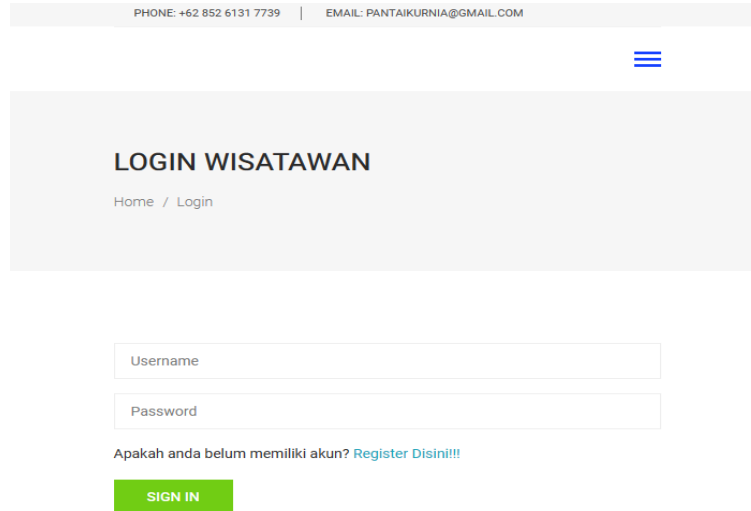

Fig 11. Traveller Login Page

Tourist Registration Page: This page allows new travelers to create an account by filling out the registration form. They will be asked to provide personal information such as name, email address, and password. Once registration is complete, travellers can use their account to log in to the system.

Figure 11. Traveller Login Page

Traveller Home Page: This is the main view for travellers once they're logged into their account. This page may contain general information about attractions, promotions, or special offers. Travellers can also access other features such as booking tickets, viewing booking history, or uploading proof of payment.

Figure 12. Traveller Home

Ticket Booking Page: This page allows travelers to make ticket bookings or reservations for specific attractions. Travelers can choose the date of their visit, the number of tickets, and other options available. After choosing, they can proceed to payment to complete the order.
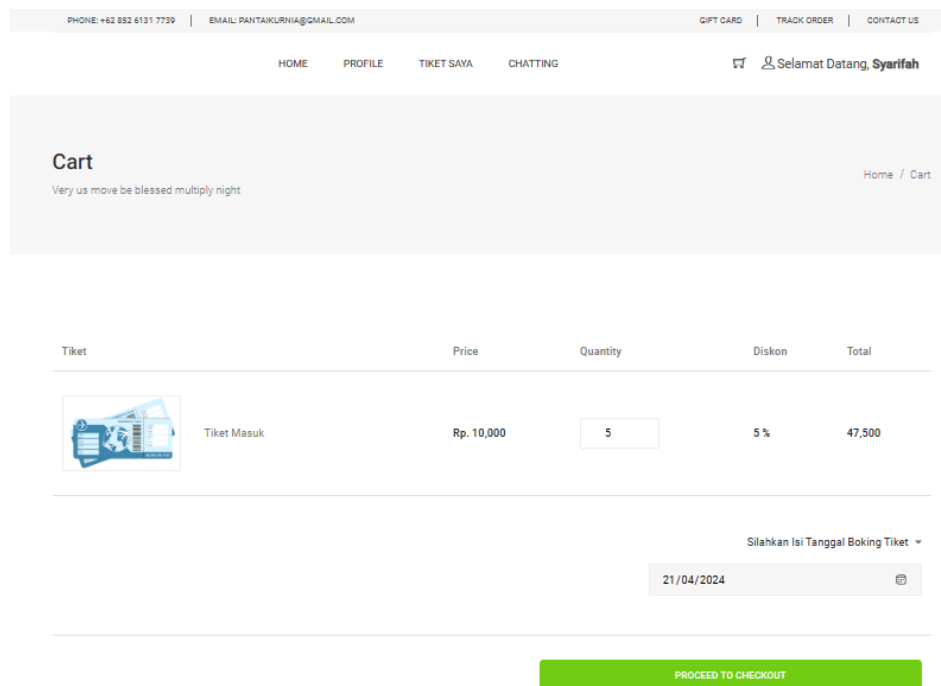
Figure 13. Ticket Booking Page

4. CONCLUSION

Based on the analysis of the QR Code-based entrance ticket application at the Kota Pari Village Mangrove Tourism, it can be concluded that this application:

1. Providing convenience and efficiency in the purchase and use of entrance tickets. Users can quickly place ticket bookings and use QR codes as a secure payment method.
2. Managers can also monitor and manage admission reservations easily through this system. This application provides a convenient experience for visitors and makes it easier for managers to manage admission tickets.

Suggestion

1. Improve Security: Ensure strong security in this application system, especially when it comes to the processing and storage of visitor data. Implement security measures such as data encryption to protect sensitive user information.
2. Develop Additional Features: Consider developing additional features that can enhance the visitor experience, such as a more interactive online booking system, visit schedule reminders, or integration with map apps to help visitors navigate the tourist area.
3. Update and Maintain the System: Ensure that the application system is regularly updated and maintained. This is important for addressing bugs, improving performance, and bringing new features that are relevant to technological developments.
4. User Counseling: Provide clear and accessible user manuals, both in the form of documentation and video tutorials. This will help visitors and managers understand how to use the app correctly and maximize its benefits.

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