


## Web-Based Mini Soccer Field Reservation Information System Using the CodeIgniter Framework

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### ABSTRACT

The field rental information system was developed to simplify the reservation process and the management of field rental data digitally. This study aims to design and implement a web-based system that can be accessed by both renters and administrators. The development method used includes stages of analysis, design, implementation, and system testing. The system provides features such as user management, category management, product (field) management, transactions, and article content management. Test results show that the system operates well and meets the intended requirements, allowing users to easily make field reservations and enabling administrators to manage data more effectively. The implementation of this system is expected to increase work efficiency and minimize errors in recording and managing field rentals.

**Keywords:** Information System, Field Rental, Online Reservation

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#### **Article history:**

Received April, 2024  
Revised April, 2024  
Accepted Mei, 2024

### A. INTRODUCTION

Minisoccer is a widely played sport across various age groups, both recreationally and competitively. In Indonesia, minisoccer is gaining popularity as a more flexible and dynamic alternative to traditional soccer, particularly in urban areas. This game demands agility, teamwork, and good stamina, and requires adequate field facilities. As public interest in minisoccer increases, so does the demand for easily accessible, convenient, and well-organized field facilities tinggi <sup>1</sup>.

In supporting the management of sports facilities like fields, the role of information systems is crucial. An information system is an organized entity that manages data and information to support decision-making processes and operational activities. In the context of minisoccer field rentals, information systems can be utilized to manage reservation processes that were previously conducted manually. The digitalization of reservations provides convenience for users in checking schedules, making bookings, and receiving direct and efficient confirmations <sup>2</sup>.

However, many minisoccer field managers have yet to implement information systems in their reservation processes. Booking procedures are still traditionally conducted via phone, WhatsApp messages, or in-person at the location. This carries the risk of various problems such as scheduling errors, booking overlaps, information delays, and loss of reservation data. This condition not only disadvantages users but also complicates facility managers' efforts to optimize services and operational management.

To address these issues, a solution in the form of a web-based field reservation information system, accessible in real-time and integrated, is required. The use of the CodeIgniter framework for development is an appropriate choice as it supports the development of structured, rapid, and easily expandable applications. This system is expected to enhance efficiency, accuracy, and convenience in the badminton field reservation process, while also representing a digital transformation of sports facility services adaptable to the needs of modern society <sup>3</sup>.

Previous research by <sup>4</sup> addressed challenges in conventional service management, both in car workshops and other facilities such as sports fields, where inefficient manual reservation systems led to disorganized queues, recording errors, and user dissatisfaction. To overcome this, a web-based information system utilizing the CodeIgniter framework was developed to manage digital booking processes. The implementation results demonstrated that the booking process became more efficient,

user data was well-recorded, and services became more structured and easily accessible for both administrators and users.

## **B. RESEARCH METHOD/MATERIAL AND METHOD/LETERATURE REVIEW (10 PT)**

### **A. Minisoccer**

Minisoccer represents an adapted form of football, scaled down in terms of field dimensions, player count, and match duration. The term "minisoccer" refers to a miniature football game typically played by two teams, each comprising 5 to 7 players, including a goalkeeper. This format facilitates play in more confined areas, such as smaller fields or open spaces equipped with artificial turf. The fundamental distinction between minisoccer and standard football lies in the field size. While conventional football is played on large fields approximately 100–110 meters in length, minisoccer utilizes a considerably smaller pitch, ranging from 38–42 meters in length and 18–22 meters in width. Furthermore, the game duration is shorter, typically consisting of two 20-minute halves or conforming to specific tournament regulations. The primary objective behind the development of minisoccer is to provide broader access to football for the general public, particularly in urban areas where land availability is limited. With fields that do not necessitate extensive space, minisoccer can be established in city centers, residential environments, and commercial sports facilities like indoor soccer arenas. This inherent flexibility has driven minisoccer's rapid growth and widespread popularity across diverse demographics<sup>5</sup>.

### **B. Information System**

An information system comprises a set of interconnected components designed to collect, store, process, and disseminate information. Its purpose is to support decision-making, coordination, analysis, and visualization within an organization. The primary objective of such a system is to furnish users with information that is relevant, timely, and accurate. Information systems are fundamentally composed of five main components: hardware, software, data, procedures, and human resources (brainware). Each component plays a critical role in facilitating information processing. For instance, software dictates workflow, while human operators are responsible for system execution and management. The core function of an information system is to serve as an instrumental aid in enhancing the efficiency and effectiveness of business processes or organizational activities. These systems enable work automation, more systematic data storage, and rapid, accurate reporting. Consequently, an information system forms a crucial foundation for strategic decision-making<sup>2</sup>.

### **C. The CodeIgniter Framework**

The CodeIgniter framework is an open-source PHP-based framework engineered for the rapid and efficient development of web applications. CodeIgniter adheres to the Model-View-Controller (MVC) architectural pattern, which compartmentalizes business logic, presentation layers, and data processing into distinct components. This segregation facilitates easier management and development of applications, yielding more organized and scalable code structures. This framework is designed to be lightweight, fast, and require minimal configuration. A notable advantage is its ability to operate on servers with low specifications, without necessitating complex installation procedures. CodeIgniter is highly suitable for developers ranging from beginners to seasoned professionals, owing to its comprehensive documentation and abundant implementation examples<sup>6</sup>.

### **D. The Waterfall**

The Waterfall methodology is a systematic and sequential software development model. This model is termed "Waterfall" because its development phases flow linearly downward, much like a waterfall, progressing from one stage to the next without reverting to a preceding phase. Each stage must be fully completed before proceeding to the subsequent one. Dr. Winston W. Royce first introduced this method in 1970, establishing it as a classic approach in software engineering. Despite its traditional nature, this methodology remains widely employed, particularly for projects characterized by stable requirements and clearly defined specifications from their inception<sup>7</sup>.



Figure 1. Waterfall Method

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## C. RESULTS AND DISCUSSION

### A. Use Case Diagram

The following use case diagram illustrates the interaction between actors and the system within the designed minisoccer field reservation process.

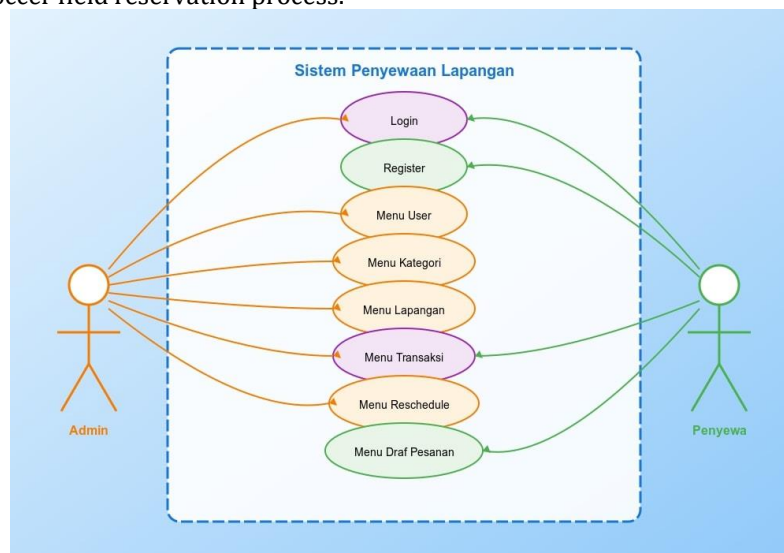


Figure 2. Usecase Diagram

The presented use case diagram delineates the interactions between two primary actors, namely the Admin and the Tenant, with the web-based minisoccer field rental system. This system is engineered to facilitate the management of field bookings through various features accessible to both actors. The Admin possesses comprehensive control over a range of menus, including Login and Register for user account management, a User Menu for administering registered user data, and a Category Menu for classifying available field types or services. The Admin also has access to a Field Menu for managing field availability, a Transaction Menu for monitoring and overseeing rental transactions, a Reschedule Menu for adjusting schedules in case of changes, and a Cart Menu for reviewing the status of uncompleted transactions. Conversely, the Tenant has restricted access tailored to their specific needs within the field rental process. Tenants can perform Login and Register to create accounts and access the system. They can select the Field Menu to check available field schedules, make bookings via the Transaction Menu, and modify previously booked schedules through the Reschedule Menu. Additionally, tenants can utilize the Cart Menu to review their selected reservations prior to confirming their booking.

## B. Result

### 1. Home Page

The Home Page is engineered as the initial display of the system, providing general information and primary navigation for users to easily and quickly access other features.

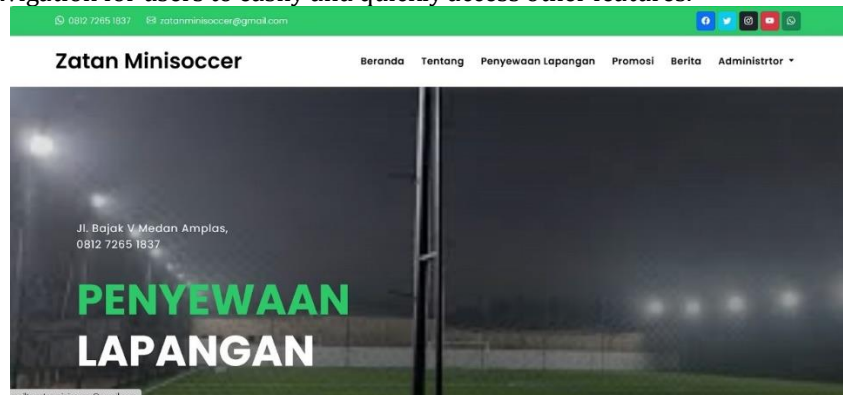


Figure 3. Home Page

The figure above illustrates the display of the Home Page of the Zatan Minisoccer system. This page functions as the main entry point, providing the first impression to visitors. At the top, a header contains contact information, such as a phone number and email, along with social media icons linked to popular platforms. The system name, "Zatan Minisoccer," is prominently displayed on the upper left as the site's identity. The navigation menu is arranged horizontally with options like Home, About Us, Field Rental, Promotions, News, and a specific menu for Administrator, facilitating user access to various system features.

### 2. Admin Dashboard Page

The Admin Dashboard Page is designed as the primary control center for administrators to efficiently manage data, monitor system activity, and access management features.

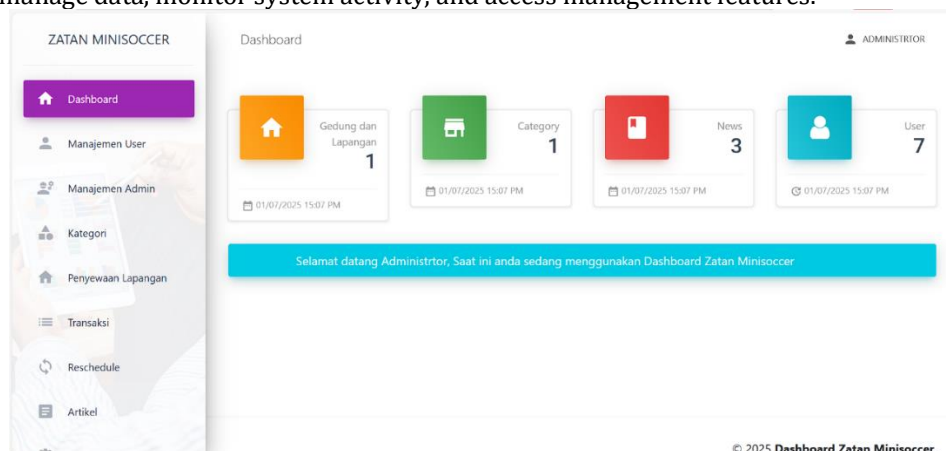


Figure 4. Admin Dashboard Page

The figure above displays the Admin Dashboard Page of the Zatan Minisoccer system. This page serves as the control hub for the administrator in managing all system components. On the left side, a vertical navigation panel provides quick access to various management features such as Dashboard, User Management, Admin Management, Categories, Field Rental, Transactions, Reschedule, and Articles. The main dashboard view presents a summary of important data in the form of colored information cards, such as the number of buildings and fields, categories, news, and the total registered users. Each card also displays the date and time of the last update.

### 3. User Management Page

The User Management Page is designed to provide convenience for administrators in managing system user data.

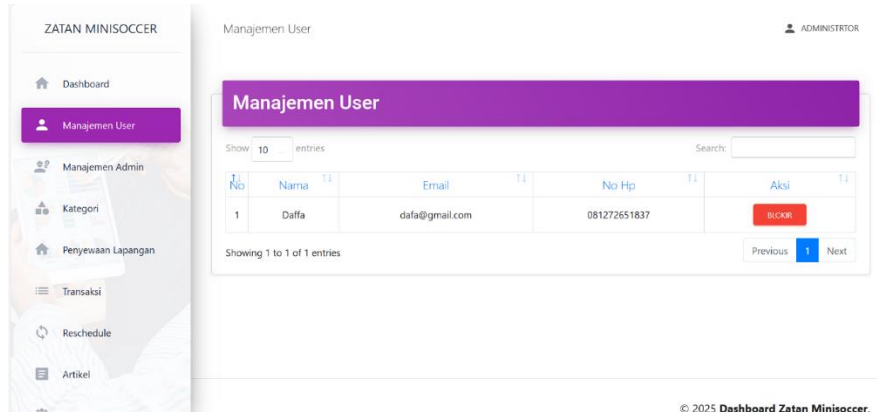


Figure 5. User Management Page

The User Management Page within the Zatan Minisoccer system displays a list of users registered in the system. The main section of this page contains a table that includes essential user information such as Sequential Number (No.), Name, Email, Phone Number, and an Action column. This table allows the administrator to directly monitor basic user identities. To the right of each user row, a "BLOKIR" (BLOCK) button is available, enabling the administrator to deactivate user accounts if violations are found or for specific requirements.

### 4. Admin Management Page

The Admin Management Page is designed to facilitate the management of administrator accounts within the system, including the addition, editing, and deletion of admin data with access to advanced management features.

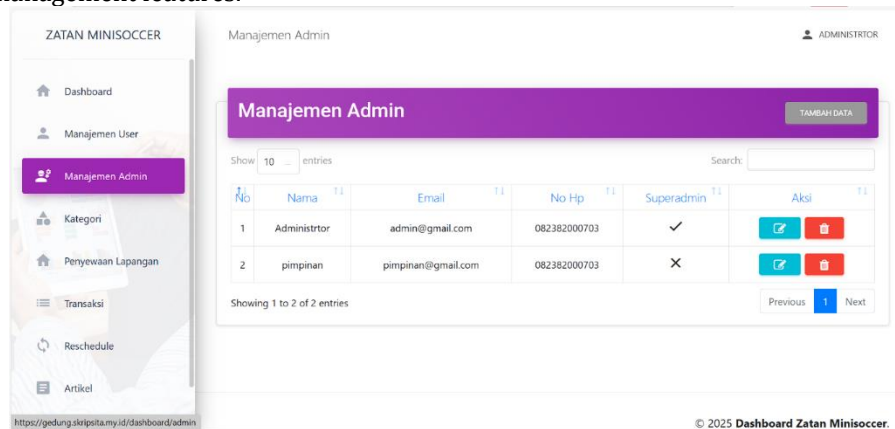


Figure 6. Admin Management

The Admin Management Page within the Zatan Minisoccer system displays a list of administrator accounts that have access to manage the system. At the top, there is a "Manajemen Admin" (Admin Management) accompanied by an "TAMBAH DATA" (ADD DATA) button for adding new administrators. The available table includes several important columns: No., Name, Email, Phone No., Superadmin, and Action. The Superadmin column indicates the role status of each administrator, whether they have full access rights (marked with a ✓ symbol) or not (marked with an ✗ symbol). Meanwhile, the Action column provides two buttons: a blue edit button for modifying admin data and a red delete button for removing admin data from the system.

### 5. Category Page

The Category Page is designed for administrators to manage category data used within the system, such as adding, editing, or deleting categories that serve as references for grouping product or service data.

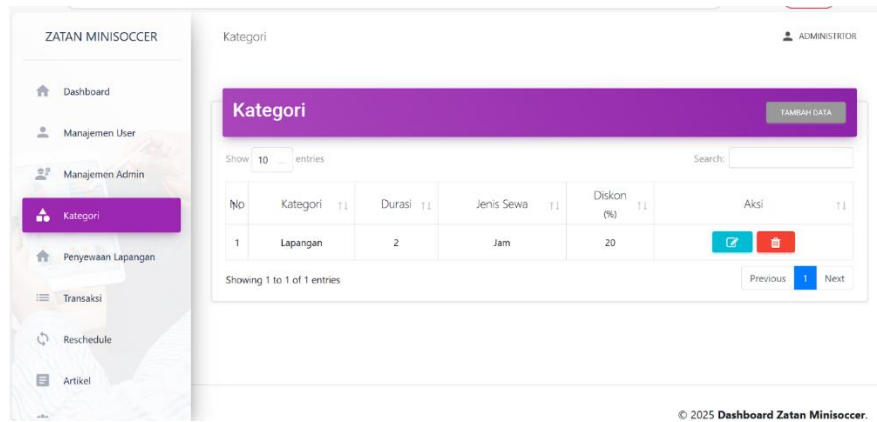


Figure 7. Category Page

The Category Page on the Zatan Minisoccer system displays a list of categories used in the rental system, such as field categories. At the top of the page, there is an "TAMBAH DATA" (ADD DATA) button to add new categories. The displayed table contains several important information columns, including No., Category, Duration, Rental Type, Discount (%), and Action. The Duration column indicates the length of the rental period, while Rental Type shows the unit of time used, such as hours. The Discount column displays the price reduction given as a percentage. In the Action column, two buttons are available: a blue edit button and a red delete button, used to modify or delete existing category data.

### 6. Field Rental Page

The Field Rental Page is provided to facilitate administrators in managing data for fields available for rent, including adding new information, updating details, and deleting data that is no longer in use.

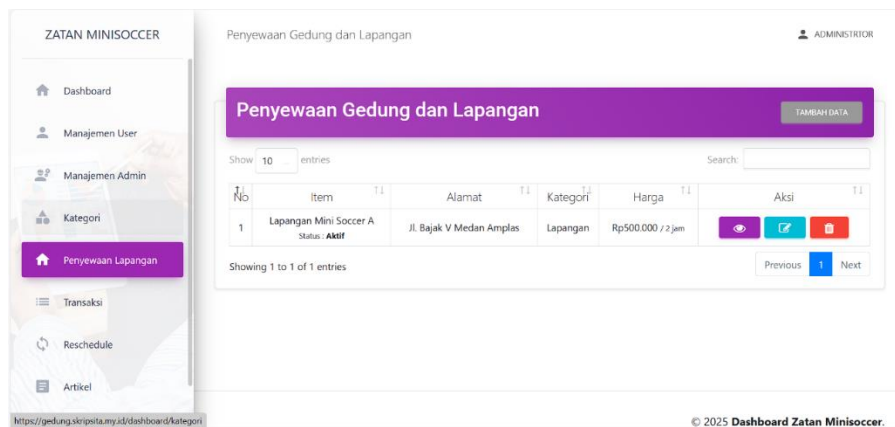


Figure 8. Field Rental

The figure illustrates the "Penyewaan Lapangan" (Field Rental) page used by administrators to manage data items for fields available for rent. The table on this page contains important information such as the field item name (e.g., "Lapangan Mini Soccer A"), the field's location address, the category that groups it (e.g., "Lapangan" - Field), and the rental price (e.g., Rp500,000 per 2 hours). In the action column, several buttons are available, allowing the admin to edit, view details, or delete the respective field data. Additionally, there is an "Tambah Data" (Add Data) button in the upper right corner to add new items to the rental list.

## 7. Transaction Page

The Transaction Page is designed to display and manage all field booking data made by tenants, enabling administrators to efficiently monitor, verify, and regulate the status of each transaction.

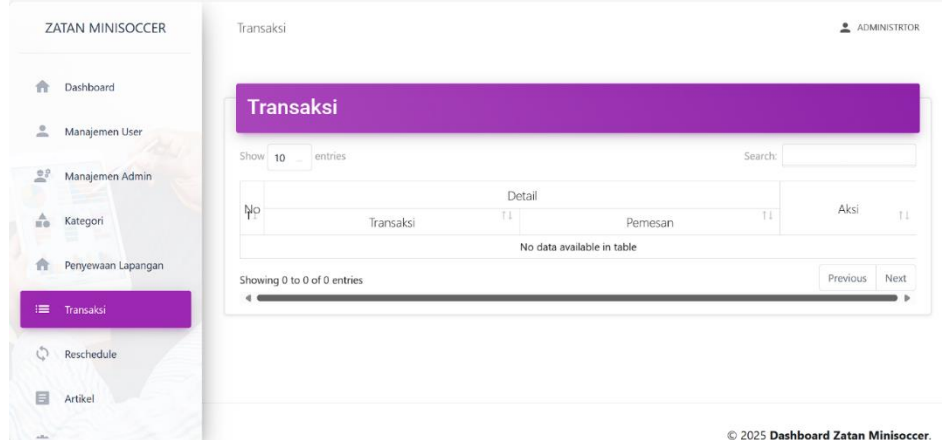


Figure 9. Transaction Page

The "Transaksi" (Transaction) page in the figure displays an interface designed for managing transaction data for bookings made by tenants. In the center of the page, there is a table with columns such as Number (No.), Transaction information, Details, Booker, and Action. Currently, the table contains no data, indicated by the message "No data available in table." This table will eventually be used to display a list of all field rental transactions, including detailed information about the booking, the tenant, and providing action buttons such as viewing details or processing the transaction status.

## D. CONCLUSION

The conclusions derived from this research are as follows:

1. The developed field rental information system successfully facilitates the digitalization of the field reservation process, thereby reducing reliance on manual procedures and expediting service delivery to users.
2. The inclusion of user, category, product, and transaction management features enables administrators to manage data in a structured, efficient, and centralized manner, eliminating the need for conventional record-keeping.
3. The system's responsive and user-friendly interface design streamlines interaction and navigation for both tenants and administrators within the system.
4. Transaction processes, including schedule verification and booking confirmation, have been seamlessly integrated, allowing users to make reservations autonomously and systematically.
5. This system significantly enhances data accountability and transparency within the rental process, as all activities are digitally recorded and can be monitored in real-time by administrators.

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