



ANDROID-BASED BOAT RENTAL INFORMATION SYSTEM ON PANGANDARAN BEACH

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ABSTRACT

Pangandaran Beach there is Lots very object interesting tours For visited by tourists . Tourists can enjoy beautiful sun rising on the East Coast and the sun sunset on the West Coast. In addition , tourists can also rent boat For middle sea and also around Good from the West Coast to the East or on the contrary .

In rental boat moment This Still done manually , such as must come to moreover formerly to place rental boat . Meanwhile , now This everything want to all-round practical and not complicated when do rental boat the .

So, for simplify the rental process boat that is with use android application that I made about rental boat at Pangandaran Beach . Through application This tenant can do booking online without need come to place rentals and more easy in determine desired location targeted as well as can pay it inside application the .

If the research This succeed will produce A capable system help give convenience for second split parties , so that can expected later will simplify and speed up the service process , data storage and presentation return the data .

ARTICLE INFORMATION

Keywords:

System Information , Rental , Pangandaran , Android

1. Introduction

The tourism sector is a key driver of regional economies, contributing significantly to increased community incomes. The development of marine-based tourist destinations in Indonesia is showing an increasingly positive trend, particularly in coastal areas with unique natural attractions. One of West Java's leading destinations is Pangandaran Beach, known for its panoramic sunrises and sunsets, as well as its diverse marine tourism activities. This beach not only attracts domestic tourists but also provides business opportunities for the local community, particularly in the marine transportation sector, such as boat rentals.

Boat rentals in the area have become an integral part of the tourism experience. Tourists use this service to explore the beach, enjoy panoramic ocean views, and access specific spots like white sand areas and underwater attractions. However, an analysis of the current system reveals that boat rentals are still conducted conventionally. The transaction process requires tourists and boat owners to interact directly on-site, from offering services and negotiating prices to making payments. This service model presents several challenges, including limited information, irregular data recording, potential administrative errors, and a lack of time efficiency.

On the other hand, developments in information technology, particularly Android-based mobile devices, have transformed patterns of public interaction and transactions in various sectors, including tourism. The use of mobile applications allows for online reservations, which are faster, more transparent, and well-documented. Implementing an Android-based information system in boat rental services has the potential to improve service quality, expand promotional reach, and support more structured data management.

Based on these conditions, a systematic solution is needed that can bridge the needs of tourists for practical services with the needs of boat operators for an orderly and documented administrative system. This research focuses on the design and development of an Android-based boat rental information system designed to manage user data, boat data, rental transactions, and reporting in an integrated manner. This system is expected to replace the manual mechanisms currently implemented, thus making operational processes more effective and efficient.

The novelty of this research lies in the integration of local boat rental services into a mobile-based digital platform designed to meet the specific needs of marine tourism areas. The developed system not only provides booking features but also encompasses user account management, transaction data processing, and access rights settings for administrators and captains. Thus, this research not only offers process digitization but also presents a more structured information system-based tourism service management model.

Academically, this research contributes to the application of information systems concepts to the local tourism services sector, particularly micro-scale maritime transportation. Practically, the research findings are expected to improve operational efficiency, simplify reservations for tourists, and assist boat owners with data management and reporting. Therefore, developing an Android-based boat rental information system in the Pangandaran Beach area is a strategic step in supporting the digital transformation of the regional tourism sector.

2. Method

2.1. Types and Approaches of Research

This research uses a case study approach with a system design and development method. The case study was chosen because the research focuses on a specific object: boat rental services in the Pangandaran Beach tourist area. This approach allows researchers to conduct an in-depth analysis of the existing system, identify operational issues, and design information technology-based solutions tailored to field needs.

The system development method used refers to a structured (sequential) development model, which includes the stages of requirements analysis, system design, implementation, and testing. Each stage is carried out systematically to ensure the system being built meets user needs.

2.2. Data collection technique

Data collection was carried out through a number of technique following :

- a. Observation direct
 Researchers do observation regarding the rental process the boat that is underway manually , start from the bidding process services , recording tenant data , up to transaction payment . Observation This aim For get description real about channel Work the system in progress walk .
- b. Interview
 Interview done to owner boat and candidate users service For dig information related need system , constraints operational , as well as hope to service digital- based .
- c. Documentation study
 Documents analyzed includes tenant data , owner data boats , fleet data, and report previous transactions noted manually . This data become base in design system database structure .
- d. Literature study
 Researchers examine reference related scientific with system information , design application Android based , as well as draft modeling system such as Flowcharts, Data Flow Diagrams (DFD), and Entity Relationship Diagrams (ERD).

3. Results and Discussion

3.1. Dataset Description

Dataset used in study This sourced from results observation and documentation of the rental process boats in the Pangandaran Beach area . The data analyzed is representation from previous manual system used by the owner boat . The data structure then converted to in a computerized database For support implementation system Android based .

Main dataset consists of on three core entities , namely user data , boat data , and transaction data . Each entity own designed attributes For fulfil need operational system .

Table 1. Boat Rental System Dataset Structure

No	Entity	Amount Attribute	Main Attributes	Data Function
1	User	7	id_user	Identity and rights access users
2	Boat	9	id_boat	Fleet and rate information
3	Transaction	10	transaction_id	Order and payment data

This relational structure means that a single user can perform multiple transactions, with each transaction linked to a specific node. This model ensures data integrity and minimizes information redundancy.

3.2. Model Performance Comparison (Manual vs Digital System)

This study compares the performance of a manual system with a developed Android-based computerized system. Evaluation parameters include transaction time efficiency, recording accuracy, and report availability.

3.2.1. Analysis Procedure Boat Rentals Underway

Based on analysis problem in the current system analyzed there is procedure in study This that is procedures rental boat .

Table 1. Procedure Boat Rental

No	Description	Process
1	Owner boat must offer to tenant in rent the boat .	Manual
2	After do offers and tenants interested , then asked the goal to which way who want visited .	Manual
3	After deliver to place objective so tenant request telephone number to owner boat so that it can pick him up after finished doing activities .	Manual
4	After pick up tenant , then tenant pay to owner the boat that has agreed from beginning .	Transaction direct

Analysis :

Seen from procedure above , tenant Still must carry out transaction processes direct If want to do rental boat so that less effective and efficient . So that the processing process can computerized and easier in manufacturing report .

3.2.2. Flow Map in Progress

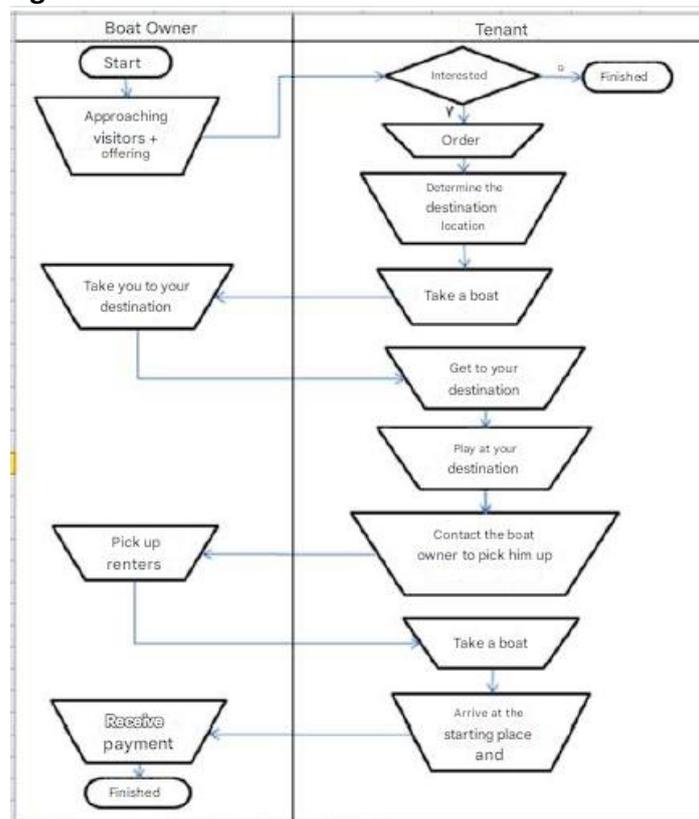


Figure 1. Rental Flow Map Boat In progress

Information Process :

1. Owner boat must come to visitors and offer them .
2. If the tenant interested so direct order boat said , but If No interested so will reject it .
3. Tenant determine desired location his destination .
4. Then boat charterers going to location the .
5. Owner boat deliver tenant to place objective .
6. Arrive at the location purpose , tenant play as much as you like .
7. Tenant contact owner boat For pick him up If has finished play .
8. Then owner boat pick up tenant .
9. The tenant gets on the boat , when arrived at the place beginning tenant pay in a way direct after finished do his activities .
10. Owner boat accept payment in a way direct .

Table 2. System Performance Comparison

Aspect Evaluation	Manual System	System Android Based
Ordering Process	Face advance direct	Through application
Transaction Time	Relatively longer	More fast and structured
Data Logging	Written manually	Stored automatically in the database
Risk of Data Loss	Tall	Low
Report Preparation	Done manually	Automatic and real-time

The comparison results show that digitizing the rental process improves operational efficiency and reduces the potential for administrative errors. The Android-based system allows for direct data integration into the database, promoting transparency and ease of monitoring.

3.3. System Design

3.3.1. Procedures to be Computerized

Procedures about data management that will be designed and implemented into the system including :

1. User Account Management
2. Rental Data Management
3. Confirmation Data Management Payment Data Management

3.3.2. New Procedure Flowmap Rental
 a. Ordering Process Flowmap

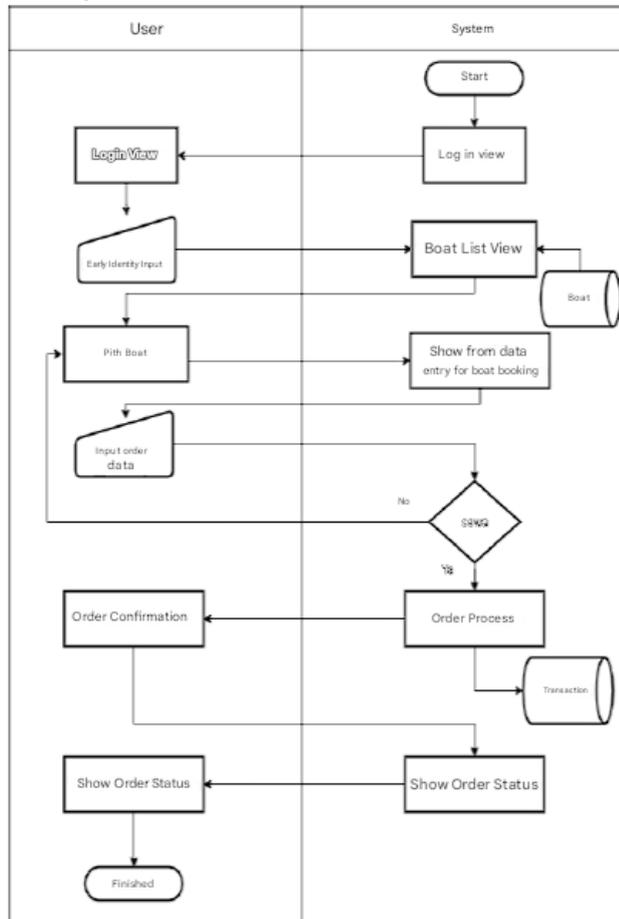


Figure 2. Marketing Process

b. Flowmap Skipper

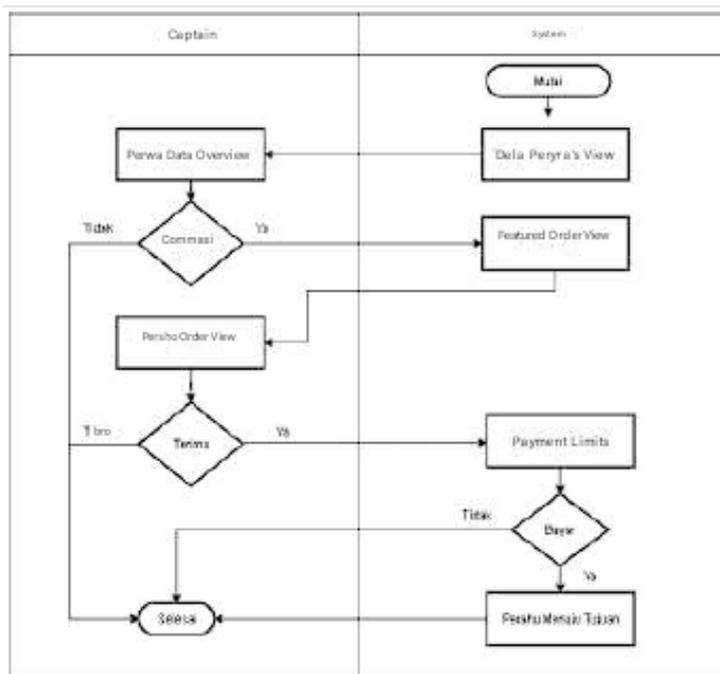


Figure 3. Acceptance Process Tenant

c. Context Diagram

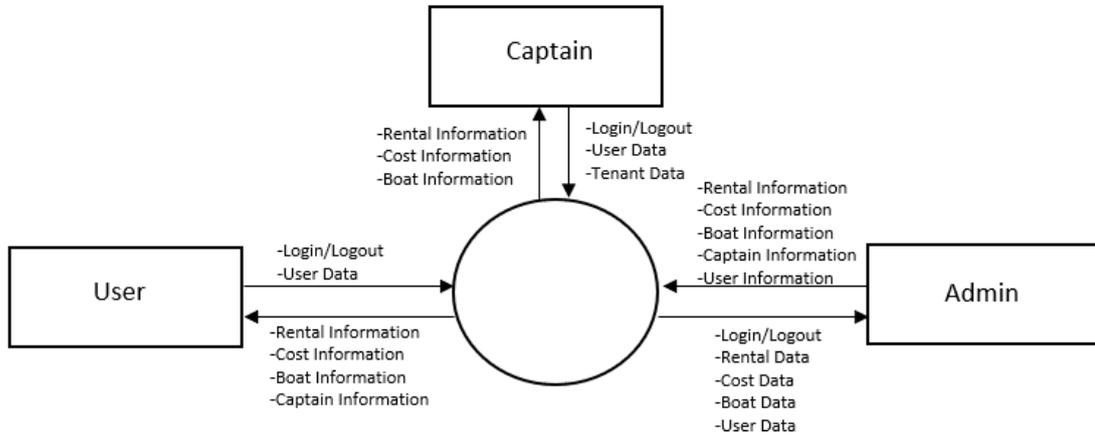


Figure 4. Context Diagram

Information :

1. Every entity For access application required *login* first formerly .
2. Admin entity on duty For provide , change and delete boat data information , user data, captain data .
3. Entity skipper on duty For provide service rental boat .
4. Entity users get information around rental boat .

d. Design Entity Relationship Diagram (ERD)

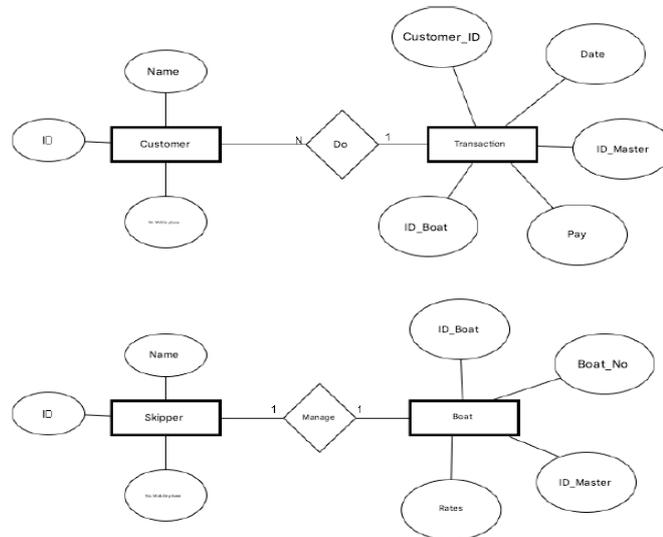


Figure 5. Design Entity Relationship Diagram

3.4. System Implementation

3.4.1. Interface File List

Table 3. Data File *Interface*

No.	Form Name	Information
1.	Index.php	Dashboard page for item rental.
2.	Index.php (login)	Page to limit users between admin and customers.

3.	Status_sewa.php	Status page to view items that rented by customers.
4.	Tenant_status.php	Overall status page for rented items.
5.	List.php	Page for new users.
6.	Add_items.php	Page to add items to be rented.
7.	Profile.php	Page to view personal data.
8.	User.php	Page to view all users application.

3.4.2. Implementation Document Database File

In designing database tables, the database files that are formed are as follows:

Table 4. List File Base Data

No.	Table Name	Information
1.	User	User data table
2.	Transaction	Transaction data table
3.	Boat	Boat data table

3.4.3. System Interface View



Figure 6. Login Form



Figure 7. Home View

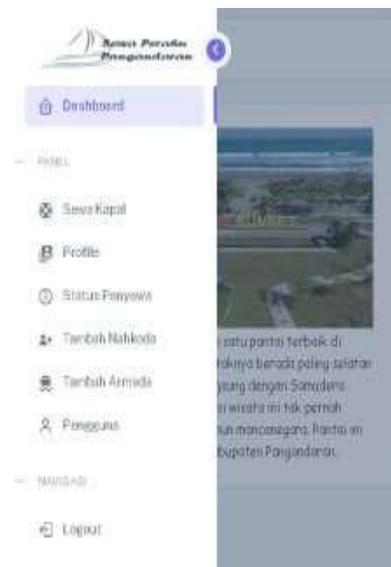


Figure 8. Navigation View



Figure 9. Boat Rental Menu



Figure 10. Profile Menu

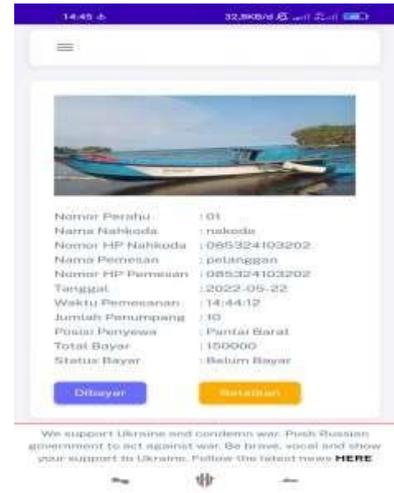


Figure 11. Tenant Status Menu



Figure 12. List Menu



Figure 13. Add Fleet Menu

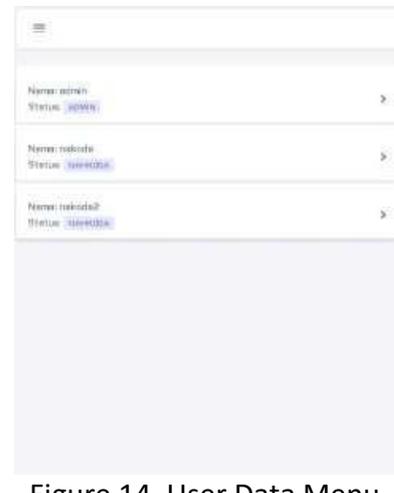


Figure 14. User Data Menu

4. Conclusion

Based on the analysis, design, implementation, and system testing, it can be concluded that the development of an Android-based boat rental information system in the Pangandaran Beach area has successfully addressed operational issues previously encountered with the manual system. The rental process, which was previously conducted through direct interaction without structured record-keeping, is now integrated into a digital system capable of systematically and documentedly managing user data, boat data, and transaction data.

The research results show that service digitization improves time efficiency, record-keeping accuracy, and ease of reporting. The developed system minimizes the risk of data loss and administrative errors because all transaction activity is stored in a centralized database. Furthermore, the implementation of access rights (admin, captain, and user) supports more controlled and accountable system management.

From a technical perspective, the implementation of an Android-based application integrated with a relational database demonstrated functional performance that met initial requirements. All key modules—from registration and ordering to fare calculation to reporting—

performed successfully, according to system testing results. This confirms that the system design, developed through structured modeling (DFD and ERD), effectively supported the implementation process.

Conceptually, this research demonstrates that implementing information systems in the local tourism services sector can improve service quality while strengthening digital-based micro-enterprise governance. The transformation from conventional to computerized systems not only impacts operational efficiency but also opens up opportunities for developing services that are more adaptive to tourist needs in the information technology era.

Thus, the Android-based boat rental information system developed in this study can be declared feasible to be implemented as a digital solution to support the improvement of services and management of boat rental businesses in marine tourism areas.

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