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Development of a Web-Based Party Equipment Rental Service (Case Study: Tarup Queen)

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ABSTRACT

The management of party equipment rentals at Tarup Queen currently faces operational constraints due to the use of conventional systems, leading to ineffective stock availability information and the risk of scheduling errors (double booking). Furthermore, manual transaction and payment verification processes often slow down the administrative workflow. This research aims to develop a web-based party equipment rental service capable of providing real-time availability information and integrating an automated payment system. The development methodology employed is the Prototyping Method, which allows for active user involvement in evaluating the interface design and system flow before the final implementation stage. The primary features developed include an interactive product catalog, a booking calendar system, and payment gateway integration for automated transaction verification. The research results indicate that the implementation of this system can minimize human error in schedule recording, accelerate the reservation process, and enhance transaction transparency for customers. The implementation of this web-based service is expected to transform Tarup Queen's operational governance to be more efficient and competitive.

Keywords: Web-Based Service, Rental Management, Prototyping Method, Payment Gateway

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INTRODUCTION

The rapid advancement of information technology has shifted the operational paradigm within the rental service sector, including the party equipment industry, which is now required to provide fast and transparent services. Tarup Queen, as one of the service providers in this field, still faces significant obstacles due to its reliance on manual order management procedures. Limited communication between the service provider and customers regarding product details often hinders information accessibility. Consequently, a digital transformation through a web-based platform has become an urgent necessity to systematically expand service reach and improve operational efficiency.

The urgency of this transformation is further highlighted by a crucial issue: the inaccuracy of inventory availability data, which poses a significant risk of double bookings or overlapping schedules. Without the support of integrated database management, monitoring the availability of party equipment such as tents and chairs becomes difficult to execute with precision amidst high demand. Therefore, the implementation of a real-time availability checking system serves as a strategic solution to minimize human error in scheduling, while simultaneously providing transaction certainty for potential lessees(Putra & Handaga, 2026).

In addition to availability management issues, another fundamental aspect requiring significant improvement is the efficiency of payment mechanisms and order verification. Currently, the manual payment confirmation process relying on uploading transfer receipts not only slows down the administrative workflow but is also susceptible to data manipulation. As a solution to these constraints, the integration of payment gateway technology is projected to automate instant payment verification through various digital channels. The utilization of this

technology is expected to enhance financial accuracy and strengthen user trust in transactions(Pande dkk., 2026).

To ensure that all features ranging from availability checks to payment processing can be easily operated by users, this research adopts the prototyping method. The selection of this method is based on the characteristics of the rental business, which requires high flexibility in terms of interface and navigation. Through this approach, developers can perform design iterations based on direct feedback from Tarup Queen before comprehensive coding is conducted, thereby minimizing the risk of functional system failure as early as possible(Sudjana dkk., 2024).

Based on these requirements, this research focuses on the development of a web-based party equipment rental service that integrates automated availability checks, reservation management, and an integrated payment system. Through the implementation of this system at Tarup Queen, it is expected to establish a more professional and transparent rental governance while providing an optimal user experience. The results of this study are intended not only to produce functional software but also to serve as an efficient digitalization model for micro-enterprises within the event equipment service sector.

1.1 Information system

Information system is defined as the integration of various interconnected components that function together to collect, process, store, and distribute information in an organized manner(Iriawan & Bororing, 2023).

1.2 Lease

Lease or rental is defined as a contractual agreement in which one party commits to providing the right to utilize an asset to another party for a predetermined period. In return, the beneficiary is obligated to fulfill payment as compensation for the previously agreed-upon pric(Nur dkk., 2024).

1.3 Prototyping method

The application of the prototyping method facilitates intensive collaboration between developers and end-users in an effort to ensure synchronization between system specifications and the expected functional requirements(Sengkey dkk., 2025).

1.4Payment Gateway

Payment gateway is a technological infrastructure that acts as a third-party intermediary in facilitating payment transmissions from customers. This system functions to securely forward transaction details from consumers to the relevant banking institutions for the purposes of authorization and approval of financial transactions(Lima dkk., 2025).

METHOD

Data collection techniques, including observation, interviews, and literature reviews, were employed in this study, utilizing the Prototyping model for software development.

2.1 Data Collection Methods

a. Observation

Systematic observation was applied to extract system requirement parameters, which were subsequently implemented into the design of the information website(Aryani dkk., 2024). Direct observation of the operational workflow at Tarup Queen was conducted to identify constraints in

stock management and manual order recording, which frequently lead to data inaccuracies and operational delays.

b. Interview

interview is a process of exchanging information and ideas through Q&A interaction between two parties to explore the meaning behind a specific issue (Sholikhah dkk., 2024). In this study, in-depth interviews were conducted to map the system's functional requirements.

c. Literature study

Literature serves as a crucial instrument that upholds the validity of analysis, the depth of research, and the accuracy of policy formulation, ensuring continued relevance within the existing context(Fadillah & Yudha, 2024).

2.2 Software development

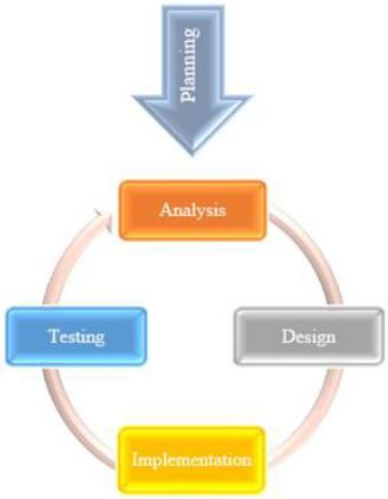

Figure 1. Prototyping Method

The system development stages begin with the Planning phase to define the service vision for Tarup Queen, followed by the iterative cycles that characterize the prototyping method. The Analysis phase is conducted to dissect specific requirements, such as payment gateway integration and equipment availability logic, followed by the Design phase to create the Web UML (Unified Modeling Language) diagrams. These designs are then realized in the Implementation (coding) stage and immediately evaluated through the Testing phase to obtain direct user feedback. If any deficiencies are identified, the system returns to the analysis stage for refinement until the final product fully aligns with the operational requirements of Tarup Queen.

FINDINGS AND DISCUSSION

3.1 Analysis

3.1.1 Identification of problems

Based on observations and interviews, three main problems were found that hampered operations:

a. Inefficiency of Stock Information

Customers cannot know the availability of equipment without asking directly, thus wasting time for admins to check ledgers or manual records repeatedly.

b. *Double Booking*

The lack of centralized order data synchronization results in a high potential for overlapping equipment rental schedules on the same date and time.

c. Manual Payment Verification

The transaction confirmation process that relies on sending proof of transfer via text message is often processed late and difficult to archive, which risks irregularities in financial reports.

3.1.2 System requirements analysis

To overcome the above problems, the following are the requirements that the system must fulfill for users (Customers and Admins):

a. Feature (Real-time)

Users need an interface that displays availability status directly based on the selected date range, so they can plan without waiting for an admin response.

b. Integrated Reservation and Inventory System

The system must be able to automatically lock the stock of equipment once an order is placed (booked status) and release it again if payment is not completed within a certain time limit.

c. *Payment Gateway*

Users need convenience in making payments through various methods (e-wallet, bank transfer, QRIS) with automatic verification without the need to upload proof of manual transfer.

3.2 Design UML

1. Use case

A Use Case diagram is an external functional unit of a system that is represented through an interface to capture certain commands or events triggered by an actor(Sabarudin dkk., 2022).

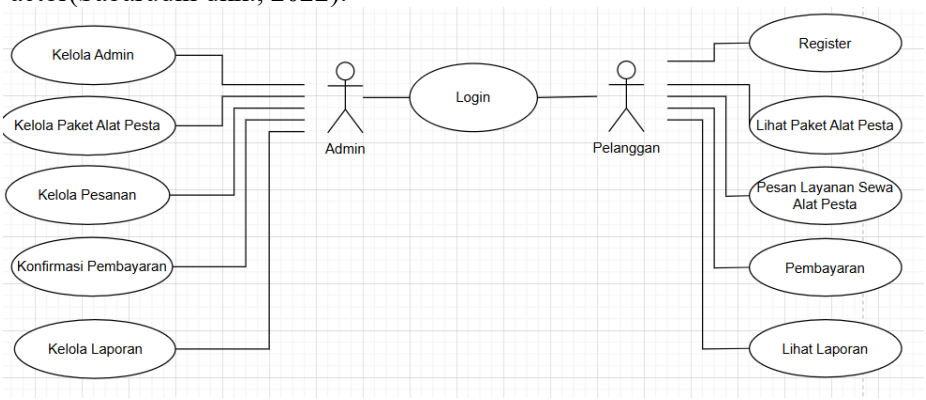

Figure 2. Use case diagram

The use case diagram above illustrates a party equipment rental system involving two main actors: the Admin and the Customer, with the Login function serving as the primary gateway for both. The Admin holds operational control, which includes managing admin data, party equipment packages, customer orders, payment confirmations, and report generation. Customers, on the other hand, have a user flow that begins with the registration process, viewing available packages, ordering rental services, making payments, and viewing their own transaction history reports.

2. Activity diagram

An activity diagram is defined as a visual representation that maps the sequence of activities and systematic workflow in a system that will be implemented(Mare & Yana, 2022). Activity manage party equipment packages.

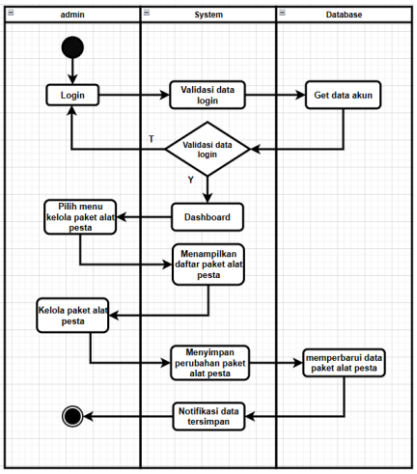

Figure 3. Activity manage party equipment packages

The workflow in the Manage Party Equipment Package activity diagram begins with the account verification process by the Admin through the system and database upon Login. Once access is granted, the Admin is directed to the Dashboard to access the package management feature, where the system will automatically load and present the party equipment package data stored in the database. Next, the Admin makes modifications or updates to the data, which is then processed by the system to be permanently saved back into the database. This procedure ends with the appearance of a Saved Data Notification as proof that all changes to the package information have been successfully updated into the system.

3. Sequence diagram

This sequence diagram maps how various objects in the system interact and collaborate dynamically to carry out a function or business process(Kurniawan dkk., 2021).

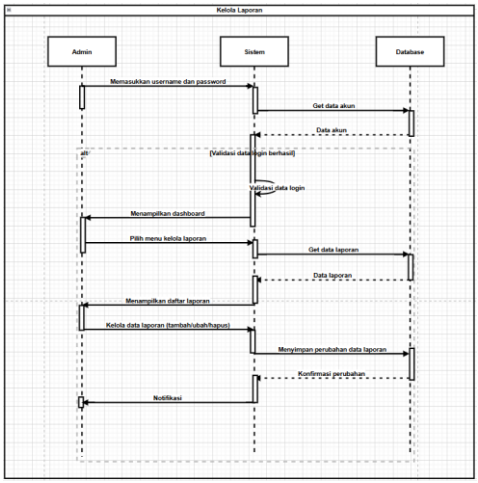

Figure 4. *reposrt sequence*

The Manage Report sequence diagram visualizes a systematic series of interactions between the Admin, System, and Database that begins with the input of login credentials by the Admin. After the system verifies the login data through the database and authentication is declared successful, the Admin will be directed to the Dashboard page to select the manage report menu, which then responds to the system by retrieving report data from the database to be displayed to the Admin. The Admin can then perform data management activities (such as adding, changing, or deleting), where each change

instruction will be sent by the system to the database for permanent storage. This flow is closed by sending a confirmation of the change from the database back to the system, which then triggers the appearance of a Notification on the Admin screen as proof that the report has been successfully updated.

4. Databases

The use of databases aims to integrate and organize data systematically, so that the information processing process can run quickly with an optimal level of security(Syahputri & Nasution, 2023).

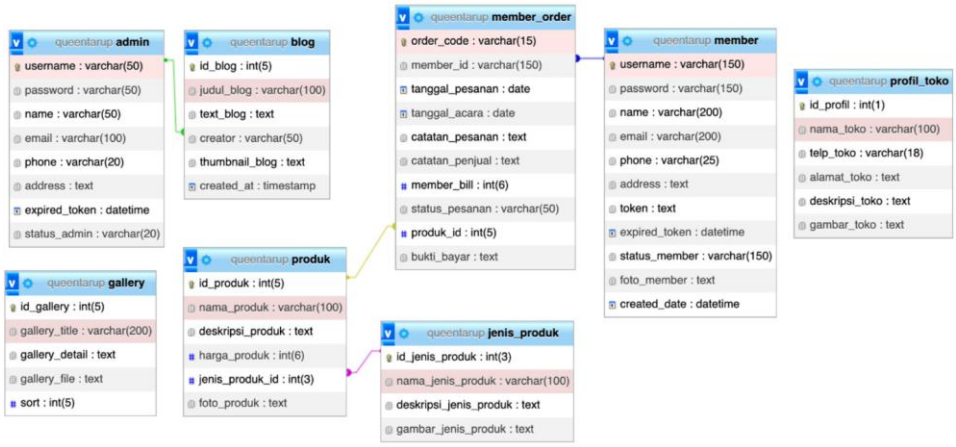

Figure 5. Databases

This diagram represents an Entity Relationship Diagram (ERD) for a web-based product ordering information system, designed to integrate member data management, product catalogs, and transaction processes. The core of this system lies in the member_order table, which connects buyer data from the member table with product information in the product table. The product table itself is categorized through relationships with the product_type table to facilitate searching. In addition to the transaction module, this system is equipped with supporting tables such as admin for access management, blog and gallery for information media, and profile_store for storing business identities. Overall, this relational structure ensures that every order is recorded with accurate details, from member identity to payment status, thus supporting an integrated and efficient administrative workflow.

3.3 Implementation

a. Register page

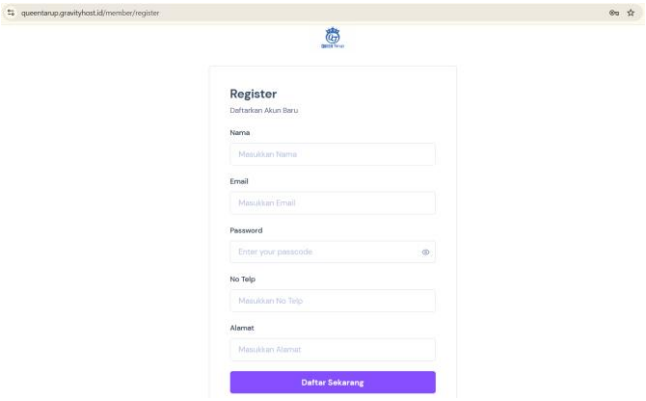

Figure 6. Register page

b. Login page

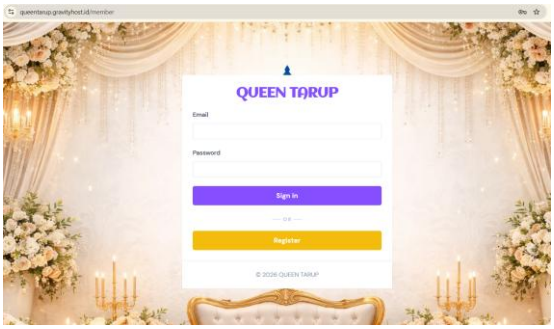

Figure 7. login page

c. Product list page

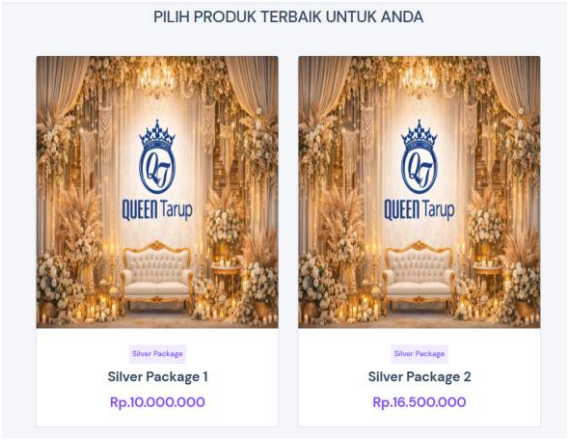

Figure 8. Product list page

d. Order history page

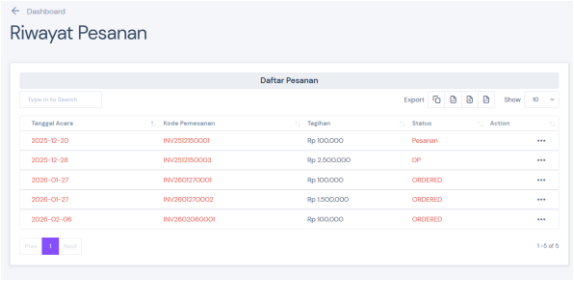

Figure 9. Order history page

3.4 Testing

Testing using the Black Box Testing method is implemented by evaluating the functionality of the completed software, where each form is tested through sample data input to ensure the output is in accordance with the expected specifications(Shaleh dkk., 2021).

Table 1. Blackbox testing

Number	Feature	Input	Ouput	Status
1	Register	Filling out the registration form with an email that is already registered.	The system rejects the registration and displays the message "Email already in use."	Success

2	Login	Entering a valid combination of username and password.	The system redirects the user to the Dashboard page according to their access rights.	Success
3	Check Availability	Selecting party equipment on a date that is already fully booked.	The system displays the status "Not Available" or locks the selection for that specific date.	Success
4	Booking	Selecting equipment, determining rental dates, and confirming the booking.	The system saves the order data to the database and redirects the user to the payment or invoice page.	Success

Discussion

The implementation of a web-based party equipment rental service for Tarup Queen demonstrates that digital transformation is capable of reducing operational hurdles prevalent in conventional systems. Through real-time availability features integrated with the database, the risk of double booking is eliminated as the system automatically locks equipment stock on the dates selected by customers. This aligns with the use of the Prototyping method, which allowed for a more intuitive interface design, enabling customers to perform independent checks without the need for time-consuming manual correspondence. Technically, the synchronization between the *member_order* and *product* tables within the ERD ensures that every change in order status is accurately distributed across all system functionalities.

Beyond efficiency in stock management, the integration of payment gateway technology serves as a crucial factor in enhancing the professional governance of Tarup Queen. Automated payment verification removes the dependency on manual transfer proof checks, which are prone to human error and data manipulation. Black Box testing results indicate that all primary features—ranging from the registration process to reservation completion—functioned according to the expected functional specifications (valid status). Consequently, this digital platform not only accelerates the administrative workflow from the internal (admin) side but also provides transparency and transactional ease for customers, ultimately increasing the business's competitiveness within the event equipment service sector.

CONCLUSION

This research has successfully developed a web-based party equipment rental service for Tarup Queen by implementing the Prototyping method, aimed at overcoming operational constraints such as ineffective stock information, the risk of scheduling overlaps (*double booking*), and the delays of manual payment verification. Through the integration of interactive product catalogs, a real-time booking calendar system, and transaction automation via a payment gateway, the system is capable of enhancing inventory management accuracy and accelerating the reservation administrative workflow. Testing results indicate that the implementation of this digital platform significantly minimizes human error in scheduling and provides transaction transparency, thereby transforming Tarup Queen’s operational governance into a more efficient, professional, and competitive entity within the event equipment service sector.

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