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Karaoke Reservation System for Room and Customer Management Optimization

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Abstract

This research discusses the development of a desktop-based karaoke reservation system designed to improve operational efficiency in room management and customer data processing. The system was developed in response to various problems commonly found in traditional karaoke business operations, such as manual data recording that is prone to human error, inefficiencies in managing room schedules, delays in administrative services, and the absence of real-time monitoring of room availability. These issues often lead to scheduling conflicts, inaccurate billing, and reduced customer satisfaction. The research methodology consisted of several stages, including user needs analysis to identify system requirements, interface design to ensure ease of use, system implementation using Java Swing as the programming framework, database development using MySQL, and functional testing to evaluate system performance. The system integrates reservation management, customer data recording, room status monitoring, and automatic cost calculation based on usage duration. The results show that the developed system significantly improves the speed and accuracy of the reservation process. Schedule conflicts can be minimized through structured room availability management, while customer data is recorded more accurately and systematically. The real-time display of room status allows administrators to monitor room usage efficiently, supporting better decision-making. Additionally, the automatic pricing feature ensures consistency and transparency in cost calculations, reducing errors caused by manual billing. In conclusion, the desktop-based karaoke reservation system proves to be an effective solution for optimizing karaoke business operations. By minimizing human error, improving service efficiency, and enhancing data management accuracy, the system contributes to improved service quality and overall customer satisfaction.

Keywords: Reservation System, Karaoke, Room Management, Information System, Java Swing, Customer Booking

1. Introduction

The entertainment industry, especially karaoke services, is one of the sectors that continues to grow along with the increasing need for recreational activities. At many karaoke venues, the room reservation process is still done manually using book notes or simple forms. This practice often causes various operational problems, such as inaccurate data recording, schedule clashes due to lack of visibility into room availability, cost calculation errors, and difficulties in tracking transaction history. These problems not only hinder the effectiveness of operational staff but also have an impact on the quality of service felt by customers. In addition, manual recording has the risk of data loss, writing errors, and a lack of integration between the information needed in management decision-making.

Seeing these conditions, the use of computer-based information systems is one of the relevant solutions to overcome reservation management problems in karaoke businesses. Desktop-based reservation systems allow for structured data storage, easy access to information, and increased efficiency in administrative processes. This digital approach can provide real-time visibility into the status of the room, minimize potential schedule clashes, and speed up the service process. Thus, the implementation of a computerized reservation system can provide added value for business actors, both in terms of operations and customer satisfaction.

This research focuses on the development of a desktop-based karaoke reservation system using Java Swing and MySQL databases. The approach was chosen because Java Swing has flexibility in building desktop interfaces, while MySQL allows for efficient and integrated data management. The development of this system starts from analyzing user needs, designing database structures, designing interfaces, to implementation and functional testing. Through this process, this research seeks to produce a system that is able to handle customer

data recording, room selection, reservation scheduling, automatic cost calculation, and real-time monitoring of reservation lists.

The main objective of this research is to design and build an information system that can optimize the karaoke reservation management process. In particular, this study aims to: (1) reduce recording errors and schedule clashes through data digitization; (2) provide a faster, structured, and easy-to-use reservation mechanism; (3) improve the accuracy of the calculation of service fees; and (4) provide a clearer display of room and reservation information for operational staff. In addition, the system is expected to improve administrative workflows through the integration of customer, transactional, and reservation data in one centralized application.

From a theoretical perspective, this research refers to the basic concepts of management information systems, usability theory in user interfaces, and the principles of relational database design. Management Information Systems (MIS) serve as the foundation for supporting decision-making processes and improving organizational effectiveness. In this context, usability is a critical factor in ensuring that the system interface is not only easy to operate, but also aligned with user needs. On the other hand, the reliability of the system is highly dependent on relational databases, which ensure consistency and security of data storage, while facilitating ease of further data processing. Previous studies on reservation applications have shown that digitizing the booking process can improve operational efficiency and reduce staff workload, thus supporting the relevance of the solutions offered in this study.

Overall, this research is expected to produce a karaoke reservation system that is not only effective and efficient, but also able to improve service quality and customer satisfaction. In addition to practical benefits, this research can also be a reference for the development of similar systems in other service businesses that require a structured process of room reservation or services. The results of this research also contribute to the application of information technology in the entertainment business sector through solutions that are applicable, economical, and easy to apply.

In terms of system architecture, the karaoke reservation system developed in this research adopts a modular design to ensure scalability and ease of maintenance. Each functional component—such as customer management, room management, reservation scheduling, and billing—is designed as a separate module that interacts through a centralized database. This modular approach allows future system enhancements, such as the addition of reporting features or integration with other business systems, to be implemented without disrupting existing functionalities. By applying this design principle, the system can evolve in accordance with the growing needs of the karaoke business.

From the implementation perspective, Java Swing is utilized to build a graphical user interface (GUI) that is intuitive and user-friendly for administrative staff. The interface design prioritizes clarity, consistency, and ease of navigation, ensuring that users with limited technical backgrounds can operate the system effectively. Input forms are structured to minimize data entry errors through validation mechanisms, while menu layouts are designed to reduce the time required to complete routine tasks such as making reservations or checking room availability. This emphasis on usability aligns with the principle that an information system should support users rather than complicate their workflow.

The MySQL database plays a crucial role in managing and storing system data, including customer profiles, room details, reservation schedules, and transaction records. By utilizing a relational database structure, data redundancy can be minimized and data integrity maintained. Relationships between tables are carefully designed to support efficient querying and reporting, enabling administrators to retrieve information quickly when needed. Moreover, centralized data storage enhances data security and ensures that historical transaction data can be used for future analysis, such as identifying peak usage hours or evaluating customer preferences.

System testing is conducted through functional and user acceptance testing to ensure that all features operate as intended. Functional testing focuses on verifying that each system component performs according to its specifications, including reservation processing, schedule conflict prevention, and automatic cost calculation. User acceptance testing involves direct interaction with potential users to assess system usability and practicality in real operational scenarios. The results of these tests indicate that the system is capable of reducing administrative workload, improving data accuracy, and accelerating service delivery.

In a broader context, the implementation of a desktop-based karaoke reservation system reflects the growing importance of digital transformation in service-oriented businesses. While web-based and mobile applications are increasingly popular, desktop applications remain relevant for businesses that require stable, offline-capable systems with centralized control. This is particularly beneficial for small to medium-sized karaoke enterprises that may have limited internet connectivity or resources for complex system deployment.

Ultimately, this research demonstrates that the application of information technology in karaoke reservation management can significantly enhance operational performance. By replacing manual processes with a computerized system, businesses can achieve greater efficiency, transparency, and reliability in their services. The findings of this study not only provide practical benefits for karaoke operators but also contribute academically by offering a structured model for developing reservation systems in similar service industries. Future research may expand on this work by incorporating online reservation features, payment gateways, or data analytics modules to further improve system functionality and business competitiveness.

2. Research Methods

The methodology of this research is compiled to provide a systematic and objective explanation of all the stages carried out in developing a desktop-based karaoke reservation system. The preparation of methodologies serves to ensure that the research process can be clearly understood, tested for truthfulness, and replicated by other researchers if needed. This research adopts a structured software development approach through the stages of needs analysis, system design, implementation, and testing. The first stage is a needs analysis, which is carried out to identify the main problems in the manual reservation process at karaoke venues. Needs data was obtained through observation and informal interviews with karaoke operations to find out the workflow, data needed, and obstacles that often arise. Based on this analysis, the system is expected to be able to handle customer recording, reservation schedule settings, room selection, automatic price calculation, and the presentation of room status information in real time.

The next stage is system design, which includes designing software architecture, designing user interfaces, and designing databases. The system architecture is designed using a three-layer model consisting of an interface layer, application logic, and database. The interface is built using Java Swing to provide a simple, interactive, and easy-to-understand interface for users. The database is designed using MySQL with tables that are integrated with each other, such as tables of customers, reservations, rooms, and transactions. The design is carried out to ensure consistency and integrity of data during the system operation process. The implementation stage is carried out by applying the design results into the form of an application program. The Java programming language was chosen because it has good support for desktop applications and wide compatibility across operating systems. Implementation includes the creation of customer input forms, room selection modules, scheduling modules, pricing calculation features based on duration of use, and reservation list views. Functional integration between modules with the MySQL database is bridged by a JDBC connection. This configuration facilitates direct and dynamic data exchange between applications and data repositories, which is a prerequisite for creating a centralized and efficient system.

The next stage is system testing, which is carried out using the functional test method (black box testing). Each feature is tested based on the compatibility between user-provided input and system-generated output. Evaluation parameters include the accuracy of data recording, the consistency of room status updates, the accuracy of price calculations, and the performance of the system in handling several reservation data in a row. Testing is carried out to ensure that all the main functions are working properly and meeting the operational needs of the karaoke venue. With this methodological structure, the research is able to provide a comprehensive overview of the development process of the karaoke reservation system. The stages arranged in order support the logical connection between needs, design, implementation, and results obtained, thus strengthening the validity of this research and its application in a real operational environment.

3. Results and Discussions

At this stage, the results of the development and testing of the karaoke reservation system are presented and analyzed based on the predetermined research objectives. In general, the system was successfully implemented using Java Swing as the user interface and MySQL as the database, enabling it to support a structured and computerized reservation process.

System Implementation Results

The system implementation includes several main modules, namely the customer data collection module, room selection and booking module, scheduling module, automatic cost calculation module, and reservation list display module. All modules are connected to the database via JDBC connection so that every process of data storage, updating, and retrieval can be done in real-time. The implementation test results show that:

- The customer input module can record customer data consistently without data duplication.
The customer input module is designed to ensure consistent and accurate recording of customer data without duplication. This module applies unique identifiers for each customer, such as customer ID or phone number, to prevent multiple entries of the same individual in the database. Input validation mechanisms are implemented to ensure that all required fields are completed correctly before the data is stored. By digitizing the customer registration process, the system minimizes common errors associated with manual data entry, such as incomplete information or illegible handwriting. As a result, customer data becomes more organized, reliable, and easily retrievable. This consistency supports administrative efficiency and enables better tracking of customer history, which can be useful for service evaluation, promotional strategies, and future system development.
- The room selection module is able to display a list of rooms and their status (available/occupied) directly based on the data in the database.
The room selection module provides a real-time display of available and occupied rooms based on database records. This feature allows officers to view room status instantly without relying on manual checks or verbal confirmation. By integrating room availability directly with the reservation database, the system ensures that the information displayed is always up to date. This reduces the risk of double bookings and improves decision-making during peak operational hours. The clear visualization of room status also speeds up the reservation process, as officers can immediately select suitable rooms according to customer preferences. Overall, this module enhances operational efficiency and improves service responsiveness.
- The scheduling module can process reservation requests by rejecting conflicting schedules, thereby avoiding scheduling conflicts.
The scheduling module plays a critical role in preventing reservation conflicts. It automatically checks the requested reservation time against existing schedules stored in the database. If a time overlap is detected, the system rejects the request and prompts the officer to choose an alternative time or room. This automated validation significantly reduces human error commonly found in manual scheduling systems. By ensuring that each reservation has a unique time allocation, the module helps maintain orderly room usage and avoids customer dissatisfaction caused by double bookings. Consequently, the scheduling process becomes more reliable and structured.
- The automatic cost calculation feature works accurately based on the duration of room usage input by the officer.
The automatic cost calculation feature accurately computes service fees based on the duration of room usage entered by the officer. The system applies predefined pricing rules, such as hourly rates, ensuring consistency in billing. This eliminates discrepancies that often occur with manual calculations, especially during busy periods. By automating this process, the system not only reduces calculation errors but also speeds up transaction handling. Transparent and accurate billing increases customer trust and supports better financial management for the business.
- The reservation list display provides more structured information, making it easier for officers to monitor daily activities.
The reservation list display presents reservation data in a structured and easy-to-read format. Information such as customer name, room number, reservation time, and payment details is organized systematically. This allows officers to monitor daily operational activities efficiently and track ongoing or completed reservations. The clear presentation of data supports faster decision-making and improves coordination among staff. Overall, this feature enhances operational control and service quality.

Overall, the system implementation shows that the application can run according to the initial design and is capable of handling the karaoke room booking process effectively.

System Testing Results

System testing was conducted using the black box testing method on each main feature. The test data was based on common scenarios that typically occur in karaoke venue operations.

Based on the test results:

- All user inputs were processed correctly according to the expected output.
All user inputs were processed correctly according to the expected output, indicating that the system logic and validation mechanisms functioned as designed. During testing, various input scenarios were examined, including complete data entry, edge cases, and invalid inputs. The system successfully validated required fields, rejected incomplete or incorrect entries, and stored valid data accurately in the

database. This demonstrates that the input handling process is reliable and capable of supporting daily operational activities without introducing data inconsistencies. Proper input processing is essential in preventing errors that could propagate to other modules, such as scheduling and billing. The results confirm that the system effectively supports accurate data capture, which is fundamental for maintaining data integrity and ensuring smooth reservation operations.

- The system is able to update room status immediately when a room is booked or finished being used.
The system is able to update room status immediately when a room is booked or finished being used. This functionality was tested by performing consecutive booking and checkout transactions, and the room availability status was updated in real time within the system interface. Such immediate updates ensure that officers always have access to current room information, reducing the risk of double bookings. Real-time room status management improves coordination among staff and enhances service efficiency, especially during peak hours. This result confirms that the integration between the reservation module and the database is functioning properly and supports accurate operational monitoring.
- The system showed stable performance when tested with several consecutive reservation entries.
The system showed stable performance when tested with several consecutive reservation entries. Stress testing was conducted by simulating multiple reservation transactions within a short period. The system maintained responsiveness, with no crashes, data loss, or performance degradation observed. This stability indicates that the system architecture and database design can handle routine operational loads effectively. Stable performance is crucial for ensuring uninterrupted service and maintaining user confidence. The test results demonstrate that the system is reliable for daily use in a real-world karaoke business environment.
- No calculation errors were found in the auto-pricing feature for all duration variations.
No calculation errors were found in the auto-pricing feature for all duration variations. The system accurately calculated costs based on different usage durations and predefined pricing rules. Tests included short, standard, and extended reservation durations to ensure consistency. The results confirm that the automated pricing logic eliminates manual calculation errors and ensures billing accuracy. Accurate cost calculation not only improves financial transparency but also enhances customer trust and administrative efficiency.

These test results show that the core features of the system have met the functional requirements set out in the analysis phase.

Analysis of Results and Discussion

When compared to the manual reservation process, the developed system provides significant improvements, especially in terms of speed, accuracy, and data consistency. The time required to complete a reservation transaction is shorter, as staff no longer need to make manual records or check room availability one by one.

In addition, data digitization has proven to minimize recording errors, such as customer name errors, data duplication, or schedule inconsistencies. Full integration between the customer, room, and transaction modules makes it easier for officers to monitor all operational activities.

In terms of user experience, the use of Java Swing provides an interface that is simple yet easy for users to understand. Although not as complex as modern web-based applications, the system still meets operational needs and can be run on various computer devices without requiring additional installation.

Theoretically, the results of this study are in line with the basic concepts of management information systems that emphasize the importance of data integration and process efficiency. The system also supports the principle of usability, namely ease of use, consistency of appearance, and clarity of workflow.

Research Limitations

Some limitations found in this study include:

- The system does not yet support online ordering by customers, so all transactions still depend on operators.
- There are no daily or monthly statistical reports available to assist in managerial decision-making.
- The interface display is still basic, making it unsuitable for large-scale use with more complex visual requirements.

Nevertheless, these limitations can serve as a basis for further research and development in the future.

Implications of Research Results

The implementation results show that the desktop-based karaoke reservation system developed can be a practical solution for karaoke businesses that still use manual recording. With further improvements, this system has the potential to be developed into a commercial-scale application and used by various entertainment service providers.

Tables and Figures

Table 1. Incoming Order Report

No	Code	Customer Name	Room	Phone Number	Date	Time/ Hour	Long Karaoke	Price	Status
1	03	bagus	Small3(Max 3)	089087654321	2025-01-10	14:00-15:00	1	50000	Full
2	04	Andi	Small3(Max 3)	087654321234	2025-01-10	10:00-11:00	1	50000	Full
3	01	Rizky	Small1(Max 3)	081345676533	2025-01-04	07:00-08:00	1	50000	Full
4	09	fathul	Medium 1(Max 5)	08234567889	2025-11-29	23:00-01:00	2	160000	Full

The report was created on: Tue Nov 25 18:24:46 WIB 2025

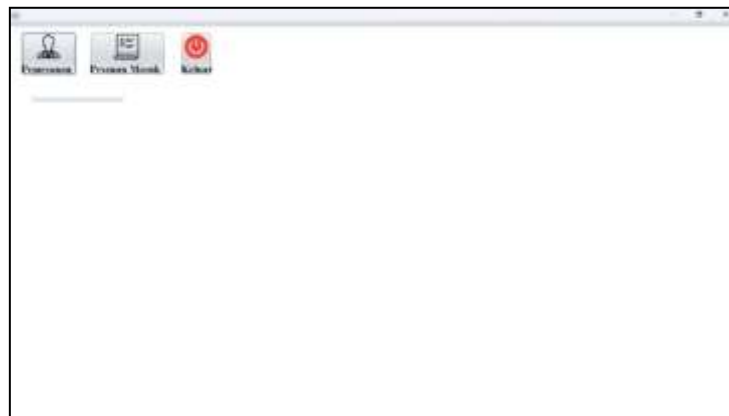


Figure 1. Initial display



Figure 2. Order menu



Figure 3. Save order




Figure 4. Refresh



Figure 5. Order information



Figure 6. Print incoming orders

A screenshot of a database management system interface showing the 'Table structure' view for a table. The table has 10 columns: 'id' (int(11), AUTO_INCREMENT), 'kode' (varchar(50)), 'nama' (varchar(100)), 'alamat' (varchar(100)), 'no.kamar' (varchar(15)), 'tanggal' (date), 'jam' (varchar(20)), 'lampiran' (int(11)), 'harga' (decimal(10,2)), and 'status' (char(5)). Each column has a 'Change' and 'Drop More' button next to it.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	kode	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	nama	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
4	alamat	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
5	no.kamar	varchar(15)	utf8mb4_general_ci		No	None			Change Drop More
6	tanggal	date			No	None			Change Drop More
7	jam	varchar(20)	utf8mb4_general_ci		Yes	NULL			Change Drop More
8	lampiran	int(11)			No	None			Change Drop More
9	harga	decimal(10,2)			No	None			Change Drop More
10	status	char(5)	utf8mb4_general_ci		No	None			Change Drop More

Figure 7. Database tabel

4. Conclusion

Based on the results of implementation and testing, it can be concluded that the desktop-based karaoke reservation system can improve operational efficiency through a more structured, accurate, and error-free recording process. This system successfully integrates customer data, room scheduling, room status updates, and automatic payment calculations into a single platform that is easy for operators to use. Functional testing shows that all features work according to user needs and can reduce schedule conflicts and information inconsistencies that often occur in manual procedures. Although it still has some limitations, such as the lack of online booking and statistical reporting features, this system has made a significant contribution to supporting the reservation management process in karaoke businesses and can be further developed to achieve maximum performance.

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