



Development of a Web-Based Sales Information System for Benson Bakery Using the Waterfall Model

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ABSTRACT

The rapid development of information technology has encouraged many businesses, including small and medium enterprises, to adopt information systems for business management. Benson Bakery, a bakery and pastry business, still relies on manual record-keeping, leading to delayed reports, data loss, and order inaccuracies. This study aims to design a web-based sales information system to improve operational efficiency and service quality. The system development method used is the Waterfall model, which includes the stages of requirement analysis, design, implementation, testing, and maintenance. The result is an integrated system capable of managing product, order, and report data in real-time. The implementation of this system is expected to optimize business processes at Benson Bakery and enhance customer satisfaction.

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INTRODUCTION

The rapid advancement of information technology has significantly impacted various sectors, including the business world. According to Turban, Volonino, and Wood (2023), the internet has become a primary tool in supporting business activities, from marketing to sales transactions. The use of information technology not only increases operational efficiency but also expands market reach and enhances competitiveness.

One of the most widely adopted implementations of information technology today is web-based information systems. These systems allow business actors to manage sales data in a real-time, accurate, and integrated manner. With the convenience of access anytime and anywhere, web-based systems are highly suitable for small and medium enterprises (SMEs) that aim to improve their service quality.

Benson Bakery is one such SME operating in the production and sale of bread. Currently, its sales processes are still conducted manually, from transaction recording to inventory management. This manual approach causes several problems, such as recording errors, transaction delays, and inefficiencies in inventory control. In addition, customers often face difficulties in obtaining accurate and up-to-date information about products, prices, and availability.

To address these issues, a computerized, web-accessible sales information system is needed. This system is expected to assist Benson Bakery's management in managing sales data, speeding up transaction processes, and providing accurate information to customers.

This study adopts the Waterfall model for system development. This method is chosen due to its systematic workflow, making it suitable for projects with clearly defined requirements from the beginning. According to Hidayati (2020), the Waterfall method consists of several stages: requirements analysis, system design, implementation, testing, and maintenance.

Based on the above background, this study aims to design and develop a web-based sales information system at Benson Bakery using the Waterfall method to improve the efficiency and effectiveness of its business processes.

METHOD

This research focuses on designing a web-based sales information system for Benson Bakery. The main objective is to develop a system that simplifies sales transactions and data recording, facilitates customers in accessing product information, and assists administrators in managing and delivering sales-related information through integrated web technology.

The system development model used in this study is the Waterfall method. Waterfall is a systematic and sequential software development model in which each phase must be completed before proceeding to the next one (Baihaqi, 2023). The phases in the Waterfall method include requirement analysis, design, implementation, testing, and maintenance (Sommerville, 2023).

The following are the stages of the Waterfall method applied in this research:

1. Requirements Analysis
This initial phase involves identifying the core problems, proposing solutions, and analyzing system requirements to ensure the software meets user expectations.
2. Design
Based on the analyzed requirements, this phase focuses on designing the system architecture, including process modeling, data modeling, and user interface design.
3. Implementation
The design is translated into executable code using the programming language chosen by the development team.
4. Integration and Testing
Each software component is tested individually and then integrated to ensure all modules function correctly and meet predefined specifications.
5. Operation and Maintenance
Once the system is deployed, regular maintenance is conducted to fix bugs and adapt the system to future changes or user needs.

RESULTS AND DISCUSSION

Results

This study resulted in the development of a web-based sales information system for Benson Bakery, which includes essential features such as product data management, order processing, sales reporting, and admin account control. The system was designed with a user-friendly interface to facilitate data access and operations for the administrator. Data security is ensured through a login authentication system to restrict unauthorized access.

The user interface was developed using a simple, informative, and responsive design approach to support digital administration and improve operational efficiency. The main features include:

1. Homepage

This landing page displays the business identity, key services, and primary navigation. It helps users, particularly admins, to access system features efficiently.



Figure 1. Main Page View

2. About Page

Provides information about the business profile, vision, and core values of Benson Bakery. This section supports branding and builds customer trust.



Figure 2. View About Benson Bakery

3. Admin Login Page

Serves as the entry point for authentication. Only authorized users with valid credentials can access the system to ensure data confidentiality.

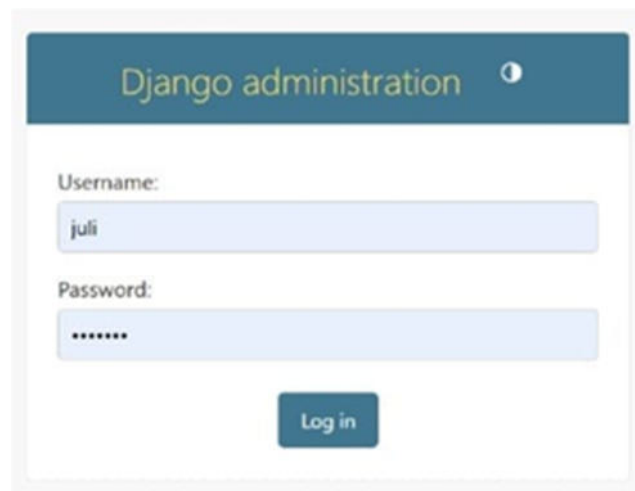


Figure 3. Admin Login View

4. Order Entry Page

Enables digital recording of customer transactions. Orders entered are automatically stored in the database, streamlining the reporting process.

Benson Bakery Home Pesan Tentang Kami Admin

Data Pemesan

Nama:

Email:

Alamat:

No. HP:

Figure 4. Booking Data Display

5. Admin Dashboard

Acts as the control center where administrators manage all system data. A well-organized menu interface facilitates effective system operation and management.

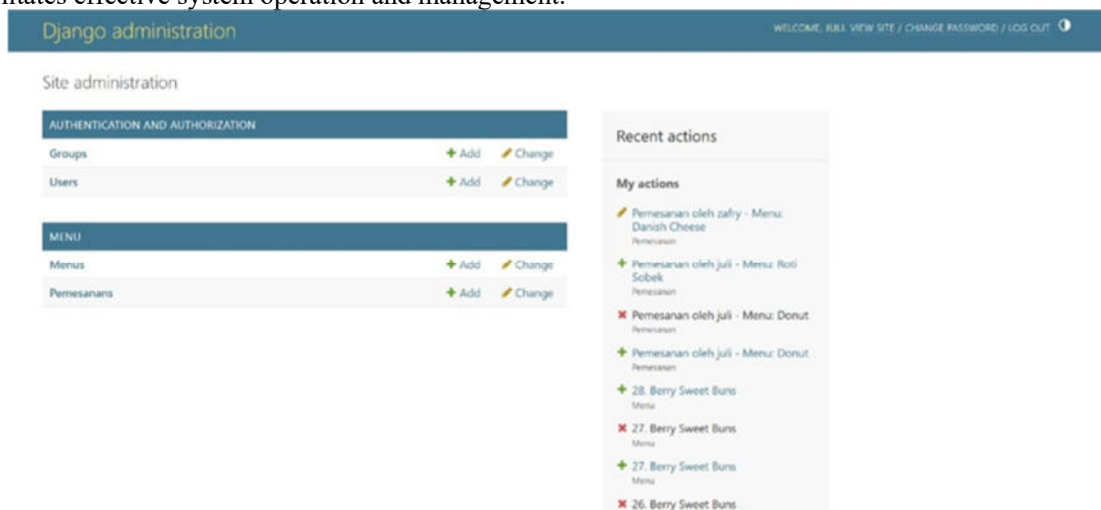


Figure 5. Admin Page View

Discussion

The implementation of this web-based system has improved data management efficiency compared to the previously used manual system. Real-time data handling for orders and product inventory significantly reduces the risk of data loss and recording errors. Additionally, the system provides flexibility by allowing access anytime and anywhere, which enhances service quality for customers. The outcome indicates that the developed system meets the functional requirements and objectives set at the beginning of the research.

CONCLUSION

The development of a web-based sales information system at Benson Bakery has resulted in a functional system that aligns with user requirements. The system is equipped with key features such as product data management, order recording, sales reporting, and secure administrative access. The implementation of this system has proven to support the digitalization of business operations, improve transaction management efficiency, and minimize the risk of recording errors. Based on the testing results, the system performs well and is easy to use. Therefore, the research objective—to design and build an effective web-based sales system for Benson Bakery—has been successfully achieved. For future development, it is recommended to add

features such as automatic stock tracking, customer database management, and integrated notification systems to enhance service quality and overall business operational effectiveness.

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