A Website Based Digital Cashier System for Bakery Shops with Real-Time Transaction and Reporting Features

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Article Info	ABSTRACT
	The *bakery* business as one of the fast-growing small and medium enterprises (SMEs) sector needs technological solutions that are able to meet the needs of fast and accurate transactions. The researcher found problems with the cashier system in the bakery where it still often uses conventional transactions due to various obstacles, such as limitations in recording transactions, difficulties in monitoring stock in real time, and a long-time reporting process. This condition can hinder productivity and timely decision-making. This research aims to develop a website-based digital cashier system, *bakery* businesses can optimize their operations through integrated features. The method used in designing the system is Waterfall, which includes the stages of needs analysis, One of the important features is real-time transactions, which allow the cashier to record sales directly and synchronize the data to the server. In addition, the *real-time report feature* makes it easier for bakery business owners to monitor business performance instantly, without having to wait for a manual recapitulation process. A web-based digital cashier system for bakeries is a relevant and strategic solution because it can provide added value to bakery business management, both in terms of operational efficiency and increased customer satisfaction. By utilizing this technology, it is hoped that bakeries can compete more effectively in an increasingly competitive market.
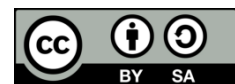
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1. Introduction

A system is a unit consisting of elements or components that interact, relate and work together in an organized manner to achieve a certain goal. A system has an orderly structure and is supported by a process or mechanism that governs how the components are interconnected. A system can be simple or complex, depending on the number and complexity of the elements and the relationships between them [1].

Digital technology has revolutionized various aspects of life, ranging from communication, education, business, to entertainment, by providing ease and speed in processing and disseminating information. Digital concepts also involve transforming traditional processes into electronic forms, such as digitizing documents or work systems. With the continued development of digital innovations, such as artificial intelligence and cloud computing, the world is increasingly connected globally, creating new opportunities for collaboration and efficiency across sectors[2].

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The development of information system technology has played a major role in providing added value to the economy. Efficiency in various fields especially in the sale, purchase and ordering of cakes. Where every company and industry really needs the role of information systems in running the sales, purchasing and ordering processes.

Based on the observations that have been made, the Bakery Shop has its own business process which in its daily activities is carried out manually, especially in the sales department [3]. In the process of selling cakes, orders and sales of cakes are recorded manually in the notebook, as well as in the sales process. Transactions are also calculated and written on manual sales records. Then the data on the sales note is collected to record the data in the sales ledger at the end of working hours or the next day, but only incoming transactions are recorded in the sales book. This is considered less efficient because cash flows are not recorded correctly and these activities are carried out repeatedly. And because of the size of the production cost depends on the price of raw materials. Sometimes the price of raw materials also increases and decreases, this also makes it difficult for owners to determine the selling price of cakes.

Web-based refers to systems, applications, or services accessed through an internet browser without the need for the installation of special software on the user's device[4]. Technology-based *Copyright* © it utilizes the HTTP/HTTPS protocol and is designed to be accessible from a variety of devices, such as computers, tablets, or smartphones, as long as it's connected to the internet. Web-based systems include data management applications, online stores, academic information systems, and social media. With the support of modern technologies such as PHP, HTML5, CSS, and JavaScript, web-based applications are now able to provide an interactive and responsive experience[5]. The main advantages are flexibility, ease of updating and global accessibility so that it is very relevant in supporting the needs of individuals and organizations in the digital era.

Starting a business doesn't always require a lot of capital. With creativity and perseverance, a hobby, skill or talent can be turned into a profitable business. In the world of entrepreneurship, there is a guideline that starting a business does not always require large capital. However, hard work, perseverance and seriousness are the capital that can make a business continue to grow. The *bakery* business as one of the fast-growing small and medium enterprises (SMEs) sector needs technological solutions that are able to meet the needs of fast and accurate transactions. Conventional cashier systems often face various obstacles, such as limitations in recording transactions, difficulties in monitoring stock in real time, and a time-consuming reporting process. This condition can hinder productivity and timely decision-making.

With the presence of a website-based digital cashier system, *bakery* businesses can optimize their operations through integrated features. One of the important features is real-time transactions, which allows the cashier to record sales directly and synchronize the data to the server. In addition, the *real-time report feature* makes it easier for bakery business owners to monitor business performance instantly, without having to wait for a manual recapitulation process.

The implementation of this system also allows for centralized management of customer data, raw material stocks, and sales history [6]. This not only improves efficiency, but also provides a better experience for customers through faster and more accurate services. In addition, these systems can aid in strategic decision-making through more in-depth data analysis, such as sales trends, customer preferences, and more optimal inventory management. With the support of automation, the risk of human error can be minimized, making business operations more reliable and productive.

Therefore, the development of a web-based digital cashier system for bakeries is a relevant and strategic solution[7]. This system can provide added value to the management of the bakery business, both in terms of operational efficiency and increased customer satisfaction. By utilizing this technology, it is hoped that bakeries can compete more effectively in an increasingly competitive market

2. Research Methods
2.1 Research Time and Place
The research was carried out for 3 months (three), starting from October to December. The location of the study is Toko Bunda Reni *Bakery* , in Muara Enim City, South Sumatra.
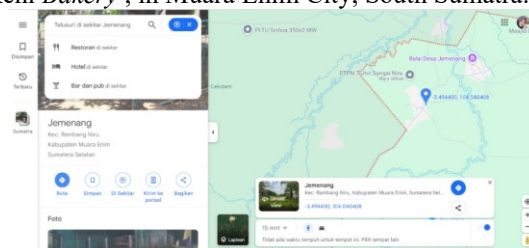

Figure 1. Research Location

2.2 Data Collection

In the discussion of the methodology of this research, there are several data collection techniques that will be discussed in this study, namely:

a. Observation is a data collection technique carried out by researchers directly observing the research area to closely observe the activities being carried out. Direct observation at Bunda Reni Bakery Shop to find out the problems that exist.

b. Literature Study is a data collection technique that is carried out by studying and collecting information from reference sources of books, journals and other sources that are directly related to the discussion of this research.

2.3 System Development Methods

Information system development is often referred to as the system development process. System development can be defined as drafting a new system to replace the old system as a whole or improve an existing system. Many system development methods are available. System development is an old system that is processed in such a way or replaced to become a new system and undergo changes in a better and more useful direction. The old system needs to be repaired or replaced due to several things, namely the existence of problems.

The most well-known method is also called System Development Life Cycle (SDLC). SDLC is a common methodology used to develop information systems and has several models in the application of the process stages, including Sequential Model or Waterfall model, Parallel Model, Iterative Model, Prototyping Model, RAD (Rapid Application Development) Model, Spiral Model, VShaped Model and Agile Development[15].

The system development model used by the author in this study is the waterfall motel. The waterfall method is a systematic approach model that works in order with the existing stages. The waterfall SDLC model is often called the linear sequential model or the classic life cycle.
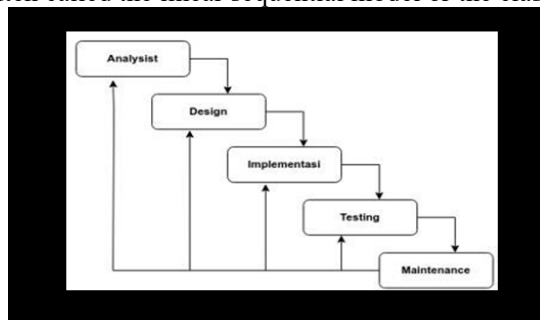

Figure 2. Waterfall Method

a. Analysis

The process of collecting needs is carried out intensively to specify the needs of the software so that the software can be understood as needed by the user. In this needs analysis, it aims to analyze the needs needed in the design both in the form of documents and other sources that can help in determining solutions to existing problems.

b. Design

Software design is a multi-step process that focuses on the design of software program creation including data structures, interface architectures and coding procedures. In addition, design is also a flow of a detailed software and algorithm.

c. Implementation

At this stage the design must be translated into the software program codes. The result of this stage is a computer program according to the design that has been designed in the previous design stage.

d. Testing

Testing focuses on the software in terms of logic and functionality to ensure that all parts have been tested. This is done to minimize errors and ensure that the output produced is in accordance with what is cooled. Program testing is carried out using *BlacBox Testing* in the hope that the design that has been made can run according to desire.

e. Maintenance

The last stage, the support or maintenance stage, can repeat the development process from specification analysis to changes to existing software, but not to create new software.

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3. Results and Discussion

3.1 Running system

The pastry shop that was the subject of the study had a manual sales system that involved recording transactions by the cashier, updating inventory stock, and manually compiling sales reports. Although the system has been running for several years and is capable of serving customers, there are a number of significant limitations. These limitations include a low level of accuracy in recording transactions due to human error, a slow sales reporting process that hinders decision-making, and difficulties in tracking inventory stock in real-time, which can lead to inefficiencies in stock management

3.2 Proposed system

To overcome the limitations of the manual system used by the cake shop, the proposed system is a *website-based digital* cashier system equipped with automatic transaction recording features, real-time stock management, and computerized sales reports. This system will allow cashiers to accurately record transactions using web-based tools, thereby reducing the risk of human error. In addition, inventory stock *updates* will be carried out automatically every time a transaction occurs, allowing stock monitoring to avoid shortages or excess stocks. The integrated sales reporting feature will automatically generate reports in no time, providing relevant information to support faster and more informed decision-making.

With this system, pastry shops can improve operational efficiency, optimize inventory management, and provide better service to customers. The following is the workflow of this digital cashier system :
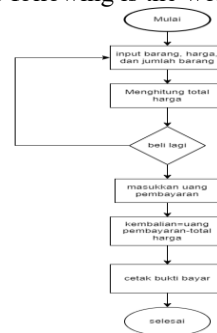

Figure 2. Proposed system

3.3 System Planning

System design is an important step in software development that aims to design a new system or improve an existing system to be more effective and efficient in supporting user needs. In this context, the design was carried out to build a website-based digital cashier system that can handle transactions, stock management, and the preparation of sales reports in real-time. In this design, the Unified Modeling Language (UML) approach is used, which is a visual modeling language used to design and document systems in a structured manner. UML provides different types of diagrams for modeling aspects of the system, such as workflows, data structures, and interactions between components. Here is an explanation of system design with the various UML diagrams used:

3.3.1   Use Case Diagram

One of the first steps in system design is to create a Use Case Diagram. This diagram depicts the various actors involved in the system, such as cashiers, store managers, and customers, as well as the various use cases that include the actions they perform. Use Case Diagrams allow us to visually understand the interaction between actors and systems.

In this case the Use Case Diagram describes how the cashier will use the system to record sales, how the store manager will access the sales reports, and how the customer will interact with the system in terms of payment. This diagram helps in designing the core functions of the system to be implemented.

Figure 3. Use Case Diagram

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3.3.2   Activity Diagram

The following is an explanation of the Activity Diagram on the Suit and Kebaya Rental Website in Palembang using the Waterfall Method, as follows:

3.3.3   Cashier Activity Diagram

Use Case Diagram is used to illustrate an activity between cashiers. In Figure 4. is an activity diagram in the Digital Cashier system:
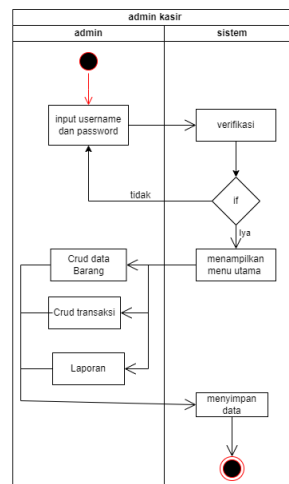

Figure 4. *Cashier Activity Diagram*

3.3.4   Class Diagram

The image below explains the class diagram about the relationship between entities used on the Bunda Reni Bakery Digital Cashier website.
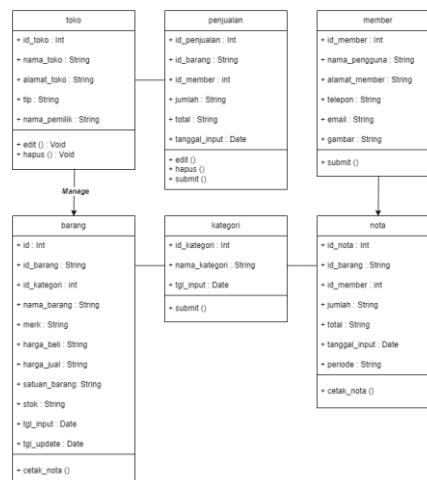

Figure 5. Class Diagram

3.4 User Interface Implementation

3.4.1   Login Page

This login page functions to log in to the system or website, the admin logs in, namely entering the username and password.
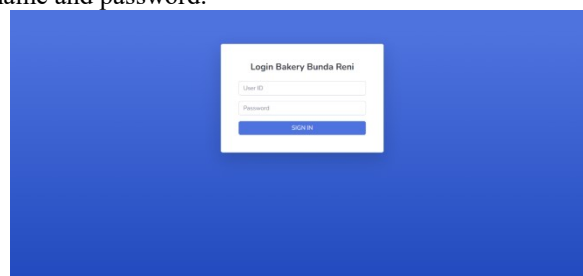

Figure 6. Login Page

3.4.2 Cashier Dashboard

The cashier dashboard page has 4 menus that have each function.

7. Cashier Dashboard Page

3.4.3 Item Data Page

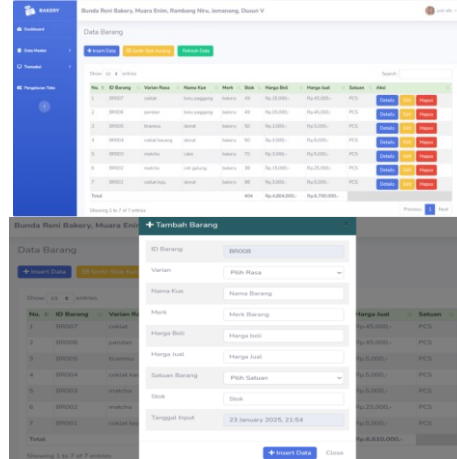This item data page is to see the availability of goods, increase the stock of goods
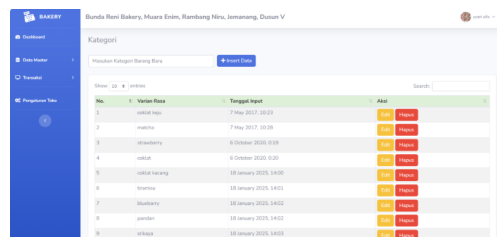

Figure 8. Item Data Page

3.4.4 Category Pages

Figure 9. Category Pages

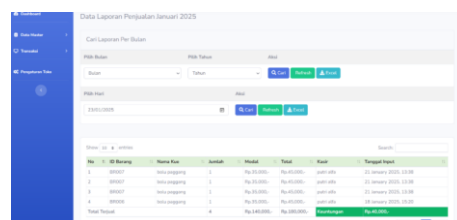### 3.4.5 Transaction Page

Figure 10. Transaction Page

3.4.6 Report Page

Figure 11. Report Page

3.4.7   Cashier Profile Page

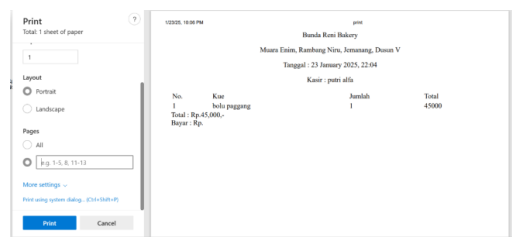Figure 11. Cashier Profile Page

3.4.8   Print Notes

Figure 11. *Print Notes*
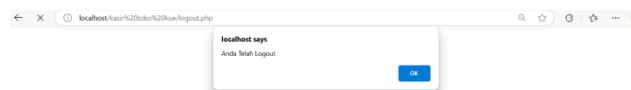
3.4.9   Logout Page

Figure 12. Logout Page

4.   Conclusion

The website-based digital cashier system designed for Bakery Shop stores has successfully met operational needs by overcoming the limitations of manual systems. The system allows for real-time transaction logging, automated stock management, and fast and accurate sales reports. With these features, the system improves operational efficiency, minimizes recording errors, and provides relevant data to support strategic decision-making.

Acknowledgments

1. Further Development: Add features such as digital payment integration and customer management to improve service to consumers.
2. User Training: Provide training to store staff to use the system to the fullest.
3. System Maintenance: Perform regular maintenance to ensure the system remains in optimal function and avoid technical issues.
4. Customer Feedback: Collect feedback from users for future system improvements and development.

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