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Design of an Online Sales Information System using a Pre-order System for Mochicrush ID in Jambi City Based on Web

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ABSTRACT

Mochicrush ID is an individual business engaged in selling food, specifically mochi, using a pre-order system. Promotion is conducted through Instagram; however, order recording often faces challenges as it is still done manually using books or mobile phones, which risks lost records and calculation errors. This issue affects the accuracy of sales information and can hinder overall business operations. This study aims to design an efficient and integrated system to manage sales transactions and pre-order processes via a web-based platform to improve the order recording and processing. The system is developed using the Laravel framework and MySQL database with the Waterfall software development method. The resulting system is expected to minimize errors in order recording, increase operational efficiency, and simplify the management of orders for the business owner. With the implementation of this computerized system, the operational performance of Mochicrush ID can be enhanced, ultimately contributing to improved customer satisfaction.

Keywords: Pre-Order, Mochicrush ID, Transaction Efficiency, Customer, Website

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SDGs: Quality Education (4); Decent Work and Economic Growth (8); Peace, Justice and Strong Institutions (16)

INTRODUCTION

E-commerce is a digital platform connected to the internet that allows sellers and buyers to conduct transactions online. E-commerce not only facilitates transactions but also creates a global market by connecting sellers and buyers from various countries through the internet. (Hanifah et al., 2023), (Rerung, 2018). In this context, the use of websites becomes an important component as they can present information and facilitate interactions among users. Websites, categorized into three main types—static, dynamic, and interactive—play a crucial role in supporting e-commerce (Herliana & Rasyid, 2016), (Abdulloh, 2018). As technology and information advances, its application in online business increasingly enhances operational efficiency. Information technology enables fast data processing, secure storage, and efficient information delivery (Rachmadi, 2020). In the online food sales industry, the application of information technology provides convenience for customers to place orders, track deliveries, and provide reviews. Therefore, the implementation of information technology in business is crucial for improving progress and competitiveness.

One of the transaction models that has developed in e-commerce is the pre-order (PO) system, where sellers accept orders before producing the goods (Utami, 2022). Mochicrush ID, an individual business engaged in selling food in the form of mochi in Jambi City, implements the pre-order system to serve its customers. However, during the online ordering process, several issues often arise, such as order recording done manually in notebooks or on mobile phones. Common problems include errors in recording orders, lost records, and calculation errors, which result in inaccurate information. In light of these issues, the author is interested in conducting research to design a web-based information system using the waterfall method and Laravel framework. Laravel was chosen because it is a popular framework within the PHP community, known for being fast and easy to use (Russel, 2016). This system is expected to address the problems faced by Mochicrush ID and enhance efficiency in the pre-order process.

Previous studies have shown that the application of information technology and management information systems can help resolve similar issues. (Hasan, Nur Fitrianingsih Amborowati, 2020) designed a management information system for companies, while (Syabania & Rosmawani, 2021) demonstrated that implementing customer relationship management (CRM) can facilitate customers in understanding products and expedite the ordering process.(Hilmi & Tawakal, 2021). developed an application with pre-order services to ease transactions. Additionally, research by (Kusumawati et al., 2018). utilized the Bootstrap framework to create an attractive and

dynamic website interface, while (Faqih & Mutmainnah, 2022) used MVC architecture with Laravel for a purchasing management system.

This study aims to examine the business processes of Mochicrush ID, design a web-based online sales information system, and develop a more efficient pre-order system. It is hoped that this system can enhance the ease of the ordering process and reduce frequent errors.

LITERATURE REVIEW

E-Commerce

Online sales, or e-commerce, occur when buying and selling activities are conducted online through electronic devices connected to the internet. According to (Adicandra Fauzan Triananda, 2023), "e-commerce is a website connected to the internet that offers or facilitates online transactions, and it is also a method of shopping and transacting online." According to (Hanifah et al., 2023), "e-commerce is a buying and selling activity just like traditional transactions, except that the parties involved do not meet in person but communicate electronically via the internet."

Thus, it can be concluded that e-commerce is a buying and selling activity that involves buyers and sellers through the internet, enabling both to shop, sell, and transact easily through online platforms.

Pre-Order

The pre-order system is a transaction method that allows buyers to order a product and make payment in advance. The pre-order system benefits both parties by giving buyers early access to desired products and providing sellers with initial information about customer interest. Pre-order is an online transaction where buyers must pay a certain amount upfront when ordering an item, and the ordered item will be delivered later (Hilmi & Tawakal, 2021). According to (Hanifah et al., 2023), the pre-order system is a sales transaction system where the availability of the product is not immediate, but this does not mean the item is out of stock. The product is typically produced in limited quantities, and buyers can order it in advance through a booking system and payment process, with the transaction being agreed upon between the seller and buyer, who communicate electronically.

In conclusion, pre-order is an online transaction method where products are ordered in advance, payment is made upfront, and delivery occurs once the item is available.

Website

A website, or web, is an information page provided through the internet, allowing access worldwide as long as there is an internet connection. According to (Adicandra Fauzan Triananda, 2023), "A website is a collection of pages used as a storage space for data and information based on specific topics, capable of displaying text, images, animations, sound, and video, both static and dynamic, forming a series that is interconnected, with each being linked by a network of pages." A website is defined as a page available on a server that can be accessed using the internet, containing various types of information from specific content (Herliana & Rasyid, 2016).

Based on the above definitions, it can be concluded that a website is a collection of pages that meet various needs, including text, images, animations, audio, video, or combinations thereof, created for specific purposes and accessible via the internet.

Unified Modelling Language (UML)

Unified Modeling Language (UML) is a language used in software development that designs and documents the structural behavior of software systems, facilitating system development. According to (Prihandoyo, 2018), "Unified Modeling Language is a visual modeling method used in the design and creation of object-oriented software."

According to (Mubarak, 2019) UML (Unified Modeling Language) is a graphical language used to visualize, specify, build, and document object-oriented software development systems, providing a standard for writing a system blueprint, which includes business process concepts, the writing of classes in specific programming languages, database schemas, and the components necessary for the software system.

Based on the definitions above, it can be concluded that Unified Modeling Language (UML) is a visual modeling method based on graphics/images for software development systems that includes business process concepts, the writing of programming language classes, database schemas, and other necessary components, thus aiding in the facilitation of system development.

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RESEARCH METHODS

Research Stages

The Research Stages can be used as a guide for conducting the research process to ensure that the researcher can carry out the study in a structured manner and that the research proceeds according to the intended goals. The following are the research stages undertaken:

1. Problem Identification

   The problem identification stage is conducted to understand the existing issues, such as the order recording problems faced by Mochicrush ID customers, and to seek solutions to the problems addressed in this research.

2. Literature Review

   The literature review stage is carried out by reading and gathering data from several journal and book sources related to the research problem, which serves as the foundation for conducting the study.

3. Data Collection

   The data collection stage is conducted through interviews with the owner of Mochicrush ID to obtain accurate information regarding the issues raised. Following this, an observation of the ongoing business processes is conducted for analysis. Documentation is also carried out to provide the necessary information.

4. Data Analysis

   The next stage is data analysis, which is done to develop a new system. This analysis examines both functional and non-functional requirements and designs using models or techniques like Unified Modeling Language (UML), such as use case diagrams, activity diagrams, and class diagrams. Additionally, this research addresses the design of input, output, and data structures.

5. System Design

   After that, the system design stage is conducted, starting from sketching, designing, and drafting the system, which will eventually function.

6. Report Writing

   Writing the final report titled "Design of an Online Sales Information System Using a Pre-Order System for Mochicrush ID in Jambi City Based on Web."

Research Model Development

In this research, the waterfall model is used to develop the system by following a systematic and sequential approach, where each stage is required to wait for the completion of the previous stage before proceeding to the next one.

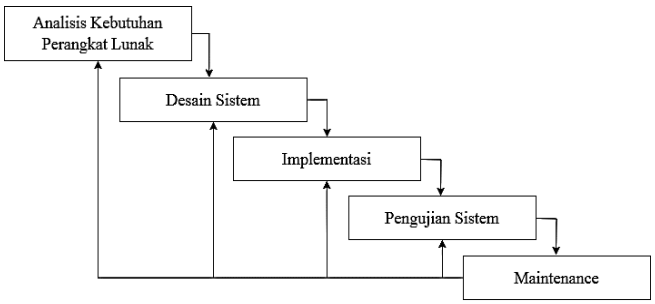

Figure 1. Waterfall Model

(Traver, 2019)

To explain the system development technique using the waterfall model:

1. Software Requirements Analysis

   Analyzing the software requirements for the system to be built by identifying existing problems and finding the necessary solutions to design the system.

2. System Design

   System design is carried out by creating data designs, interfaces, and system architecture using tools that explain how the new system will function. Several schemas or diagrams included in the Unified Modeling Language (UML) are use case diagrams, activity diagrams, and class diagrams.

3. Implementation

   Implementation is done by developing a web-based online sales application using a pre-order system, leveraging the Laravel framework and MySQL database.

4. System Testing

   System testing is conducted to ensure that the produced software meets the required needs and functions as intended.

5. Maintenance

   The maintenance stage is where the completed Mochicrush ID online sales software is operated, followed by periodic maintenance.

RESULTS AND DISCUSSION

System Analysis

System Analysis of the Current Process

The following is the flow of the current system for ordering and delivery:

1. The customer visits Mochicrush ID's Instagram account (@mochicrush.id).
2. They select a product and place an order via Instagram or WhatsApp by filling in the provided form, including the buyer's name, phone number, mochi flavor variant, complete address (using online delivery services), and selecting a payment method (cash or transfer).
3. The admin receives the order from the buyer.
4. The product is delivered according to the predetermined schedule.

Problem-Solving Solutions

To resolve these issues, the author proposes the following solutions in the form of an online sales information system design:

1. Designing an online sales information system that can add, modify, delete, and search for orders in a computerized manner.
2. The system is designed to make it easier for customers to view products and place orders.

System Requirements Analysis

Unified Modeling Language (UML)

The Unified Modeling Language (UML) is a modeling tool used in designing and developing object-oriented software (Utami, 2022). UML is a language that allows the use of visual representations to depict, specify, and develop object-oriented software systems. Additionally, UML provides written guidelines for system design, which include concepts of business processes, programming class definitions, database schemas, and software development components (Herliana & Rasyid, 2016).

Use Case Diagram

The use case diagram is a representation of the relationships or interactions between actors and the system being designed or built. It helps in identifying the functions present in the system, as well as the parties who have permission or access to use these functions (Abdulloh, 2018). The use case diagram explains the interactions of the system being designed or desired (Prihandoyo, 2018).

a. Use Case for Visitors and Customers

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The image below illustrates the use case diagram featuring the actors of visitors and customers who can interact with the system, along with the individuals who can operate the system.

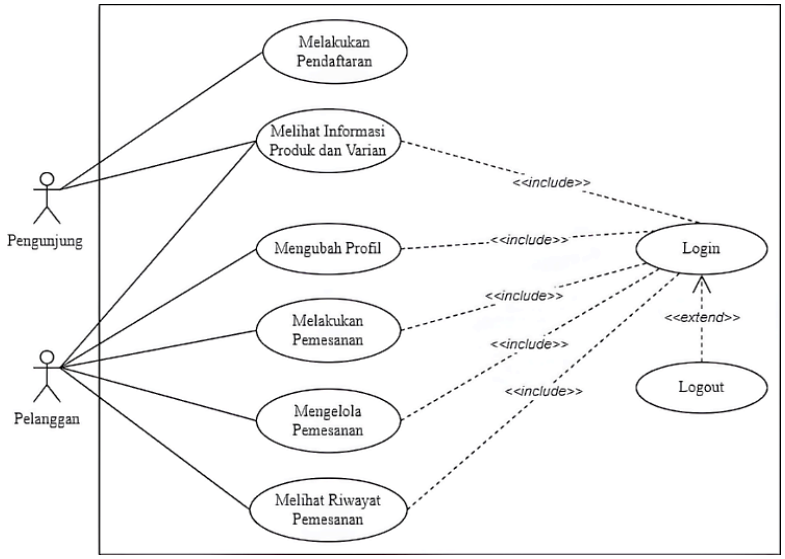

Figure 2. Use Case Diagram for Visitors and Customers

The image below depicts the use case diagram for the admin as a user interacting with the system.

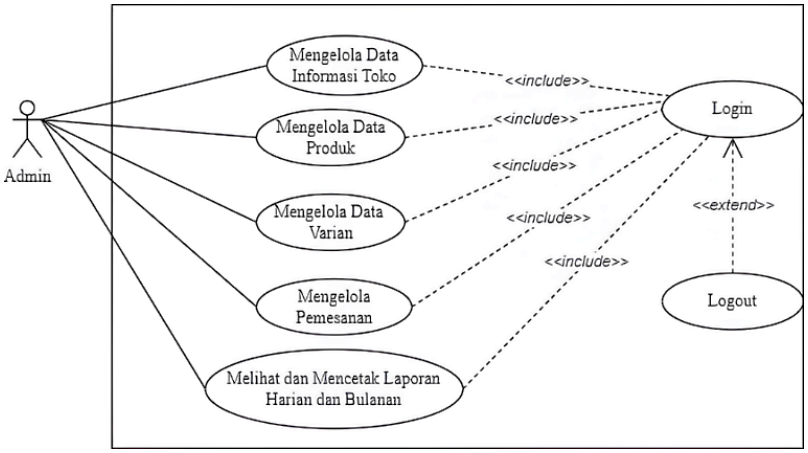

Figure 3. Use Case Diagram for Admin

Activity Diagram

An activity diagram is an explanation of the actions or activities that occur within the system rather than by the actors (Abdulloh, 2018). The activity diagram illustrates the activities performed by the system, explaining the workflow, including how activities are initiated, the possible decisions to be made, and how the process will conclude (Prihandoyo, 2018)**.**

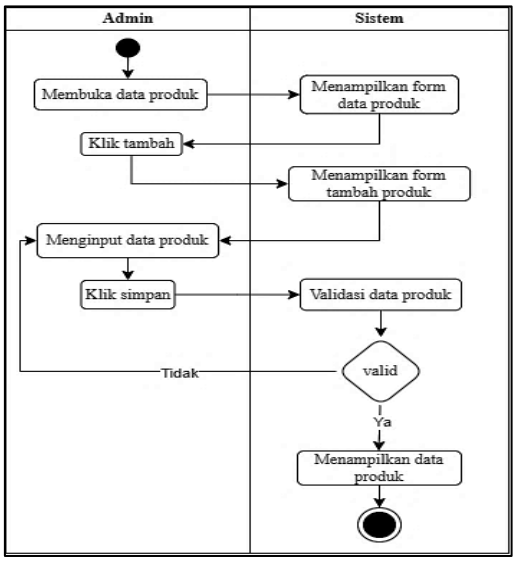

Figure 4. Activity Diagram

Class Diagram

The class diagram illustrates the structure of the program's database process (A. Syamil et al, 2023). The class diagram displays the system's structure through the classes intended to build the system. These classes are equipped with class attributes and methods that execute the functions of the class (Prihandoyo, 2018).

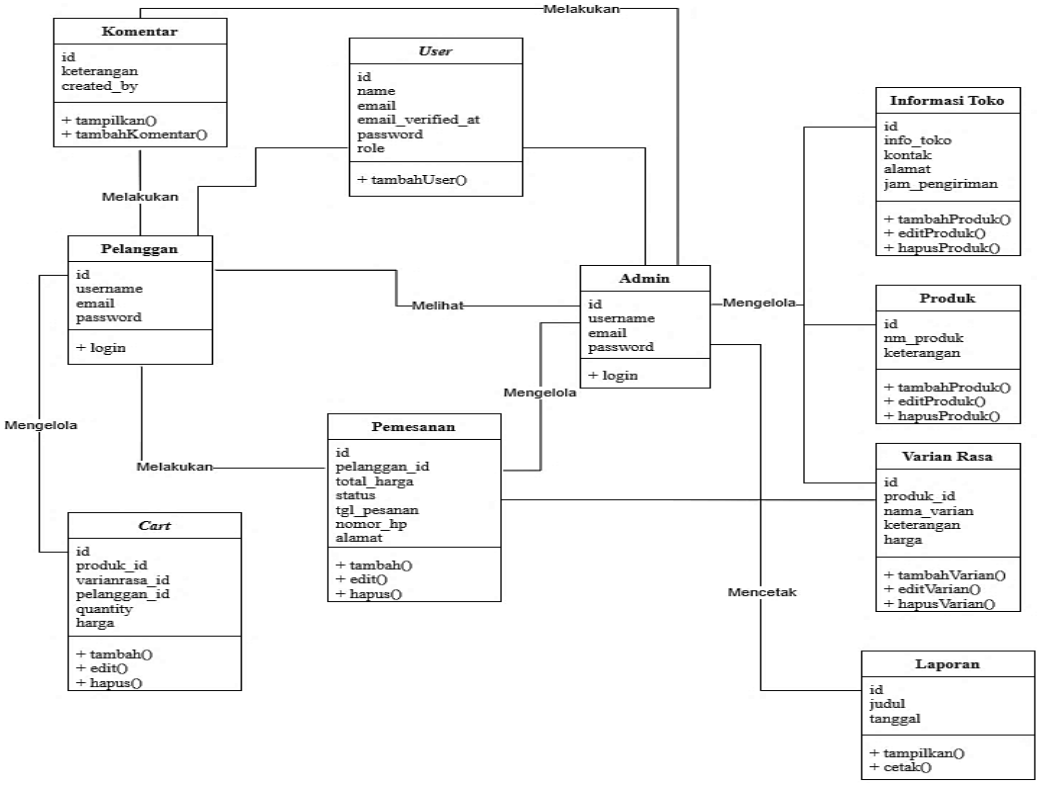

Figure 5. Class Diagram

Implementation

Implementation is the result of the system or software derived from the previously designed processes. The results of the implementation are as follows:

a. Home Page

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The home page displays the results of the previously illustrated design. The following home page is the implementation of the ordering design.

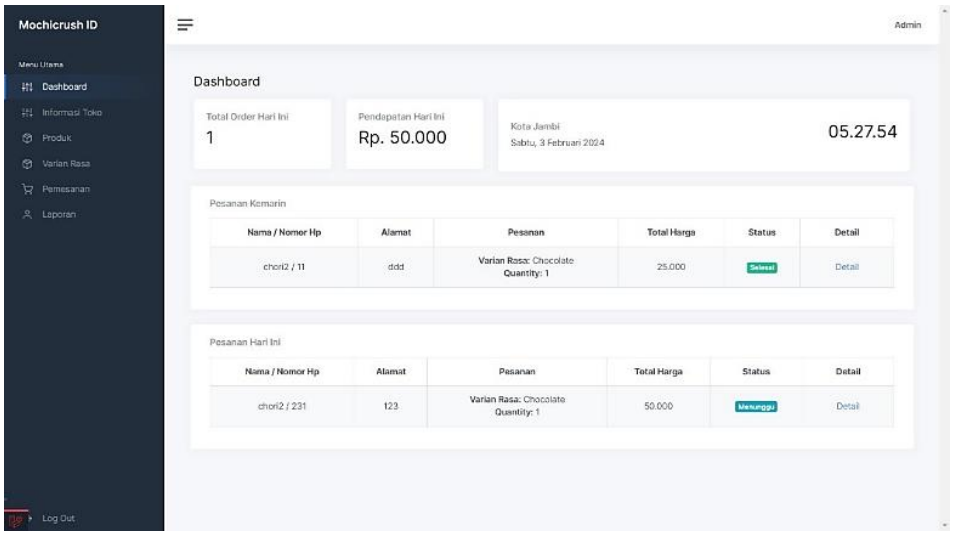

Figure 6. Home Page

b. Ordering Page

The ordering page serves as the design or foundational framework that generates functions according to the established design. This page includes functional systems such as viewing customer order data, searching by date and name, and resetting the search.

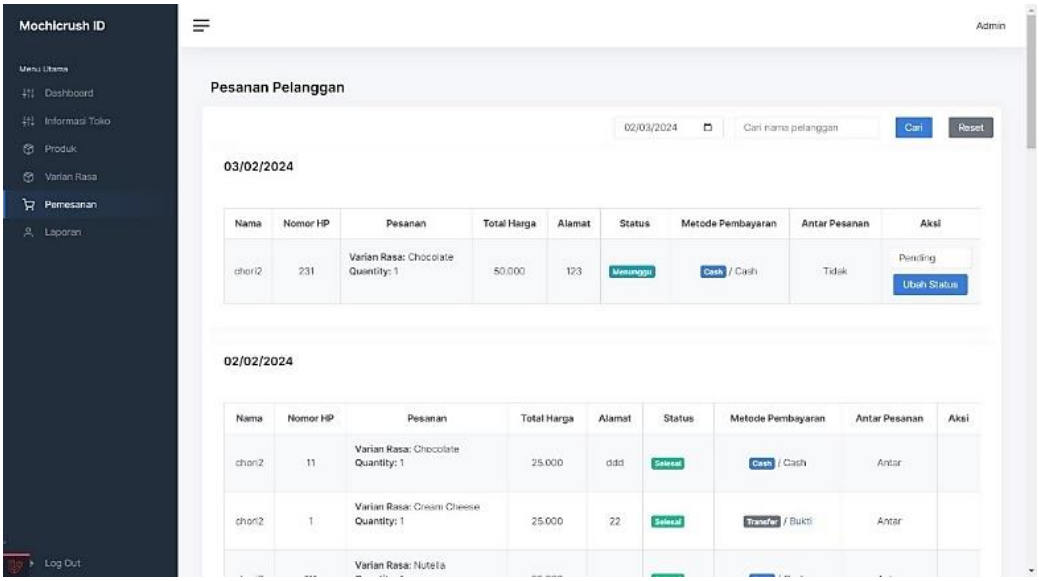

Figure 7. Ordering Page

c. Report

The report serves as the design or foundational framework that has been previously created, functioning as data information so that the admin can observe and print the report information as needed.

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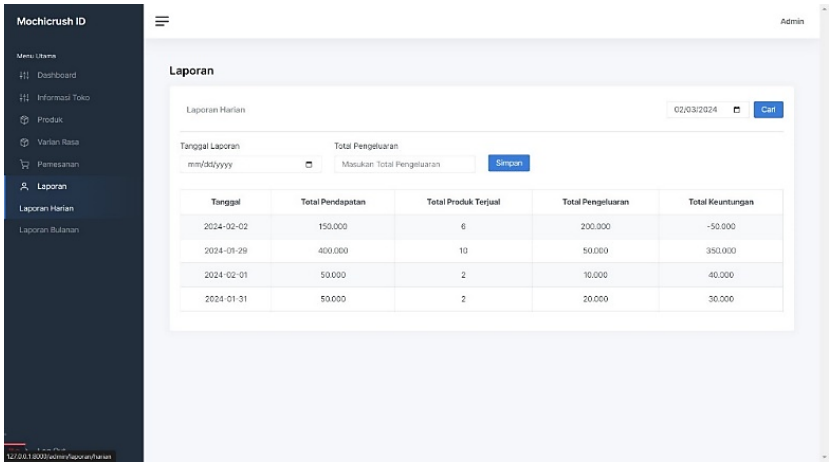

Figure 8. Report

Application Testing

Application testing is conducted using the Black Box Testing approach, where the testing focuses solely on observing the outcomes of the implementation present in the software.

Tabel 1. Operate the System

Conditions	Testing Procedure	Input	Output	Results Obtained	Conclusion
Add Product (Successful)	Operate the System	Add Product (Complete)	Display message "Data successfully added"	Display message "Data successfully added"	Good
Add Product (Failed)	Operate the System	Add Product (Incomplete)	Display message "Data needs to be filled"	Display message "Data needs to be filled"	Good
Edit Product (Successful)	Operate the System	Edit Product Data (Complete)	Display message "Data successfully updated"	Display message "Data successfully updated"	Good
Edit Product (Failed)	Operate the System	Edit Product Data (Incomplete)	Display message "Data needs to be filled"	Display message "Data needs to be filled"	Good
Delete Product (Successful)	Operate the System	Klik Hapus	Display message "Data successfully deleted"	Display message "Data successfully deleted"	Good

CONCLUSION

Based on the research results, an online pre-order sales system has been successfully developed for Mochicrush ID in Kota Jambi. Previously, the order recording process was done manually using notebooks or mobile phones, which often led to errors in recording and managing orders. To address these issues, the system was designed to be computerized, incorporating various features that minimize errors in data input, updates, and the recording of orders and sales. The system also includes features for managing order data, product data, and variant data in a more structured and efficient manner. Additionally, users can easily generate printable sales reports and monitor order history in a more organized way. With these features, the system is expected to improve operational efficiency at Mochicrush ID, reduce recording errors, and expedite the order processing. Overall, the implementation of this system has a positive impact on sales management at Mochicrush ID, particularly in terms of accuracy and speed of service to customers. This innovation is expected to provide a sustainable solution for optimizing order and sales management.

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