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Ulon Coffee Shop's Web-Based Raw Material Stock Management Information System Using the Just-In-Time Method

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ABSTRACT
Raw material stock management is an important aspect in the smooth operation of the Food and Beverage (F&B) business. Coffee Shop Ulon, which operates in the coffee beverage sector, still records stock manually, which often causes problems such as the accumulation of materials with a short shelf life or stock shortages that impact service. To overcome this, an information system is needed that is able to manage inventory more efficiently, accurately, and integrated. This study aims to build a Web-Based Raw Material Stock Management Information System Using the Just In Time (JIT) Method with the PHP (Laravel) programming language and MySQL as a database. The implementation of the JIT method is expected to help Coffee Shop Ulon ensure the availability of raw materials according to needs, reduce waste due to expired materials, and prevent stock shortages. The results of this study are a web-based information system with features for recording incoming and outgoing raw materials, expiration reports (waste), minimum stock reminders, and recording supplies from suppliers. With this system, stock management at Coffee Shop Ulon becomes more organized, efficient, and supports fast and accurate decision making.

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INTRODUCTION

In running a food and beverage (F&B) business, raw material inventory management is a crucial aspect to ensure smooth operations (Dzaki et al., 2025). Coffee Shop Ulon, a coffee beverage business, relies heavily on the availability of ingredients such as coffee beans, milk, sugar, syrup, and other complementary ingredients. If inventory is not managed properly, unused ingredients can accumulate or become out-of-stock when needed, which can impact customer service.

Currently, Coffee Shop Ulon has a website to support its business activities, but it is not yet equipped with an integrated raw material inventory management system. Critical features such as efficient raw material supply management, reporting of expired materials (waste), recording of nearly-consumed materials, and managing supplier deliveries are not yet available within the existing system. As a result, inventory recording and monitoring are still done manually or separately, complicating the decision-making process.

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A common problem is that stock levels don't match daily needs (Aurora Nethanis Marpaung, 2024). For example, when stock is excessive, ingredients with a short shelf life, such as milk or syrup, can expire and be wasted. Conversely, if stock is too low, production can be disrupted, resulting in customers not getting the menu items they want.

Ulon Coffee Shop faces significant challenges in managing its raw material inventory, often resulting in overstocking or understocking. The current manual inventory management method is inadequate for direct inventory monitoring, disrupting production and customer service. This leads to costly losses due to expired ingredients and the risk of losing customers due to out-of-stock items. Therefore, a web-based inventory management information system that integrates Just-In-Time (JIT) methods is needed to ensure timely procurement of raw materials, thus optimally increasing the coffee shop's efficiency and productivity.

To address these issues, a more efficient and integrated approach to stock management is needed. One effective method is Just In Time (JIT), a system that procures raw materials on time and according to need (Rina et al., 2021). By implementing the JIT method, Coffee Shop Ulon can avoid excess stock and ensure the availability of ingredients when needed, while reducing waste.

For the JIT system to function optimally, a web-based information system capable of monitoring and managing stock in real time is required (Azairatullah Zulnia Amanda & Nandra, 2025). Therefore, the development of a "Web-Based Raw Material Stock Management Information System at Coffee Shop Ulon Using the Just In Time Method" is necessary. This system is designed not only to record the incoming and outgoing raw materials, but is also equipped with features such as waste management, stale goods reports, minimum stock reminders, material supply management, and recording deliveries from suppliers.

With this system, stock management at Coffee Shop Ulon is expected to be more organized, efficient, and aligned with actual needs. This system not only simplifies real-time recording and monitoring of raw materials but also facilitates faster and more accurate decision-making (Wulandari et al., 2025). This will certainly support smooth operations, reduce the risk of understocking or overstocking, and minimize raw material waste.

METHODS

The research procedures section, entitled "Web-Based Raw Material Stock Management Information System in a Coffee Shop Using the Just-In-Time Method," comprises several methods, including: data collection, software development, and data processing and analysis (Haifa & Rais, 2024).

The Web-Based Raw Material Stock Management Information System for the Ulon Coffee Shop uses PHP as its primary programming language and Laravel as its PHP framework to create a website monitoring dashboard for raw material stock management. The authors also used MySQL for data storage on the server.

The Waterfall software development method, in which each stage must be completed before proceeding to the next, ensures there are no overlapping processes (Olifia & Dwi Kurniawan, 2025). This approach aims to optimize the performance of the website being

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developed. Furthermore, the waterfall method ensures that each stage of development is carried out in a structured and focused manner, resulting in optimal results.

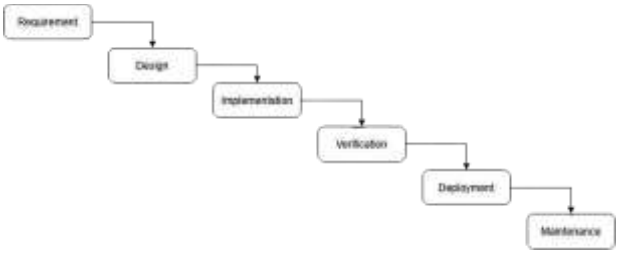

Figure 1. Waterfall Software Development Method

1. Requirements Analysis Stage
   In this stage, operational requirements are collected and analyzed in depth. The objectives and functions of this Information System are determined, accompanied by the preparation of complete and detailed requirements documentation (Amin, 2023).
2. System Design Stage
   This stage determines the flow or algorithm for the system to be built. In this case, the author uses the Unified Modeling Language (UML), which consists of Use Case Diagrams and Activity Diagrams (Ramdany, 2024).
3. Implementation Stage
   The next stage is the implementation stage, where the entire system design is converted into program code to build a complete and fully functional Web-Based Raw Material Inventory Management Information System for Ulon Coffee Shop Using the Just-In-Time Method.
4. Verification
   During the verification phase, the Web-Based Raw Material Inventory Management Information System at Ulon Coffee Shop will undergo system verification and testing to determine whether the system fully or partially meets the system requirements. Submissions can be grouped into unit testing, system testing, and acceptance testing.
5. Deployment
   At this stage, the Web-Based Raw Material Stock Management Information System at Ulon Coffee Shop is ready for public release and use. The website will then be uploaded to a suitable hosting server so that users can access it via their laptops or other devices.
6. Maintenance
   The maintenance phase is a crucial step after the system is released. During this phase, system performance will be continuously monitored, and any bugs or technical issues that may arise will be identified and fixed. Additionally, fixes and improvements will be implemented based on user feedback (Husnul Fitri & Rahma, 2022). The primary goal of this phase is to ensure the system remains reliable, secure, and functions optimally in the long term (Hajizah, 2024).

RESULTS AND DISCUSSION

This section details the implementation process and analysis of the Web-Based Raw Material Stock Management Information System at Ulon Coffee Shop using the Just-In-Time Method,

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developed as a website. The description includes the design and implementation of each interface that supports more efficient and timely raw material stock management. This implementation is expected to simplify daily operations for users while increasing the effectiveness of inventory monitoring and control (Khasanah & Susanto, 2025).

Program View

This discussion explains in detail the program display in the Web-Based Raw Material Stock Management Information System at the Ulon Coffee Shop. The Web-Based Raw Material Stock Management Information System uses the Just-In-Time (JIT) method with the PHP (Laravel) programming language and MySQL as the databas

a. Login Page Display

This section displays an image of the login page. This page is the initial interface of the system, as all dashboard or landing page activities must go through this process first. Its purpose is to ensure data management within the system is seamless. Users who wish to log in must have a valid account; if an invalid account is not provided, the system will redirect them to this page.

Figure 2. Login Page Display

b. Administrator Dashboard View

This section displays an image of the administrator dashboard. The dashboard serves as the main control center, presenting a summary of important data from various menus within the system (Khoirullah et al., 2025). Information displayed on this page includes the total number of registered administrators, distributor data, and the number of active cashiers or baristas. Furthermore, the dashboard provides a notification feature to provide up-to-date information on system activity and displays a list of login activity history for each logged-in user.

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Figure 3. Administrator Dashboard View

c. Cashier or Barista Dashboard Display

This section displays an image of the cashier or barista dashboard. This dashboard can only be accessed by the cashier or barista role. It summarizes data on total incoming stock, outgoing stock, notifications, purchase data, and the time the cashier or barista logged into the system. The following image shows the cashier or barista dashboard.

Figure 4. Cashier or Barista Dashboard Display

d. Home Page View

This section contains an image of the Home Page View. This menu is accessible only to cashiers or baristas and contains a list of products by category, as well as a search function to facilitate data retrieval. The following image shows the home landing page.

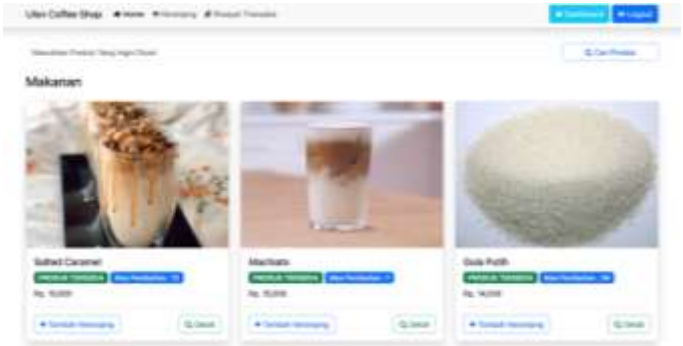

Figure 5. Home Page View

e. Shopping Cart Landing Page View

This section contains an image of the shopping cart landing page. This menu can only be accessed by cashiers or baristas, who manage the purchase data of products ordered by customers. The following image shows the shopping cart landing page.

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Figure 6. Shopping Cart Landing Page View

f. Checkout Landing Page View

This section contains an image of the checkout landing page. This page can only be used by cashiers or baristas to manage the product data that customers have ordered. Later, visitors will be asked for some information to help the cashier or barista deliver the products they have prepared. Below is an image of the checkout landing page.

Figure 7. Checkout Landing Page View

g. Transaction History Landing Page View

This section displays an image of the transaction history page. This menu is accessible only to cashiers or baristas. This menu is used to manage the transaction history of customers' purchases. All customer purchases are recorded in this menu. The following image shows the transaction history page.

Figure 8. Transaction History Landing Page View

h. Notification History Data Page Report View

This section displays an image of the notification history report page. This menu can be accessed by admins, cashiers, baristas, and distributors. All notifications regarding raw material delivery reports, sales transactions, and other items will be recorded in this menu. The following image shows the notification history page.

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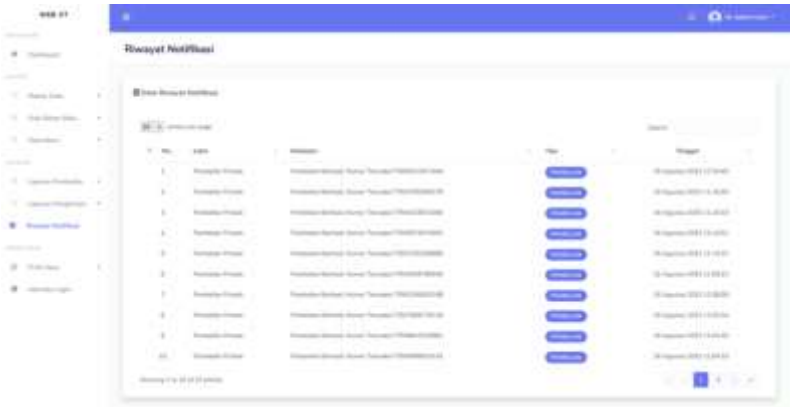

Figure 9. Notification History Data Page Report View

i. Notification History Data Page Report View

This section displays an image of the purchase history data report page. This page can be accessed by admins, cashiers, or baristas to monitor customer purchase data. All product purchase data made by customers is managed on this page. The following image shows the purchase history data report.

Figure 10. Notification History Data Page Report View

Test Case Black Box Testing

Black Box testing is used to ensure that every function in a system operates as required without considering the internal processes of the program code. Testing is performed by providing specific input and then comparing the resulting output with the expected output. This method can determine whether the system's features, from data input and processing to output presentation, meet the specified specifications. Below are several test case pages representing various scenarios.

a. Login Page Testing

Table 1. Login Page Testing

No.	Testing Scenarios	Test Case	Expected results	Test Results	Conclusion
1.	Username and Password are not filled in then click the login button	Username: (blank) Password: (blank)	The system will refuse to display the message "Username and Password are Required."	As expected	Valid
2.	Fill in the username input but leave the password input	Username: adminulon Password: (blank)	The system will reject and then display the message “Password Required”	As expected	Valid

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No.	Testing Scenarios	Test Case	Expected results	Test Results	Conclusion
	blank, and click the login button.				
3.	Fill in the password input but leave the username input blank and click the login button.	Username: (empty) Password: Passwords	The system will reject it, then display the message "Username Must Be Filled"	As expected	Valid
4.	Fill in the username and password input, and click the login button but the account is not active.	Username: adminulon Password: password Synchronize data with the status on that account	The system will reject, then display the message “Your Account is Inactive”	As expected	Valid
5.	Fill in the username and password input, and click the login button, and the account status is active.	Username: Adminulon Password: Password Synchronize active status in database	The system will redirect you to the dashboard page corresponding to the account's role and display the message "Login Successful."	As expected	Valid

b. Raw Material Data Page Testing

Table 2. Raw Material Data Page Testing

No.	Testing Scenarios	Test Case	Expected results	Test Results	Conclusion
1.	View all raw material data	Click the raw materials menu	The system will display raw material data	As expected	Valid
2.	Raw material name is empty	Click the “Add” button menu, then leave the raw material name input blank and click the “Save” button.	The system will give an error message “Raw Material Name Must Be Filled In”	As expected	Valid
3.	Category is empty	Click the “Add” button menu, then clear the category input and click the “Save” button.	The system will reject it, then display the message “Category Must Be Filled In”	As expected	Valid

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c. Product Data Page Testing

Table 3. Product Data Page Testing

No.	Testing Scenarios	Test Case	Expected results	Test Results	Conclusion
1.	View all product data	Click the product menu	The system will display product data	As expected	Valid
2.	Product code is empty	Click the “Add” button, then leave the product code input blank and click the “Save” button.	The system will give an error message “Product Code Must Be Filled In”	As expected	Valid
3.	Product name is empty	Click the “Add” button, then leave the product name input blank and click the “Save” button.	The system will reject it, then display the message "Product Name Must Be Filled in"	As expected	Valid
4.	Category is empty	Click the “Add” button, then leave the category column input blank and click the “Add” button.	The system will reject it, then display the message “Category Must Be Filled In”	As expected	Valid
5.	Bare price	Click the “Add” button menu, then clear the price column input and click the “Save” button.	The system will reject it, then display the message “Price Must Be Filled”	As expected	Filled
6.	Blank image	Click the “Add” button menu, then clear the image input column and click the “Save” button.	The system will reject it, then display the message “Image Must Be Filled In”	As expected	Valid
7.	Blank description	Click the “Add” button menu, then clear the description column input and click the “Save” button.	The system will reject, then display the message “Description Required”	As expected	Valid

CONCLUSION

Conclusion: The manual management of raw material inventory at Ulon Coffee Shop often creates various challenges, such as stockpiling, which leads to waste, and stock shortages that hamper operations. Therefore, an information system is needed that can support more effective, efficient, and real-time stock recording and management (Farhan et al., 2025). Through the implementation of the Just In Time (JIT) method, a web-based stock management information system built with PHP (Laravel Framework) and MySQL can help Ulon Coffee Shop ensure the availability of raw materials according to production needs, eliminating excess or shortages. This system also features minimum stock reminders, expired material reports, and a list of nearly out-of-stock items so distributors can follow up immediately without manual processes. With this information system, it is hoped that raw material inventory management at Ulon Coffee Shop will be more structured and support

smooth operations. Furthermore, the system can minimize the risk of waste, expiry the decision-making process, and improve the quality of customer service (Khansa & Firdaus, 2024). The limitations of this research are that the information system designed is only website-based and can only be accessed by a browser. The information system designed only uses the PHP programming language and the Laravel Framework. It also uses MySQL as its database storage. It is not integrated with the cashier management system already used in the coffee shop. Further research can develop the existing website system. Develop a database to process the data. Create an Android mobile system/application that is interconnected with the website system. This will allow the Ulon Coffee Shop Raw Materials Stock Management Information System to be connected to both the website and the Android mobile.

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