



## Implementation of Web-Based Furniture Store Management Information System

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### Abstract

*In the era of increasingly rapid digitalization, the need for efficient and integrated business management is becoming increasingly important. Companies that are able to manage data systematically and in real-time have a competitive advantage in facing market competition. Alma Jati Mebel Pati, as a business actor in the furniture industry sector, faces challenges in the operational management process, such as manual transaction recording, non-centralized stock management, and difficulties in making fast and accurate sales reports. This study aims to develop and implement a web-based furniture store management information system to improve the efficiency and effectiveness of the company's operations. This system is built using the Waterfall method which consists of several stages, namely needs analysis, system design, implementation, and testing. The technologies used include PHP as a programming language, MySQL as a database management system, Laravel as a backend development framework, and Bootstrap for a responsive and user-friendly interface. This system is equipped with main features such as recording sales and purchase transactions, product stock management, and financial report generation. Testing was carried out using the Black Box Testing method to ensure that the system's functionality runs according to user needs. The test results show that all features function properly without significant errors. In addition, the usability test conducted on users resulted in a satisfaction rate of 85%, indicating that the system is easy to use and helpful in daily work processes. With this system, Alma Jati Mebel is expected to optimize business management more effectively, efficiently, and integrated.*

## Introduction

In today's digital era, the development of information technology has brought about major changes in various aspects of human life. Rapid advances in the field of communication and information have changed the way individuals interact, work, and adapt to their surroundings. These changes encourage society to be more open to technological innovations that continue to develop. In addition to providing convenience in everyday life, technology also creates various new opportunities, especially in the education sector and the business world (Aldowah et al., 2017; Haleem et al., 2022; Garlinska et al., 2023). With the application of the right technology, work efficiency can be increased, productivity can be maximized, and various processes can run more effectively. Therefore, both individuals and organizations need to continue to follow technological developments in order to improve the quality of life and competitiveness in the era of globalization (Maliki et al., 2023; Khemraj, 2023; Sutrisno et al., 2023; Tavares et al., 2022; Adamik & Sikora-Fernandez, 2021; Kalandarovna & Qizi, 2023).

Alma Jati Mebel is a company engaged in the sale of teak wood furniture. However, in practice, the company faces obstacles in stock management which is still done manually. This condition often causes ineffectiveness, recording errors, and the risk of data loss. In today's digital era, the implementation of a Management Information System (MIS) is very crucial to improve operational efficiency and overall business management (Ashrafuzzaman, 2024; Bhima et al., 2023; Rusilowati et al., 2024; Shniekat et al., 2023). By implementing an integrated information system, Alma Jati Mebel can optimize stock management more accurately and in real time, so as to minimize errors and facilitate monitoring of stock of goods (Martin et al., 2023; Susanto et al., 2024; Dendra et al., 2024).

Optimal inventory management plays a crucial role in maintaining the sustainability of a business, especially for businesses with various types of products, where manual recording is often inefficient and has the potential to cause inaccurate information (Hauashdh et al., 2024; Djailani et al., 2025; Amyulianthy et al., 2025). To overcome these problems, an inventory management information system is needed that can help Alma Jati Mebel in controlling stock, reducing recording errors, and increasing operational efficiency (Anggara & Somya, 2023). The implementation of the right system strengthens the company's competitiveness. As a solution, the "Furniture Store" application was developed to speed up transactions, manage inventory, and present accurate automatic reports. With this system, operational efficiency increases, allowing Alma Jati Mebel to provide optimal service and maintain competitive advantage.

There are several studies that have discussed the development of website-based store management information systems. Research conducted by Wati in 2022 implemented the PHP programming language and MySQL database. UD. Mebel Jaya faced problems in inventory management and delays in ordering goods. The findings of this study indicate that the application of technology in Supply Chain Management (SCM) can increase the effectiveness of stock management, ordering goods from suppliers, and distributing products to customers. The use of this technology also contributes to increasing the efficiency of the furniture production and sales process (Wati, 2022; Wieruszewski et al., 2023; Červený et al., 2022; Molinaro & Orzes, 2022; Rame et al., 2023).

Research conducted by Suwanto et al. (2022) focuses on the operational efficiency of furniture factories and stores. With the waterfall development method, the developed system successfully improved the recording of raw materials, production, distribution, and sales, thereby optimizing stock management and reducing the loss of raw materials. However, this study has not specifically discussed the management of sales transactions at the store level and system integration with customers and suppliers (Yang et al., 2025).

Research by Adiwignya and Santoso in 2023 discussed the design of a web-based store management system with the waterfall method using ReactJS, NodeJS, and MySQL. This study highlights the problem of irregular sales recording, which complicates the process of recapitulation and reporting, as well as obstacles in documenting stock of goods. To overcome this, the researchers developed a system that aims to improve the orderliness of sales recording and stock management, so that reports can be produced more accurately and efficiently (Adiwignya & Santoso, 2022).

Meanwhile, research by Budi Sutanto and Shandi Noris in 2023 discussed the design of a web-based store management information system at Toko Mebel 45 Bojonggede, Bogor, using the waterfall development method and PHP programming language. This study found that the store still relies on a manual system, which hinders transactions, makes it difficult to check stock, and slows down report generation. Employees must check stock directly in the warehouse, while sales recording is done manually, so the process is inefficient and less structured. This study aims to develop a web-based system to speed up input of goods,

creation of notes, real-time stock checking, and automation of reports, thereby increasing operational efficiency (Sutanto & Noris, 2023; Rakibuzzaman et al., 2025; Ajiga et al., 2024).

Research conducted by Budi Sutanto and Shandi Noris in 2023 focused on designing a web-based store management information system for Toko Mebel 45 in Bojonggede, Bogor. The development of this system uses the waterfall method and the PHP programming language. The results of the study show that the store still relies on a manual system, which causes transactions to be slow, stock checking is less effective, and report generation is time-consuming. Employees must check stock directly in the warehouse, while sales recording is done manually, so that the operational process becomes inefficient. This study aims to develop a web-based system that can speed up the process of inputting goods, creating notes, checking stock in real time, and automating reports, thereby increasing work efficiency (Reza & Nulhakim, 2021; Blahušíaková, 2023; Fatima et al., 2022).

Based on the results of the analysis of differences from various studies, there is still an opportunity to develop a more complete web-based store management information system. Most previous studies have highlighted aspects of stock management and transaction recording, but have not fully covered integration with suppliers and customers. Therefore, the development of a system that is able to optimize transaction recording, accurate stock management, and automation of various processes can be an effective solution to improve operational efficiency and support more optimal business decision making.

## Methods

This study uses a qualitative approach to understand and analyze the management of a web-based furniture store management information system at Alma Jati Mebel Pati. This approach aims to collect data and information needed for system development, by exploring user experience, system needs, and challenges in technology implementation. The stages of this study include planning, data collection, data analysis, interpretation of findings, and system evaluation (Khoa et al., 2023; Kumar & Praveenakumar, 2025). The stages of qualitative research can be explained as follows;

Observations were conducted at Alma Jati Mebel to understand the current workflow, system requirements, and problems that arise in stock management, sales, and finance. This observation also aims to identify important features that need to be in the system to be designed. Store owners and related staff were interviewed to gain a deeper understanding of the system requirements, clarify business processes, and identify challenges faced in daily operations. The results of these interviews became the main basis for system design, so that the resulting solution can truly meet user needs and support the smooth operation of the store. This research begins by collecting information and theoretical studies related to the furniture industry and web-based information system design methods. Literature sources are obtained from books, scientific journals, online articles, and other relevant references. This approach aims to gain a deep understanding and strong theoretical foundation in system development, so that research results can be applied effectively according to business needs.

## System Development Methods

In developing this system, the Waterfall model development method was used. This model was chosen because it provides a structured and systematic approach, so that each stage must be completed before proceeding to the next stage (Priyolistiyanto & Handayani, 2021). There are several stages in this model which can be seen in Figure. At this stage, problems were identified at Alma Jati Mebel's business premises, such as manual stock management, difficulty in recording transactions, and time-consuming report creation. Data was collected through interviews with shop owners, direct observation of operational processes, and user needs surveys. The results of this stage were used to compile system requirements documents.

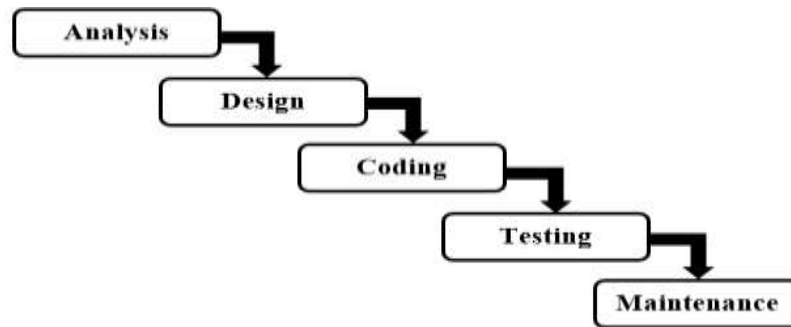


Figure 1. Waterfall Analysis Method

After the system requirements are determined, this stage focuses on designing the database structure to manage product, transaction, and customer data. The user interface is also designed using Bootstrap to be more responsive and easy to use by store staff. In addition, the system flow is designed to match the existing business processes at Alma Jati Mebel's place of business. At this stage, system development is carried out using Laravel as the backend framework and MySQL as the database. The main features developed include stock management, purchase and sales transactions, financial reports, customer management, suppliers, and discount settings and user access rights. System development is carried out in stages to ensure that each module can function properly according to the needs of Alma Jati Mebel.

System testing at Alma Jati Mebel uses Black Box Testing to ensure the system functions properly according to user needs. This method tests the functionality of the system based on input and output without looking at the source code. If errors are found, improvements are made to make the system more reliable and ready to use in store operations. This final stage aims to ensure that the system continues to run optimally at Alma Jati Mebel. Monitoring is carried out periodically to fix bugs that may appear and to update the system if necessary. If there are changes in the store's business processes, the system can also be updated to remain relevant to business needs.

## Results and Discussion

### System Requirements Analysis

To build and operate a store management information system optimally, appropriate supporting devices are required. These devices consist of hardware and software that support the entire process of development, testing, and system implementation. Selecting the right device is an important factor so that the system can work optimally without technical obstacles. This needs analysis is compiled so that the system can run efficiently and stably in the store's operational environment.

Table 1. The device requirements

| Category                     | Item / Specification  |
|------------------------------|-----------------------|
| <b>Hardware Requirements</b> |                       |
| Processor                    | Intel® Core™ i5 8350U |
| Storage                      | 512 GB SSD            |
| Memory (RAM)                 | 16 GB                 |
| Device                       | Laptop                |
| Peripheral - Mouse           | Included              |
| Peripheral - Keyboard        | Included              |
| <b>Software Requirements</b> |                       |
| Code Editor                  | Visual Studio Code    |
| Local Server Environment     | XAMPP                 |

|                      |                |
|----------------------|----------------|
| Programming Language | PHP            |
| Framework            | Laravel        |
| Operating System     | Windows 11     |
| Database             | MySQL          |
| Web Browser          | Microsoft Edge |

## System Design

### Use Case

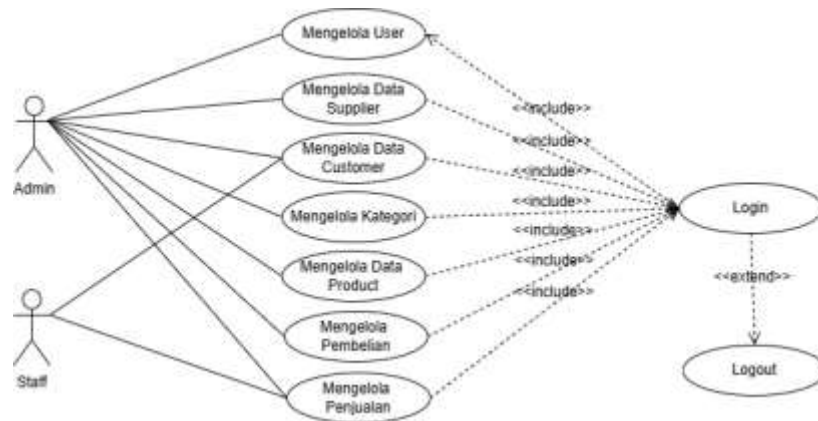


Figure 2. Use Case

Use cases are a description or depiction of how users (actors) interact with the system to achieve certain goals. The purpose of the use case is to describe the functionality of the system from the user's perspective and ensure that user needs can be met by the system being built. In the Alma Jati Mebel store management information system, there are two main actors who interact with the system, namely admin and staff. The admin actor has full access rights to the system, including logging in, managing user data, suppliers, customers, product categories, product data, purchase transactions, and sales transactions. While the staff actor has limited access rights, only including logging in and managing customer data and sales transactions. An illustration of the interaction between actors and the system can be seen in Figure 3, which shows a use case diagram as a visual representation of the role and functionality of each actor in the system.

### Entity Relationship Diagram(ERD)

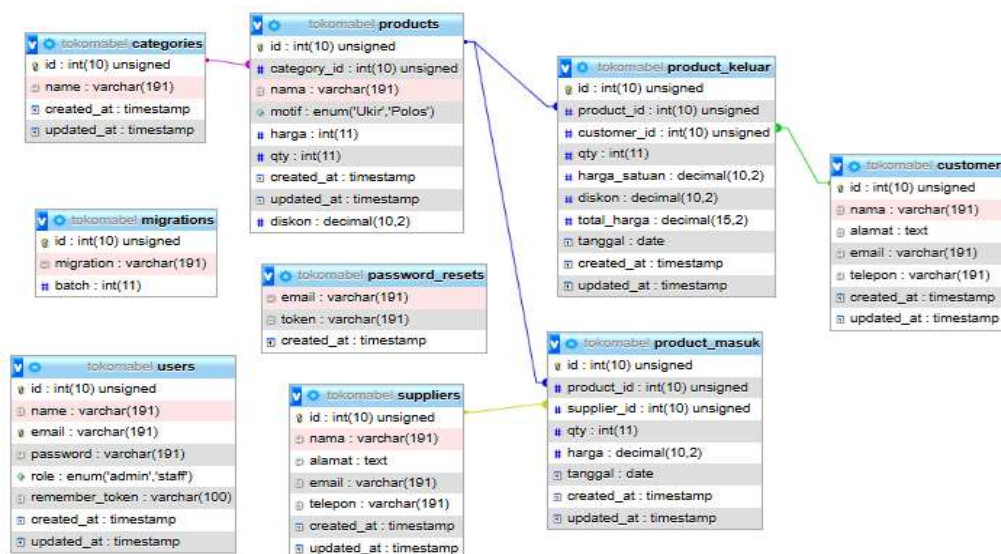


Figure 3. Entity Relationship Diagram (ERD)



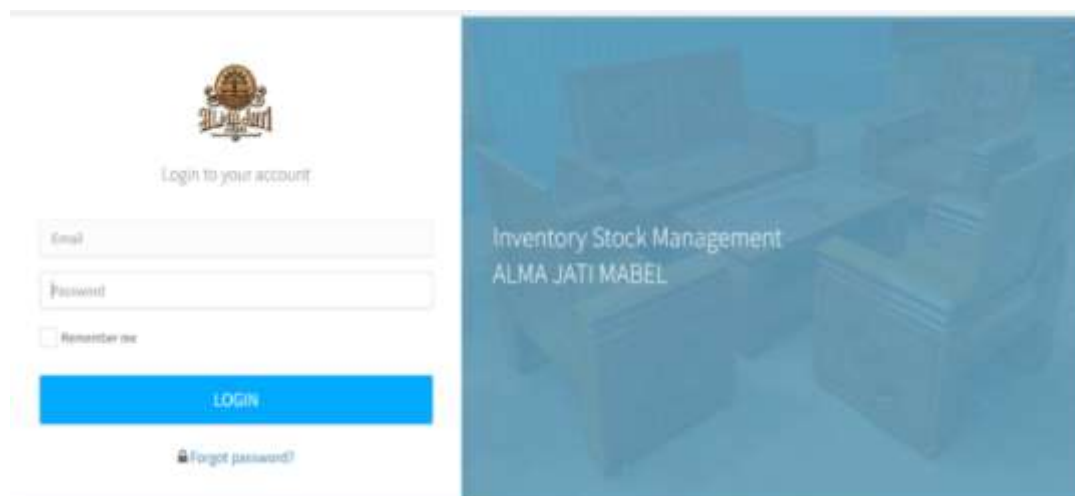
*Entity Relationship Diagram*(ERD) is a visual representation used to describe the relationships between entities and their attributes in database design, thus helping to understand the structure and flow of data systematically. In Figure 3, we can see the one-to-many relationship between categories and products, and between products and product\_masuk and product\_keluar, which shows that one entity can have many related data. In addition, suppliers are connected to product\_masuk, and customers to product\_keluar in a similar relationship. The users entity represents the users of the system and is directly related to the identity of each user.

### **Intefrafae User Interface**

The user interface, or often called UI (User Interface), is a graphical display that functions as a means of communication between users and software or hardware systems, which allows users to provide input, receive output, and interact with the system. The interface of this store management information system is implemented using the Laravel framework supported by the PHP, CSS, HTML, and JavaScript programming languages. This interface is designed into several pages that make it easier for staff and admins (owners) to manage data and assist customers in the ordering process. The implementation of the interface is divided into several parts, including:

#### ***Login Page***

On this page there is a display that asks the user to enter the username and password that has been stored in the database. After successfully logging in, the user will be directed to the main dashboard page. This login page is intended for admins (owners) and staff who have access to use this application.



*Figure 4. Login Page*

#### ***Admin and staff dashboard page***

The dashboard page is the main page that appears after the admin and staff have logged in. For the admin role, this page displays information related to all features such as users, categories, products, suppliers, customers, outgoing products, and incoming products. While for the staff role, it only displays some features such as categories, products, customers, suppliers, and outgoing products.



Figure 5. Admin Dashboard Page



Figure 6. Staff Dashboard Page

### User Data Page

On this page, the admin has the ability to add, change, or delete user data consisting of name, email, and password. All changes made will be immediately updated in the system. This page can only be accessed by the admin (owner).



Figure 7. User Data Page

### Category Data Page

Category page is used to manage product category data such as adding, editing, and deleting categories. This feature helps group products to be neater and easier to manage. This page can be accessed by admin and staff.

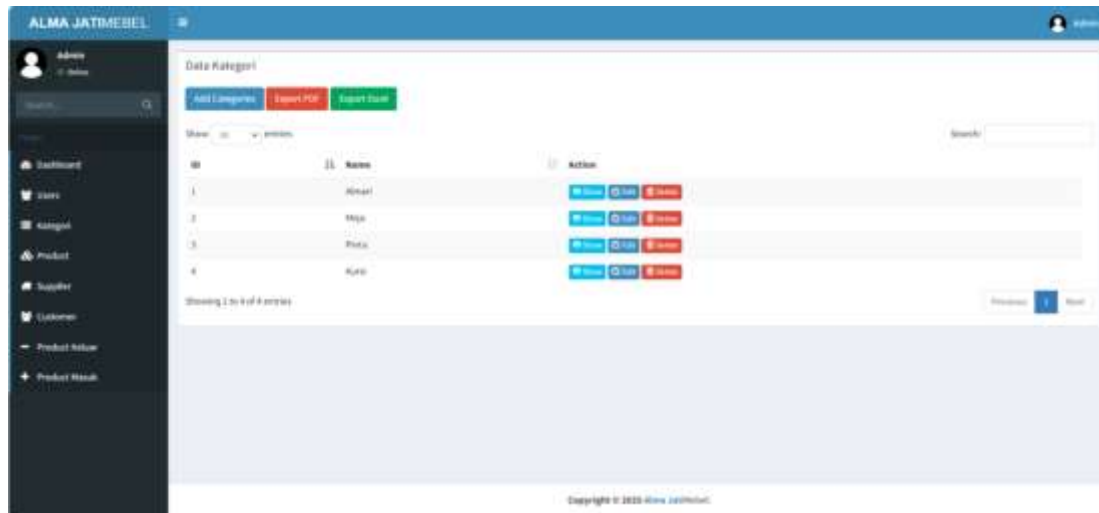


Figure 8. Category Data Page

### Products Data Page

The product data page is used to organize all the information about the items available in the store. Here, admins and staff can add new products, edit existing data, or delete products that are no longer used. The data displayed includes the name of the motif, unit price, stock amount (qty), and product category. This page is connected to the product out and product in pages.



Figure 9. Products Data Page

### Suppliers Data Page

The supplier data page is used to record and manage supplier information, such as name, address, email, and phone number. This feature can only be accessed by admins. Admins can add, edit, and delete supplier data, as well as export supplier data to PDF and Excel for reporting or documentation needs.



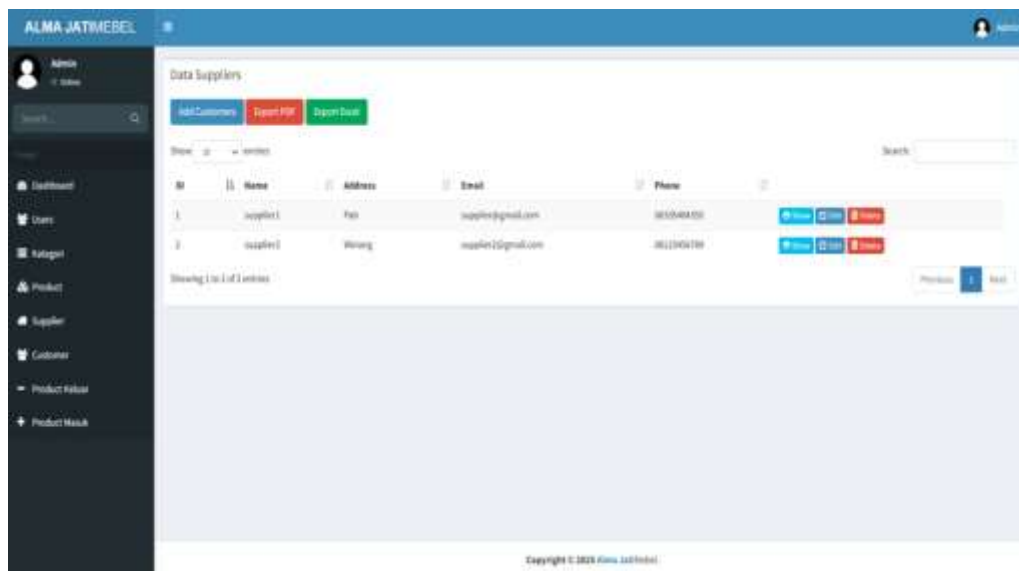


Figure 10. Suppliers Data Page

### Customer Data Page

customer data is used to manage customer information, such as name, address, email, and phone number. This page can be accessed by admin and staff to support service and transaction recording. It provides features to add, edit, and delete customer data. In addition, customer data can also be exported to PDF and Excel formats for reporting or store archive purposes.

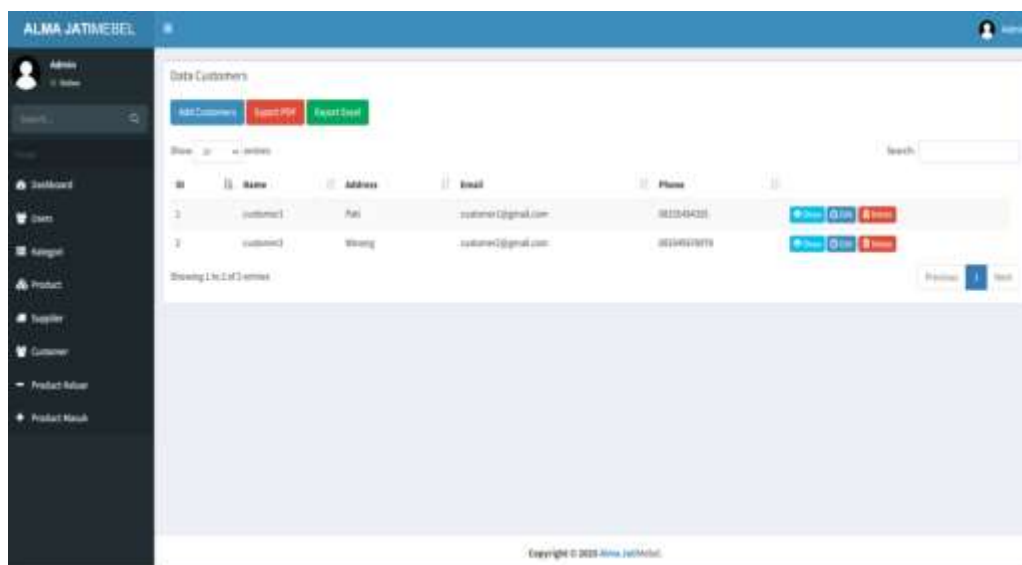


Figure 11. Customer Data Page

### Product Data Page Exit

The outgoing product data page is used to record sales transactions to customers. The recorded data includes product ID, product name, customer name, quantity (qty), unit price, discount, total price, and purchase date. Every time there is a sales transaction, the number of product qty on the product data page will automatically update to reflect the outgoing goods, ensuring that stock is always accurate. This page can be accessed by admins and staff to monitor goods that are out of stock. In addition, there are features to print transaction invoices and export data to PDF and Excel formats for reporting and documentation purposes. This feature can be accessed by admins and staff

**Data Products Out**

Buttons: Add Products Out, Export PDF, Export Excel

Showing 1 to 4 of 4 entries

| ID | Products       | Customer  | QTY | Harga Satuan    | Diskon (%) | Total Harga     | Tanggal Pembelian |
|----|----------------|-----------|-----|-----------------|------------|-----------------|-------------------|
| 1  | Almarit Hias   | customer1 | 10  | Rp 1,200,000.00 | 20.00      | Rp 960,000.00   | 04-04-2025        |
| 2  | Maja Makan Set | customer1 | 3   | Rp 1,000,000.00 | 50.00      | Rp 500,000.00   | 17-04-2025        |
| 3  | Almarit TV     | customer1 | 3   | Rp 2,000,000.00 | 10.00      | Rp 5,400,000.00 | 10-04-2025        |
| 4  | Maja Makan Set | customer1 | 3   | Rp 2,000,000.00 | 10.00      | Rp 5,400,000.00 | 17-04-2025        |
| 5  | Maja Makan Set | customer1 | 3   | Rp 1,000,000.00 | 0.00       | Rp 3,000,000.00 | 10-04-2025        |
| 6  | Maja Makan Set | customer1 | 3   | Rp 1,000,000.00 | 0.00       | Rp 3,000,000.00 | 10-04-2025        |

Showing 1 to 4 of 4 entries

Buttons: Previous, Next

**Export Invoice**

| ID | Products       | Customer  | QTY | Harga Satuan    | Diskon (%) | Total Harga     | Tanggal Pembelian | Export Invoice |
|----|----------------|-----------|-----|-----------------|------------|-----------------|-------------------|----------------|
| 1  | Almarit Hias   | customer1 | 10  | Rp 1,200,000.00 | 20.00      | Rp 960,000.00   |                   | Export PDF     |
| 2  | Maja Makan Set | customer1 | 3   | Rp 1,000,000.00 | 50.00      | Rp 500,000.00   |                   | Export PDF     |
| 3  | Almarit TV     | customer1 | 3   | Rp 2,000,000.00 | 10.00      | Rp 5,400,000.00 |                   | Export PDF     |

Figure 12. Product Data Page Exit

### Product Page Login

The incoming product data page can only be accessed by admins to maintain security and full control over the stock of goods received from suppliers. On this page, admins can record data such as product ID, product name, supplier name, quantity (qty), unit price, and purchase date. Every incoming product transaction will automatically sync with the product data page, ensuring that stock is always updated. In addition, admins can print transaction invoices and export data to PDF and Excel formats for reporting and documentation purposes.

**Data Products In**

Buttons: Add Products In, Export PDF, Export Excel

Showing 1 to 4 of 4 entries

| ID | Produk         | Supplier  | QTY | Harga Satuan    | Tanggal    |
|----|----------------|-----------|-----|-----------------|------------|
| 1  | Almarit Hias   | supplier1 | 1   | Rp 1,200,000.00 | 22-04-2025 |
| 2  | Maja Makan Set | supplier1 | 1   | Rp 2,000,000.00 | 09-04-2025 |
| 3  | Almarit TV     | supplier1 | 1   | Rp 2,000,000.00 | 09-04-2025 |
| 4  | Almarit Hias   | supplier1 | 1   | Rp 2,700,000.00 | 11-05-2025 |

Showing 1 to 4 of 4 entries

Buttons: Previous, Next

**Export Invoice**

| ID | Produk         | Supplier  | QTY | Harga Satuan    | Tanggal Pembelian | Export Invoice |
|----|----------------|-----------|-----|-----------------|-------------------|----------------|
| 1  | Almarit Hias   | supplier1 | 1   | Rp 1,200,000.00 | 22-04-2025        | Export PDF     |
| 2  | Maja Makan Set | supplier1 | 1   | Rp 2,000,000.00 | 09-04-2025        | Export PDF     |
| 3  | Almarit TV     | supplier1 | 1   | Rp 2,000,000.00 | 09-04-2025        | Export PDF     |
| 4  | Almarit Hias   | supplier1 | 1   | Rp 2,700,000.00 | 11-05-2025        | Export PDF     |

Figure 13. Product Data Page Enter

### Logout Page

The logout page can be accessed by admins and staff to end the session and redirect users back to the login page, maintaining system security after the session ends.



Figure 5. Logout Page

## System Testing

This system uses Black Box Testing. Black Box is a testing method that focuses on application elements such as user interfaces, existing functions, and workflow compatibility with the designed system. The purpose of this method is to find errors in the application, including problems with existing system functions and menus, which can then be fixed. Black Box testing, also known as functional requirement validation testing, is done by testing the features in the system. Thus, Black Box testing is a testing method that focuses on the functionality of the system application.

Table 1. Black Box Testing

| Feature         | Step                                              | Results                                                                                                                      | Status  |
|-----------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>Login</i>    | <i>Login</i> user enters email and password.      | <i>Login</i> successful and users will be directed to the dashboard that suits their respective roles.                       | Succeed |
| <i>User</i>     | Admin can add, change, delete user data.          | User data is added, edited, and deleted according to the steps taken.                                                        | Succeed |
| Category        | Admin and staff add, change and delete categories | Category data is added, edited, and deleted according to the steps taken. Data can also be printed in PDF and Excel formats. | Succeed |
| <i>Products</i> | Admin and staff add, change and delete products   | Product data is added, edited, and deleted according to the steps taken.                                                     | Succeed |
| <i>Supplier</i> | Admin add, change, delete supplier data           | Supplier data is added, edited, and deleted according to the steps taken. Data can also be printed in PDF and Excel formats. | Succeed |
| <i>Customer</i> | Admin and staff add, change, delete customer data | Customer data is added, edited, and deleted according to the steps taken. Data can also be printed in PDF and Excel formats. | Succeed |

|                        |                                                             |                                                                                                                                                                                                                 |         |
|------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>Product kout</i>    | Admin and staff add, edit, and delete outgoing product data | The product data out feature is used to add, edit, and delete transaction data. Data can also be printed in the form of invoices and exported to PDF or Excel files for sales reporting and archiving purposes. | Succeed |
| <i>Product mfoster</i> | Admin adds, edits, and deletes incoming product data.       | The product data entry feature is used to add, edit, and delete product data from suppliers, as well as print invoices and export to PDF or Excel for purchasing reports.                                       | Succeed |

The adoption of a web-based management information system (MIS) of Alma Jati Mebel Pati is a sensible manifestation of engineering techniques being used in the optimization of business processes. Engineering wise, especially in the fields of Information Systems and Industrial Engineering, there should be a fundamental goal to create systems with very little room of \*error, through elimination of inefficiencies and automation of repetitive tasks. Those objectives are achieved in this study by dealing with the current operational weaknesses, that is, manual account of transactions, uneven stock control, and slashed reporting, with a complete motile and quick digital system. Correspondence with enterprise-level information engineering is noteworthy, because (having reached the appropriate level of development), the formed MIS could allow the smooth movement of information, increased faithfulness in real-time inventory control, the possibility of tracking the history of transactions, which is an important aspect of accountability in processes and the long-term expansion of the enterprise.

The selection of the Waterfall development model applies as a very appropriate engineering decision in this context. The Waterfall model is the most applicable in system development where the scope of a project is well known and the user needs are firm and well understood, which many of the small and medium enterprises are represented by (SMEs). All stages of Waterfall model which include needs analysis, design, implementation, testing, and maintenance are implemented step by step in a calculated manner, the risk of missed functionality or architectural holes is minimized. Priyolistiyanto & Handayani (2021) confirm that this model gives a guided plan which projects disciplining and documentation and this is essential in the development of information systems where modules are interconnected and business rules are rigid. Unlike the agile methods, which are more flexible and therefore prone to scope creeps, the Waterfall model introduces rigor of systematic engineering practices to make the deliverables comply with the agreed needs.

Technically, the technology stack of the backend framework (Laravel), the programming language (PHP), the database handling (MySQL), and the interface responsiveness (Bootstrap) used in the research under analysis has multiple benefits in software engineering terms (Islam et al., 2023; Nurfadilah et al., 2024). The Model-View-Controller (MVC) framework facilitated by Laravel fully enables separation of concerns, which contributes to maintainability, scalability and debugging of code. This structure also enables strong databases management and safe authentication operations. The use of a structured structure, such as Laravel, in terms of the web-based system used in store management services, allows one to understand that using a specific structure will enable modules, including inventory, transaction, and reporting, to work in concert, thus providing better system stability. Also, the ability of MySQL to manage relational databases can also be particularly useful in the retail systems where the constant updating of the system is expected and the right control over the inflows and outflows of the stock has to be maintained. Bootstrap, in turn, improves the accessibility of the front end by adopting responsive layout, thus so that the administrative

and sales personnel will have little trouble gaining access to the system in diverse devices with minimum training.

The system has a wide interactive coverage that is designed to address practical issues that arise in the process of furniture retail business. It automates and combines stock management, transactions documentations, suppliers and customers management, and financial reports which are the prime feature in the trouble-free operations of the businesses with an inventory. The past manual systems which were in use by Alma Jati Mebel have the disadvantage of strewn lack of synchronization hence generating timely information and correct reports presented not being possible. Conversely, the lack of system integration did not only create redundancies, as Sutanto & Noris (2023) noted in a related case at Toko Mebel 45, but also predisposed a greater risk of a human error and data inconsistency. However, the system created as part of the current research is able to show real-time changes in inventory levels each time a transaction is made, generate digital receipts and reports, and manage access to the user with a limited role that is also related to the transparency and efficiency of the operations (Kokogho et al., 2024; Vaka, 2024).

In addition, engineering control system aspect of whether the system has capability to dynamically synchronise transactions operations with inventory data or not is another important success factor. This keeps inventory stock up to date with the real movement of products, hence business owners make the best decisions on when to replenish stocks and on what and when to buy stocks. As shown by the study conducted by Wati (2022), the use of such integration in a comparable SCM-based application allowed shortening lead time in the processing of orders and enhancing compatibility with suppliers. Similarly the design of the study in which most entities such as `produk_masuk` and `produk_keluar` can be linked directly to the master inventory list offers a viable system of eradicating discrepancies and thus contributes to the principle of feedback control which in most disciplines of system engineering is always stressed upon.

Besides its functionality and architecture, user interface design of this system presents elements of Human-Computer Interaction (HCI) engineering principles (Alrizq et al., 2022; Ruiz et al., 2021; Holden et al., 2022). A good MIS should not only be powerful, it should also be intuitive and should have low level of cognitive load on the user who may not be so technical. Subsequently, by using Bootstrap to design an adjustable and role-specific dashboard, it will be possible to guarantee that various user groups, such as an administrator and staff members, communicate with the functions management is related to only. This reduces the chance of modification when it is not supposed to and also simplifies how each role has to work. According to Rusilowati et al. (2024), user-centered design plays a crucial role in adoptability and the performance of the systems as more often than not MIS tools with inadequate levels of user difficulty are met with resistance by employees.. The system in this study avoids such pitfalls by providing clean navigation, consistent layouts, and exportable reporting functions, thus supporting the principles of usability, accessibility, and learnability.

Finally, system testing using the Black Box Testing method adds a layer of engineering assurance by validating the functional behavior of each module without diving into the codebase. This type of verification is particularly important in engineering applications where reliability and accuracy of outputs are paramount. The system passed all functional tests, including login validation, data entry, editing, deletion, and data export across all major modules, including suppliers, customers, and transactions. Suwanto et al. (2022) underscore that in production environments—especially where multiple users interact with shared resources—functional testing is not just a quality assurance step but a preventive engineering control against system failure and user dissatisfaction.

## Conclusion

The implementation of a Web-Based Furniture Store Management Information System at Alma Jati Mebel Pati has a positive impact in supporting the store's business processes more efficiently and structured. This system is built using the waterfall method, which includes the stages of needs analysis, system design, implementation, testing, and maintenance, so that system development can be carried out systematically and in a directed manner. The main features available in this system include product data management, customer data, supplier data, incoming and outgoing product transactions, and user data management. Each feature is designed to be integrated with each other, so that the process of stock management, transaction recording, and grouping customer and supplier data can be done more easily and accurately. System testing is carried out using the Black-box Testing method which focuses on testing the function and output of each menu without looking at the program code structure. The test results show that all features run according to their functions, such as adding, editing, deleting data, printing transaction invoices, and exporting data to PDF and Excel formats. Overall, this system is able to increase the effectiveness of store management, minimize recording errors, and help admins and staff in carrying out operational activities more quickly, safely, and well-documented.

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