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Analysis Of It-Based Logistics Inventory Systems In Companies Engaged In The Field Of Ready Mix Concrete And Precast Concrete

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ABSTRACT

This journal aims to analyze information technology (IT)-based logistics inventory systems in companies operating in the ready mix concrete and precast concrete fields. In the construction industry, efficient and accurate inventory management is critical to supporting effective and timely operations. This study identifies the problems existing in traditional inventory systems and proposes IT-based solutions to optimize logistics management.

The methodology used includes needs analysis, system design, implementation, and system performance evaluation. The results of the research show that implementing an IT-based inventory system can increase the accuracy of inventory data, speed up the decision-making process, and reduce operational costs.

This system also allows for better integration between various departments within the company, thereby improving overall coordination and efficiency. This study concludes that technological innovation in logistics management makes a significant contribution to increasing productivity and competitiveness of companies in the ready mix concrete and precast concrete industries.

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INTRODUCTION

An aspect that cannot be separated from a running business is well-organized operational management, but recently that alone is not enough, business people are starting to turn to digital technology to perfect their manufacturing process flow and cash flow so that they can hopefully provide better results. increasing effectiveness and efficiency in many ways, this journal will focus on IT-based inventory systems to provide an illustration of this probability.

The company's success in maintaining its business cannot be separated from the company's role in managing inventory so that it is easy to fulfill customer requests as comprehensively and as fully as possible.

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Companies that are able to control and manage their inventory well will certainly be able to meet the needs of each customer and of course can maintain business continuity in a sustainable manner. Inventory of goods in a company's assets is important, because from this inventory the company can manage the stock of goods in the warehouse, both consumable and non-consumable, which can later be offered for sale to consumers or customers. Therefore, the company must be able to manage the inventory system effectively and efficiently to suit the company's goals.

We can start to analyze starting from technical obstacles that generally occur during the process of making outgoing and incoming reports, human errors often occur in preparing reports because they are still made manually by Ms. Excel, so delays and errors often occur in submitting reports.

Meanwhile, non-technical obstacles are encountered when there is a lack of inventory of the goods to be ordered, or the data is not synchronized between actual inventory and stock data, which results in the goods requested by customers not being able to be fulfilled due to delays in submitting inventory.

Developing software to automate the process of creating reports and filing inventory can help overcome the technical and non-technical obstacles mentioned above. A well-integrated software system can improve the efficiency, accuracy and scalability of inventory reporting and management processes

In the manufacturing industry, it generally refers to goods that are part of a company's needs or a company's products. Manufacturing inventories themselves are usually classified into several groups, namely raw materials, final products and components.

The benefits of Inventory Control include (Pontius, 2017):

A. strike a balance between holding costs and reordering costs
B. meet customer requests
C. increase profits
D. support business operational activities

An internal inventory control system is a system purchased from an existing and tested software development company. Meanwhile, the external inventory control system is a system rented from an Electronic Data Exchange Services company in Indonesia so that it can be accessed by the Directorate General of Customs and Excise. This matter refers to state regulations through the Regulation of the Director General of Customs and Excise Number per-09/BC/2014 CHAPTER II Article 2 Paragraph 1 which reads "Companies that use the facilities: Exemption, Returns, Bonded Zones, Bonded Warehouses, and/or Free Shops Customs are required to own and use IT Inventory.".

So there is a very urgent need for an inventory control system that can be used internally and externally in real-time by developing a website-based inventory control system.

From the explanation above, it can be concluded that the existence of a website-based company inventory control system is very important so that it can then be used as a benchmark in increasing the efficiency of time and energy in data calculations and company operational costs, so that the option of renting an inventory system from another company can be eliminated, reducing conventional procedures, and makes it easier to monitor every detail of ordering and purchasing orders at one time.

This also includes production management down to the sales balance so that the company's profit and loss ratio can be detected accurately and in real time.

METHODS

The results of this research proposal are in line with the main focus areas in the Plan Main National Research (RIRN) 2017-2045, namely Focus on Research on ICT Device Technology and ICT Support.

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Picture. 1 Relevance of the Proposal to RIRN 2017-2045
Themes and Topics to Focus on Information and Communication Technology Research
Source: National Research Master Plan 2017-2045 (Ristek-BRIN)

Innovation that integrates engineering knowledge to create tools, systems, or processes that improve efficiency, safety, and performance in various industrial sectors.

This methodology contains an explanation along with the steps in completing the development of a website-based application for controlling the company's inventory system.

1. Data collection
   The method that can be used to collect data begins with making direct observations or observations of objects at the research site and asking interview questions with the Logistics Manager, Production Manager and PT Supervisor. Valeo Ac Indonesia, to understand whether this logistics management system is needed or not to help process data and information regarding Goods Delivery, Goods Receiving and Goods Delivery Tracking activities at PT. Valeio AC Indonesia.

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2. System Development Model
   At this stage of developing a website-based logistics management system, the author decided to use the Waterfall method with UML modeling (Use Case Diagram, Sequence Diagram, Class Diagram, Activity Diagram). This was chosen because Waterfall system development is faster and saves time.
3. Implementation
   At this stage, the author implements a material ordering inventory information system. This system is tested using Black-box testing techniques to ensure that the system built meets the requirements set by the company.

RESULTS AND DISCUSSION

Testing was carried out using the Black Box Testing method. This testing focuses on functionality and output generated in real-time and looks for errors in non-compliant functional categories.

The results of Black Box Testing on this inventory information system are outlined in the table below:

Table 1. Test Results on the System

NO	ASPEK PENGUJIAN	OUTPUT YANG DIHARAPKAN	HASIL	
			OK	TIDAK
1	Form *Login*	User tidak dapat masuk kedalam sistem jika *username* salah atau tidak sesuai	OK	
		User tidak dapat masuk kedalam sistem jika password salah atau tidak sesuai	OK	
2	Form *Create Account*	Sistem menampilkan form menu form *create account*	OK	
		User tidak dapat masuk kedalam sistem jika salah satu tidak di isi semuanya atau tidak sesuai	OK	
3	Form Admin	Sistem menampilkan Form dashboard admin, data transaksi dan laporan	OK	
		Acc, Tolak dan cetak data laporan	OK	
		Dapat mengedit foto profile, dan *logout* dari sistem	OK	

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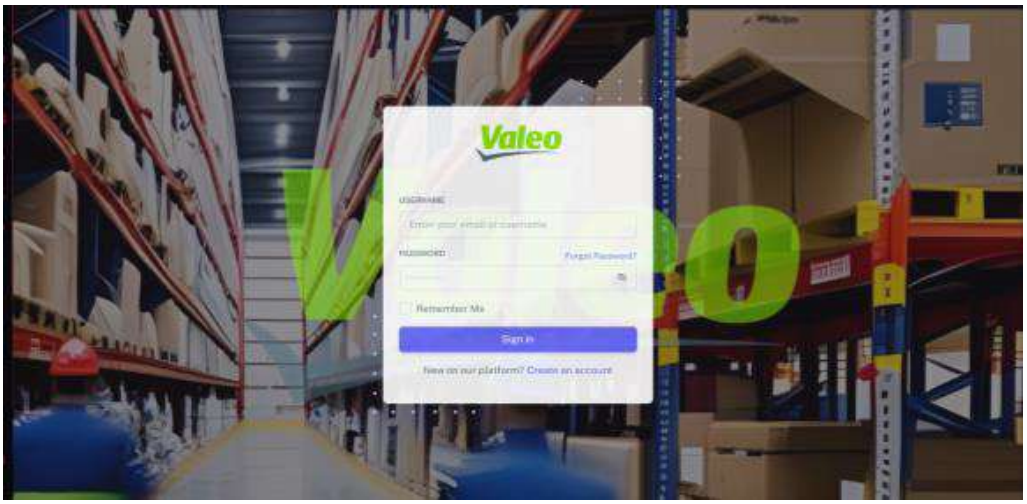
NO	ASPEK PENGUJIAN	OUTPUT YANG DIHARAPKAN	HASIL	
			OK	TIDAK
4	Form Logistik	Sistem menampilkan Form dashboard logistik, data transaksi dan laporan	OK	
		Tambah, edit dan hapus data sistem	OK	
		Dapat mengedit foto profile, dan logout dari sistem	OK	
5	Form Driver	Sistem menampilkan Form dashboard logistik, data transaksi dan laporan	OK	
		Tambah, edit, hapus data sistem, mengupdate data	OK	
		Dapat mengedit foto profile, dan logout dari sistem	OK	

Interface display (User Interface)

The user interface displays images of application programs that are built according to the design. As in the image below:

Login menu interface

The system display when the user logs in so they can gain access to the logistics management system.



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Create account menu interface

The system display when a user registers an account before logging into a system.

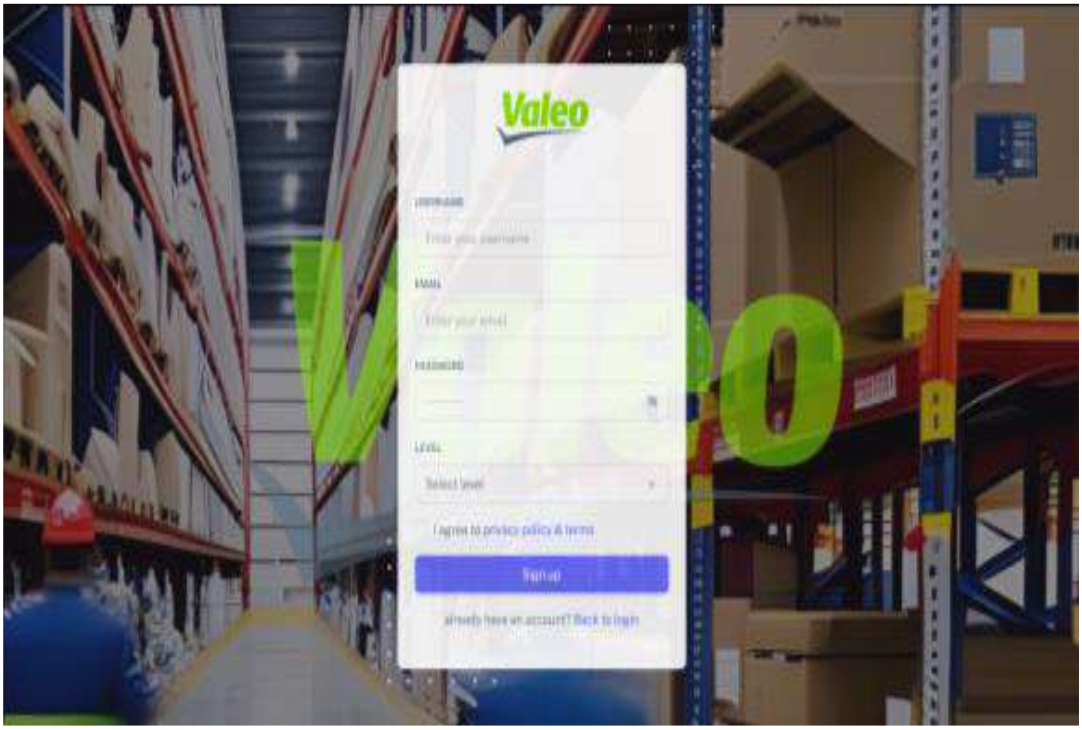

Figure 1. Create account menu interface

Admin main menu interface (Dashboard)

On the main page for admin users, there are several transaction data menu options, namely stock of goods, information on purchasing goods, and information on picking up goods. Apart from that, in the report menu, there are menu options, namely shopping data, purchase recapitulation, and collection recapitulation.

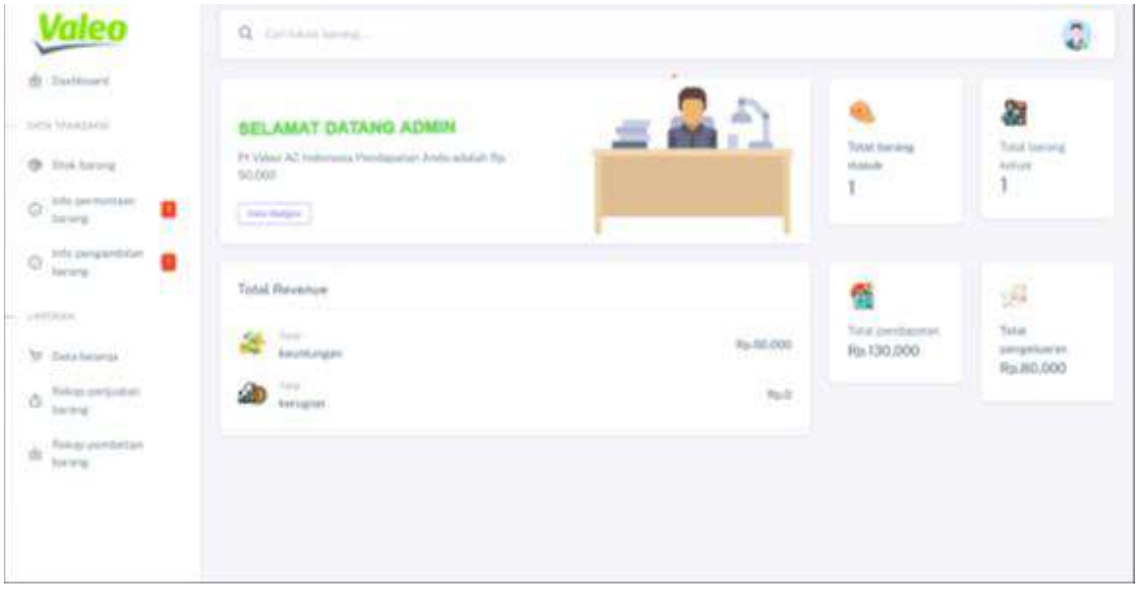

Figure 2. Menu Dasboard

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Stock menu interface

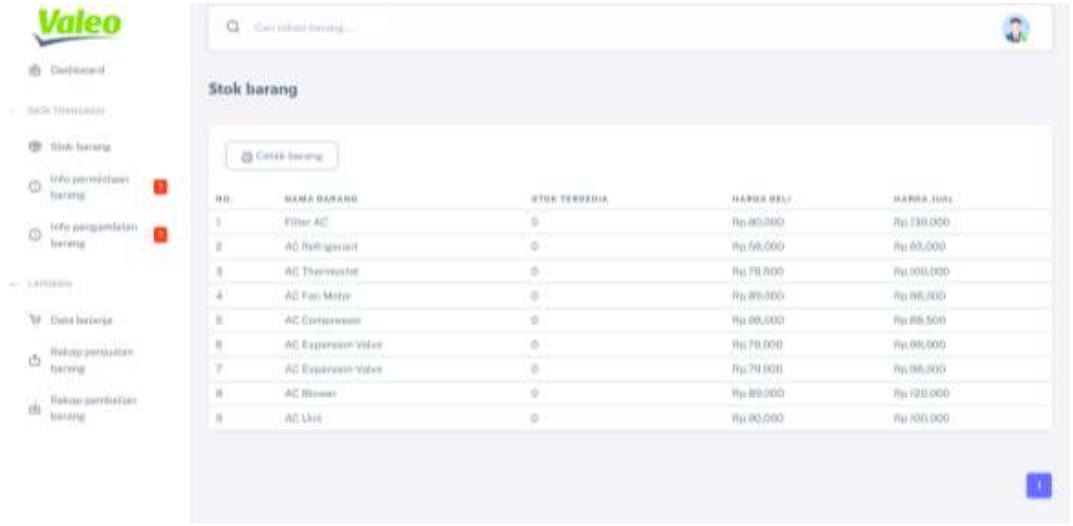

Figure 3. Stock menu interface

Item sales recap menu interface

On the main menu page, admin users can review goods sales recaps where the data comes from logistics and driver data, this data can be printed directly from the system.

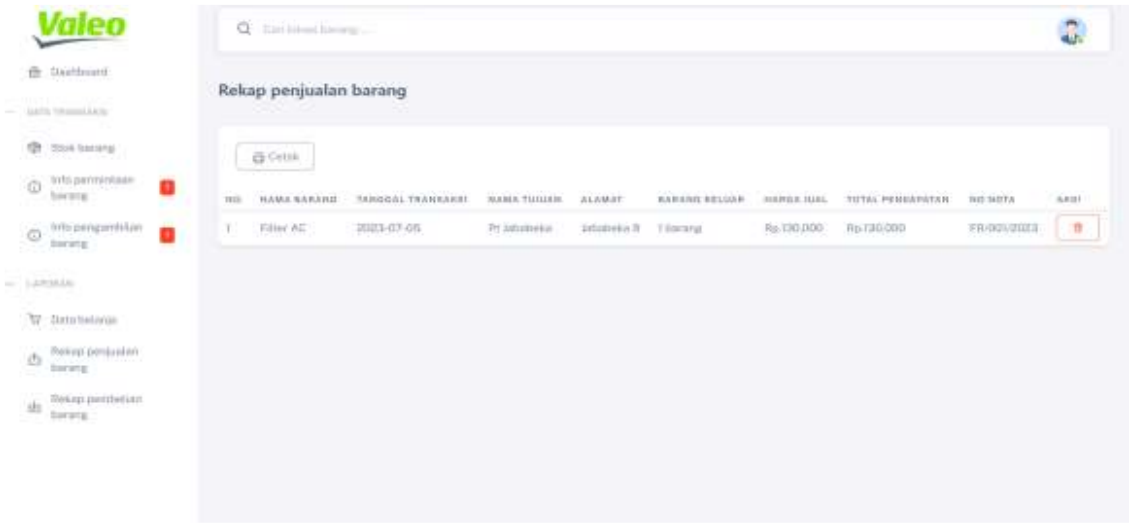

Figure 4. Item sales recap menu interface

Logistics main menu interface (Dashboard)

On the main menu page for logistics users there are several transaction data menu options, namely requesting goods, picking up goods, and on the master data menu there are menu options, namely goods data, supplier data, shelf data, warehouse data, and you can edit your profile photo in in a logistics system.

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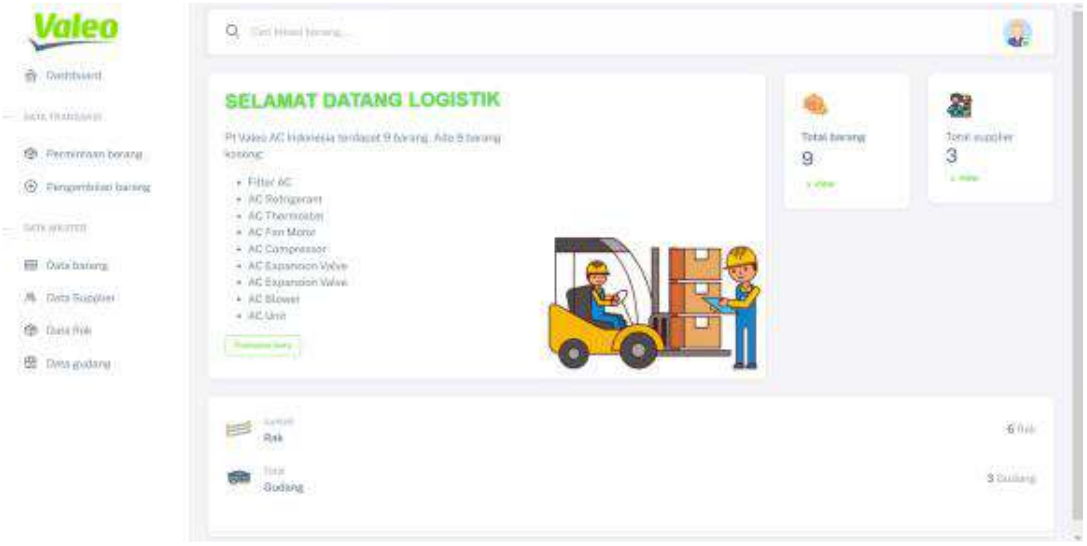

Figure 5. Logistics main menu

Item data menu interface

The system display when logistics looks at the item data menu, in this menu you can add, edit and delete item data through the logistics system, and the database will automatically be updated.

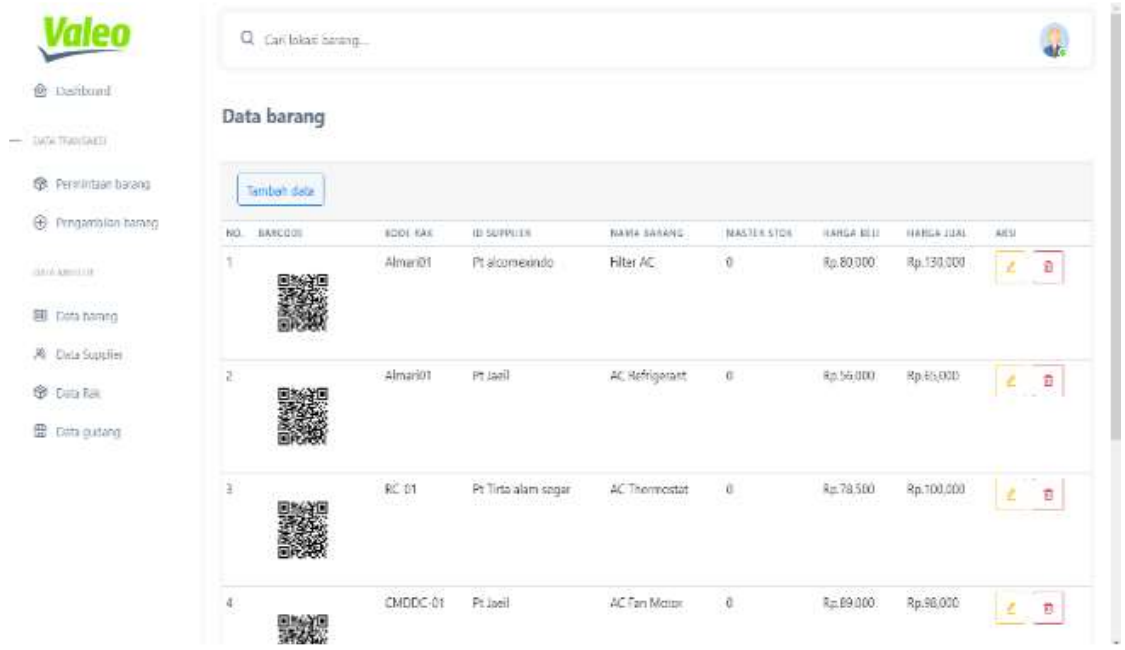

Figure 6. Item data menu interface

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Item request info menu interface

On the main menu page, admin users can accept or reject requests for goods from logistics.

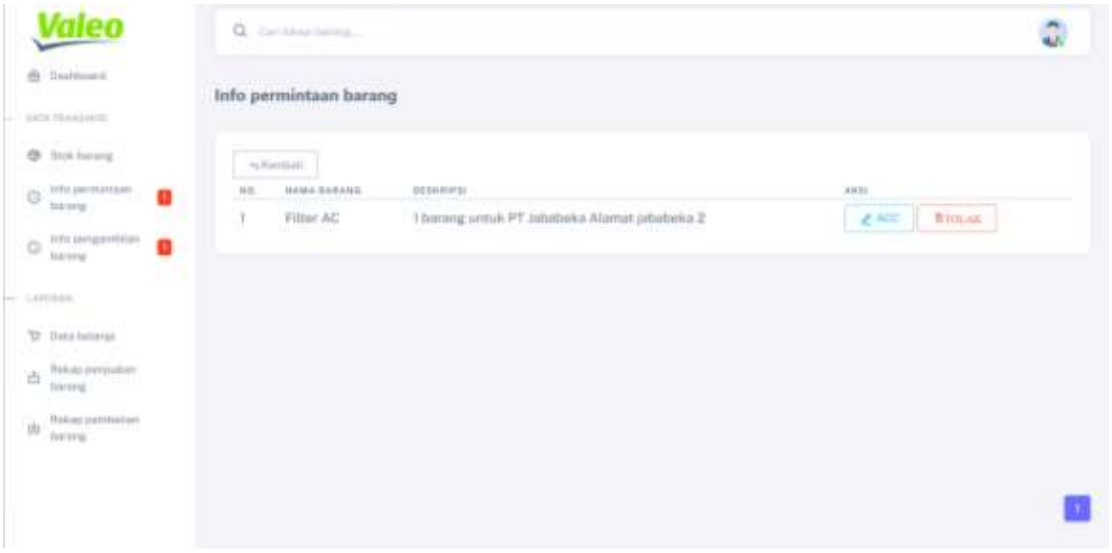

Figure 7. Item request

Item return information menu interface

On the main menu page for admin users, admins can accept or reject requests or return goods from logistics.

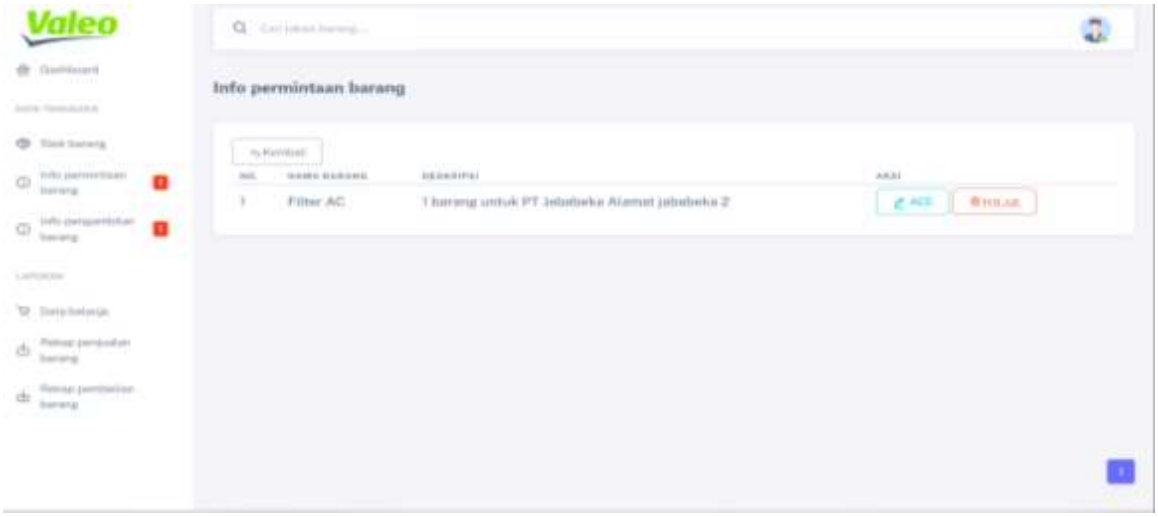

Figure 8. Item return

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Item data menu interface

The system display when logistics looks at the item data menu, in this menu you can add, edit and delete item data through the logistics system, and the database will automatically be updated.

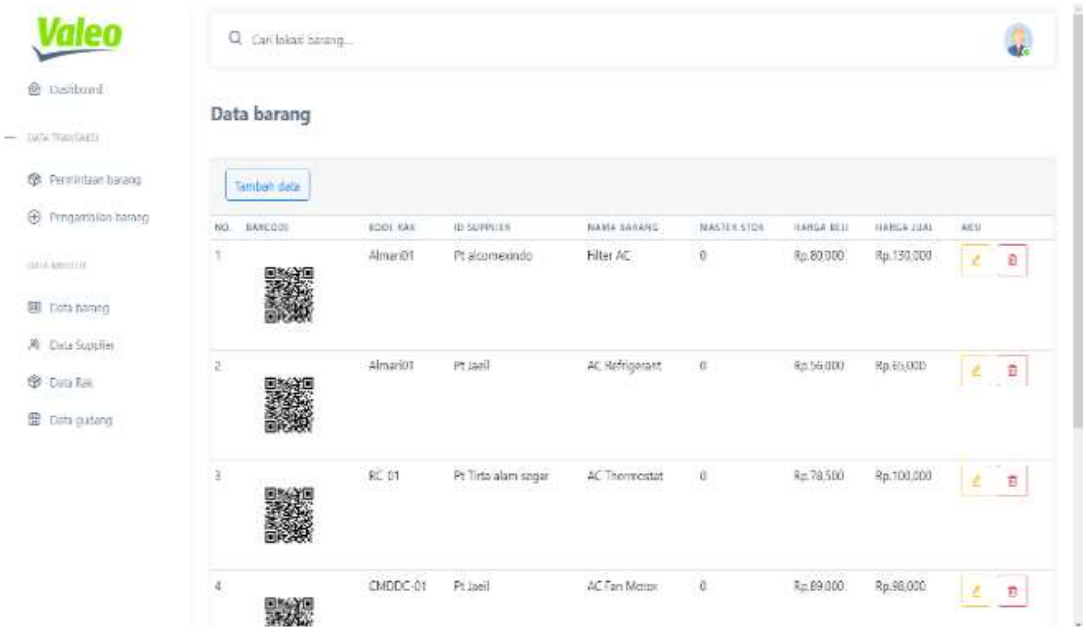

Figure 9. Item data

Supplier data menu interface

The system display when logistics looks at the supplier data menu, in this menu you can add, edit and delete item data through the logistics system, and the database will automatically be updated.

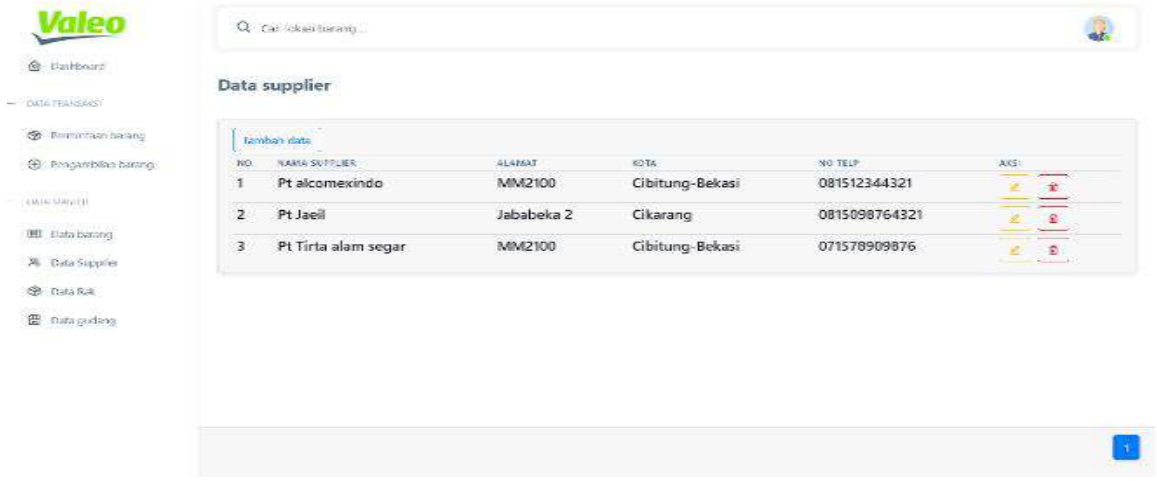

Figure 10. Supplier data menu

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Rack data menu interface

The system display when logistics looks at the RAK data menu, in this menu you can add, edit and delete item data through the logistics system, and the database will automatically be updated.

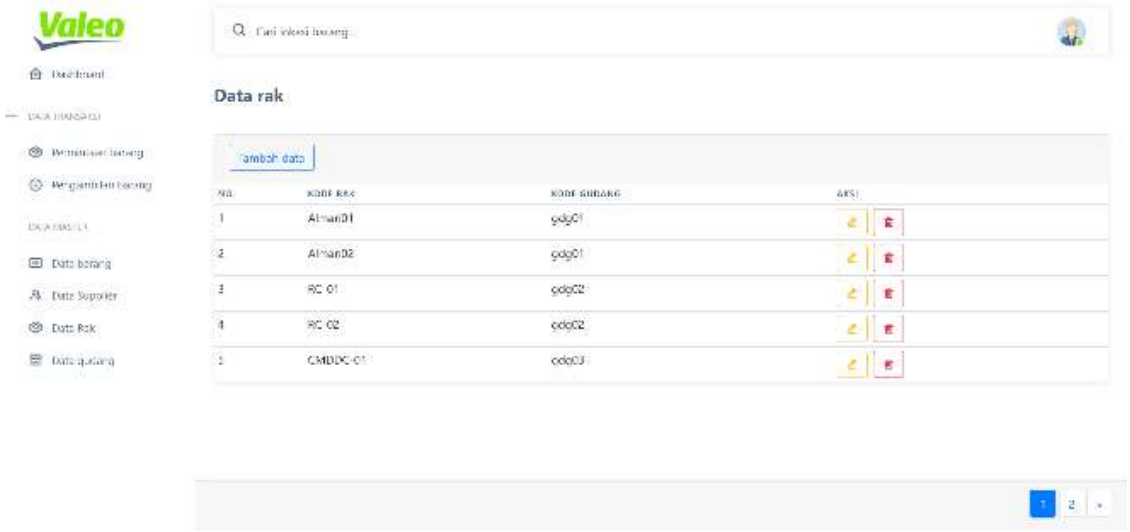

Figure 11. Rack data menu

Rack data menu interface

The system display when logistics looks at the RAK data menu, in this menu you can add, edit and delete item data through the logistics system, and the database will automatically be updated.

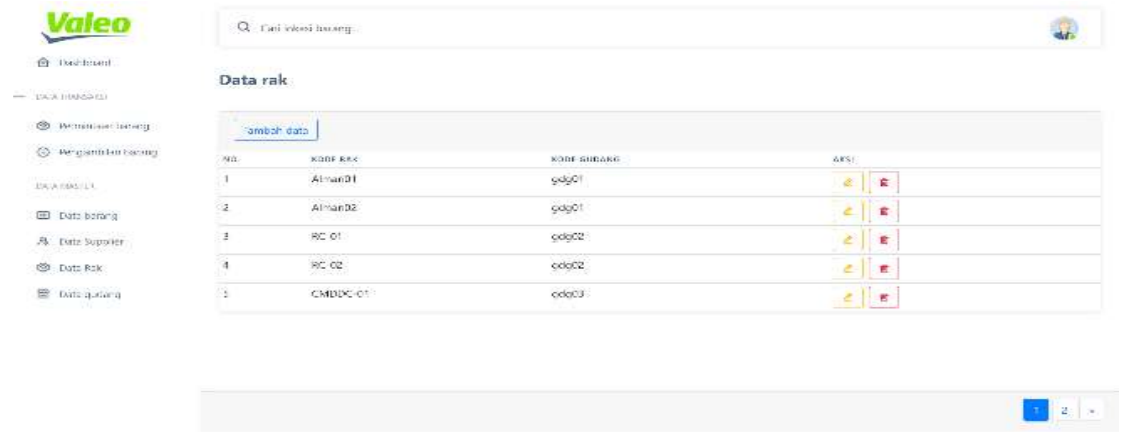

Figure 12. Rack data menu

CONCLUSIONS

Based on the results of the discussion and explanation, the existence of this material inventory information system can be concluded as follows: This website-based company inventory control system design computerizes the process of material ordering activities comprehensively down to the economic balance sheet. By building a website-based company inventory control system, business actors and vendors and suppliers can easily access and retrieve the necessary information in real-time every day. Implementing a safety stock

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system into this digital system is certainly able to provide solutions for companies in determining when and how much material to order, increasing data accuracy and increasing the efficiency and effectiveness of the company's product ordering activities. By integrating vendors/suppliers into a digital system, companies can easily manage the process and status of material orders submitted by vendors or suppliers through existing systems. This has a positive impact on the company because it has the latest material order information, thereby reducing risks in the manufacturing process which could result in production stopping

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