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Research Article

Inventory Information System: Optimizing Inventory Management for Company Business Sustainability

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Abstract
The research investigates the impact of implementing the Inventory Information System (SIPB) at Lalumiere Aesthetics Clinic to optimize inventory management and enhance business sustainability. Objectives include analyzing operational efficiency, evaluating customer service impact, assessing business sustainability, identifying challenges, and proposing a sustainability framework. Currently, the clinic faces stock shortages and discrepancies due to manual inventory management, leading to losses. The methodology involves a literature review on inventory information systems and Laravel framework, followed by prototype development using Laravel. Results indicate that implementing the system has significantly improved operational efficiency. Inventory recording, monitoring, and management have become structured and automated, reducing routine task times. The introduction of SIPB via Laravel has notably streamlined inventory processes, potentially mitigating stock imbalances and shortages that previously led to losses at Lalumiere Clinic.

Keywords: Goods Inventory Information System, Inventory Management Optimization

Abstrak
Penelitian ini bertujuan untuk menyelidiki dampak dari penerapan Sistem Informasi Persediaan (SIPB) di Klinik Kecantikan Lalumiere untuk mengoptimalkan manajemen persediaan dan meningkatkan keberlanjutan bisnis. Tujuan meliputi menganalisis efisiensi operasional, mengevaluasi dampak pelayanan pelanggan, menilai keberlanjutan bisnis, mengidentifikasi tantangan, dan mengusulkan kerangka keberlanjutan. Saat ini, klinik mengalami kekurangan stok dan ketidaksesuaian akibat manajemen inventaris manual, yang menyebabkan kerugian. Metodologi melibatkan tinjauan literatur tentang sistem informasi persediaan dan kerangka kerja Laravel, diikuti dengan pengembangan prototipe menggunakan Laravel. Hasil penelitian menunjukkan bahwa penerapan sistem telah secara signifikan meningkatkan efisiensi operasional. Pencatatan, pemantauan, dan manajemen persediaan menjadi terstruktur dan terotomatisasi, mengurangi waktu tugas rutin. Pengenalan SIPB melalui Laravel secara nyata telah menyederhanakan proses inventaris, yang berpotensi mengurangi ketidakseimbangan dan kekurangan stok yang sebelumnya menyebabkan kerugian di Klinik Lalumiere.

Kata Kunci: Sistem Informasi Persediaan Barang, Optimisasi Manajemen Persediaan

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1. Introduction

Inventory refers to a collection of goods a company stores to fulfill certain purposes, such as production and sales processes. This inventory includes raw materials, goods in process, and finished goods used in company operations. Although inventory is considered an unproductive source of funds because funds related to inventory cannot be used for other purposes, the existence of inventory is very important for the smooth operation of the company (Santoso et al. 2018)

The problems in the inventory information system include several aspects that underlie the need to optimize inventory management in the context of company business sustainability. Among them are inefficiencies in inventory management, companies needing help managing inventory efficiently, manual processes or systems that are not integrated can cause inaccurate inventory data, and difficulties in stock monitoring. Overstock and Understock Risk: The inability to correctly predict inventory needs can lead to overstock (excess inventory) or understock; overstock can result in high storage costs, while understock can hamper product availability and affect customer service. Information technology could be more optimal, but the information system used may not support effective inventory management. New technological developments, such as the latest inventory information system, still need to be fully implemented (Zamzami, Nusa, and Faiz 2021). Challenges of globalization and dynamic markets, companies operate in a dynamic global business environment with intense competition (Suhairi et al. 2023). Responding quickly to market changes is crucial, and good inventory management can help a company be more responsive to market demand. Customer Demands for Product Availability: Modern customers expect fast and accurate product availability. Mistakes in inventory management can result in customer dissatisfaction and lost business opportunities. By understanding the background of this problem, this research can identify appropriate solutions and strategies to optimize inventory management for the sustainability of the company's business.

This research aims to improve the company's business efficiency, responsiveness, and sustainability. These include increasing inventory management efficiency assessing and improving the efficiency of inventory management processes to reduce storage costs and minimize waste of resources. Optimize inventory levels, develop accurate forecast models to optimize inventory levels, and prevent overstock and understock so that companies can maintain the right balance. Inventory information system integrates with inventory information systems with other business systems to increase visibility and linkages between departments, which can support better decision-making. Minimizing environmental impact, identifying ways to reduce the environmental impact of inventory management activities, such as optimizing delivery routes or reducing packaging waste. Increasing responsiveness to market changes, developing strategies that enable companies to be more responsive to changes in market demand, and ensuring the availability of the right products at the right time.

Application of the latest technology, assessing and applying the latest information technology, such as automation systems and predictive analytics, to increase the effectiveness of inventory management (Hartatik et al., 2023). Improve customer service and increase customer satisfaction by ensuring stable product availability, fast delivery, and accurate order fulfillment (Ariyanti, Ngatno, and Saryadi 2021). Identify market trends and changing customer needs, investigate and identify market trends that may impact product demand, and changes in customer needs and preferences. Increasing business sustainability, evaluating the impact of inventory management optimization strategies on business sustainability, including financial and environmental aspects(Rachman et al. 2022). Improve data security and accuracy, ensure the security and accuracy of inventory data to prevent errors in decision making and provide a strong foundation for inventory management strategies (MUNA 2021).

By detailing these objectives, the research is expected to provide in-depth insights and concrete solutions to improve inventory management and support corporate business sustainability. In

this research, there are gaps, including the need for more application of the latest technology and the lack of research detailing the application of the latest technology in inventory information systems to achieve inventory management optimization. This study could further explore automation solutions, predictive analytics, or other technologies that can improve efficiency. Minimal environmental and sustainability aspects still need to fully explore sustainability and environmental impacts in inventory management(Sari, Agustin, and Mulyani 2019). Organizations must continuously improve by analyzing all aspects of performance by investigating risks and challenges with continuous empowerment (Hassan and Arshad, 2023). Further research could focus on how inventory optimization can positively contribute to business sustainability.

For better data integration and interconnection, there still needs to be more exploration of data integration between inventory information systems and other departments in the company. How better interconnection between departments can improve visibility and better decision-making. Aspects of inventory data security research may have yet to discuss data security issues in the context of inventory management in detail. Inventory data security is becoming increasingly important, and research can explore the challenges and solutions in keeping inventory information secure. Uncertainty and risk in the inventory management process, further research can explore how inventory management can overcome uncertainty in the market and manage risks associated with changes in market conditions or policies.

The novelty in this research is the use of a website-based inventory information system, inventory information system to provide real-time monitoring of inventory conditions and enable faster decisions. Focuses on external engagement, studying how companies can improve collaboration and connectivity with suppliers, logistics partners, and customers through inventory information systems to improve overall supply chain efficiency. End-user involvement and experience-based design (User Experience), involving end users in developing inventory information systems and designing more user-friendly interfaces to increase adoption and effectiveness. Integrating these novel elements into inventory systems research can significantly contribute to the literature and business practice in the context of inventory management for corporate business sustainability.

At the Laumiere clinic, there is often a shortage of medicine stock in the warehouse, which overwhelms the staff, and there is often an unbalanced amount of stock and the number of goods out, causing many losses to the clinic. After reviewing it again, inventory management at the Laumiere Clinic is still done manually. Namely, incoming goods and outgoing goods are written in a notebook, and the inventory reporting process is also carried out by typing incoming goods and outgoing goods one by one into WhatsApp, which is a process that often experiences writing errors. The amount needs to be more appropriate, and the process takes a long time. In the problems mentioned, it is necessary to implement new inventory management, namely a website-based information system.

PT Sinar Utama Jaya Abadi's inventory system in data management still needs to be revised, so it often experiences problems such as the time it takes to manage inventory. Therefore, researchers designed a website-based inventory information system using the waterfall model system for the development method, which can make inventory management easier (Gulo et al. 2023).

2. Design/Methods

The software development model the author will use is the waterfall method:
This model begins by determining requirements specifications and then continues with the stages of the system's planning, modeling, construction, and delivery to users. The final stage of this model involves support for the software that has been produced (Wahid et al., 2020). The following is a picture of a waterfall model.

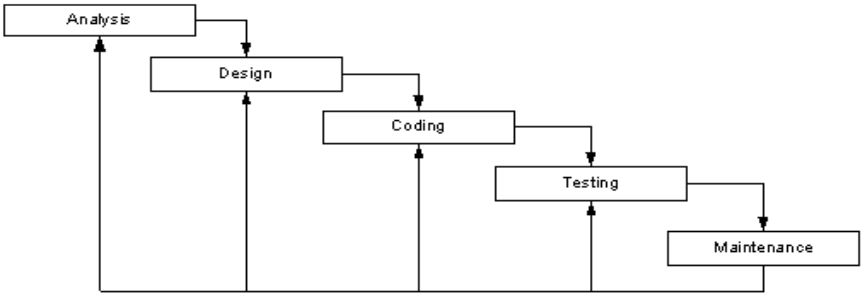

Figure 1. Illustration of the Waterfall Model

1. *Analysis*Need
   Analysis Requirements are the initial stage in the system creation process, which focuses on understanding what software requirements the user needs. The software needed is the Xampp web server, Visual Studio Code Text Editor, Laravel Framework, and PhpMyAdmin Database.
2. Design
   Software design is a process focused on creating software programs, including data structures, software architecture, interface representation, and coding procedures. Software design aims to produce a design for the interface of the application being created.
3. Implementation
   In this stage, the system creation process will be built using the programming language PHP, HTML, using a MySQL database
4. Testing
   The next stage is to test or inspect the system that is already running to ensure the system functions according to previously determined specifications.
5. Maintenance
   At this stage, system maintenance or repairs are carried out to ensure the system functions properly according to user needs

3. Results

Until now, OOP practitioners have widely used UML as a tool for designing and developing systems efficiently. Following is the UMl Diagram:

1. **Use Case Diagrams**
   Use cases describe the activities carried out by actors in the goods supply system.

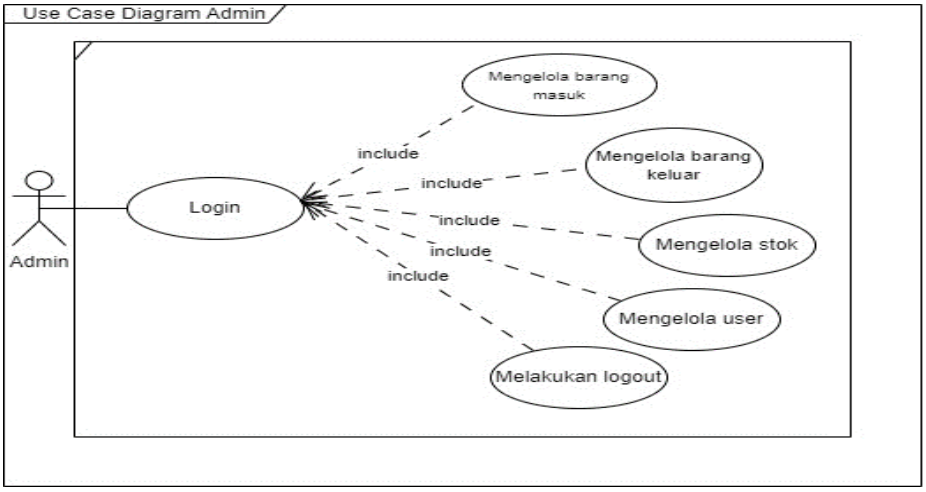

Figure 2. Admin use case diagram

The use case diagram for admin users illustrates that you can carry out several tasks, namely managing incoming goods from suppliers by checking the order letter with the goods handover letter sent by the courier. Manage outgoing goods every time there is a sale or use of goods by inputting expenditure data. Managing stock of goods in the warehouse, namely by controlling incoming and outgoing goods. Manage user data, including cashiers, sales, purchasing, and customer data.

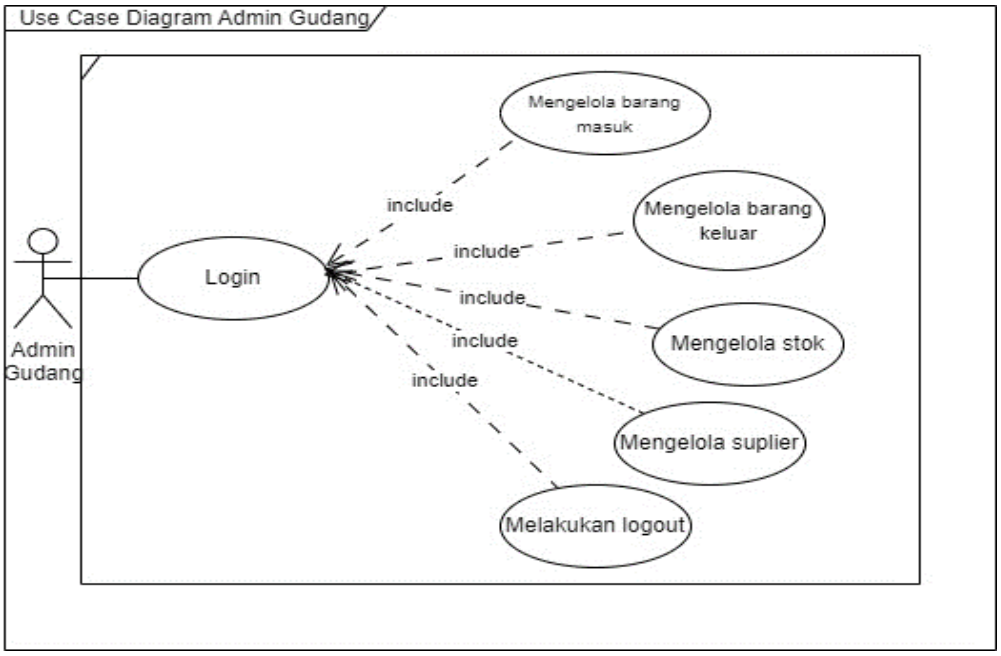

Figure 3. Use case diagram for warehouse admin

The role of the warehouse admin is the same as the admin, namely being able to carry out several tasks, namely managing incoming goods from suppliers by checking the order letter with the goods handover letter sent by the courier. Manage outgoing goods every time there is a sale or use of goods by inputting expenditure data. Managing stock of goods in the warehouse, namely by controlling incoming and outgoing goods. Manage user data, including cashiers, sales, purchasing, and customer data.

2. *Activity Diagrams*
Explains the activities of actors and computers in the program. Admin and warehouse staff must log in first with the username and password created.

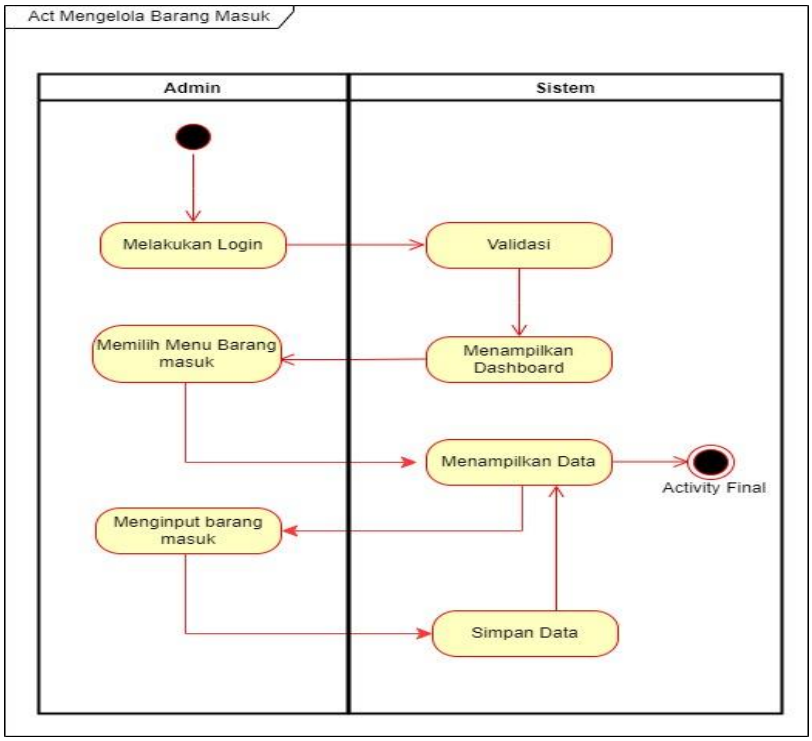

Figure 4. Activity Diagram for Incoming Goods

Activities that occur in managing incoming goods start with the admin logging in, and the system will validate and display a dashboard. Then, the admin selects the incoming goods menu, and the system will display the data and the goods data input page. After completing the input of funds, the system will save the incoming goods data.

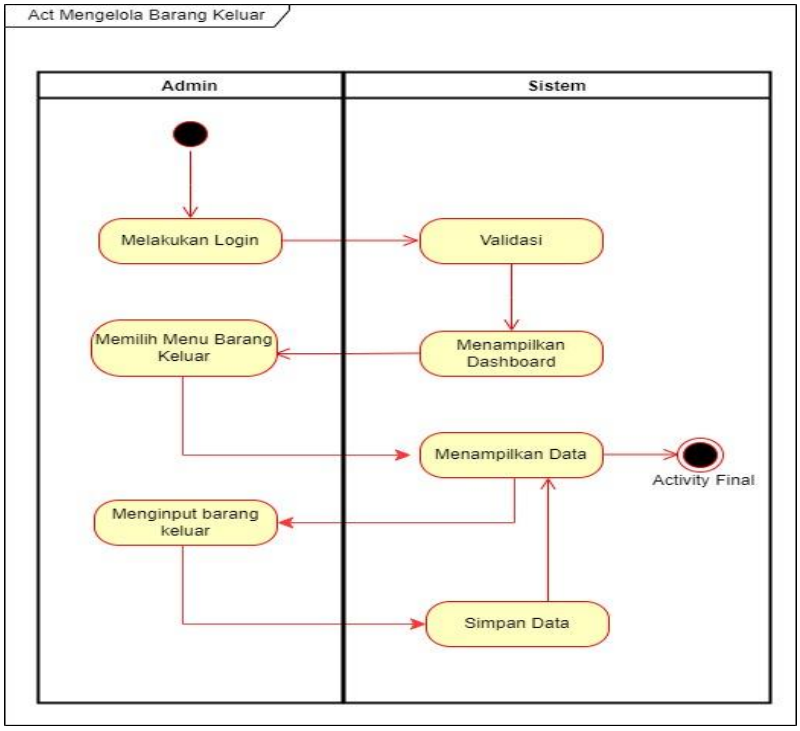

Figure 5. Activity Diagram for Outgoing Goods

Activities in managing outgoing goods start with the admin logging in, and the system will validate and display a dashboard. Then the admin selects the outgoing goods menu,

and the system will display the data and display the outgoing goods data input page. After completing the input of funds, the system will save the goods data.

3. *Class Diagrams*
Class explains the structure of the system by defining the classes, attributes, and relationships between classes that are created to build the system

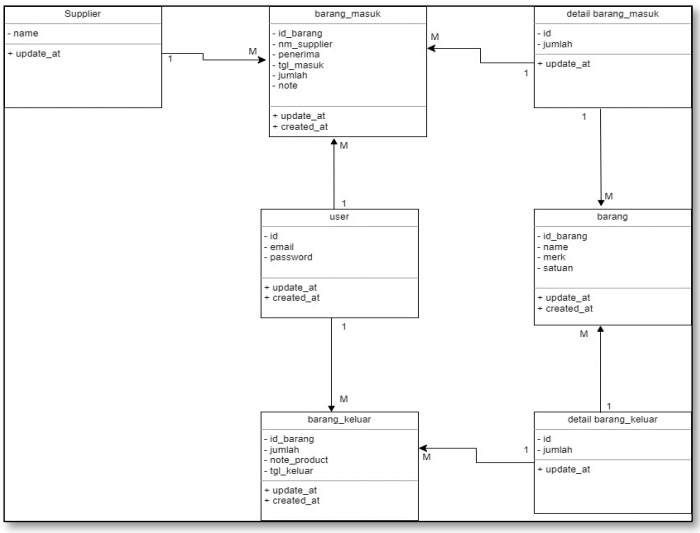

Figure 6. Inventory System Class Diagram

4. *Sequence Diagrams*
Describes the sequence (flow) of sending messages in the application as a form of interaction with the user.

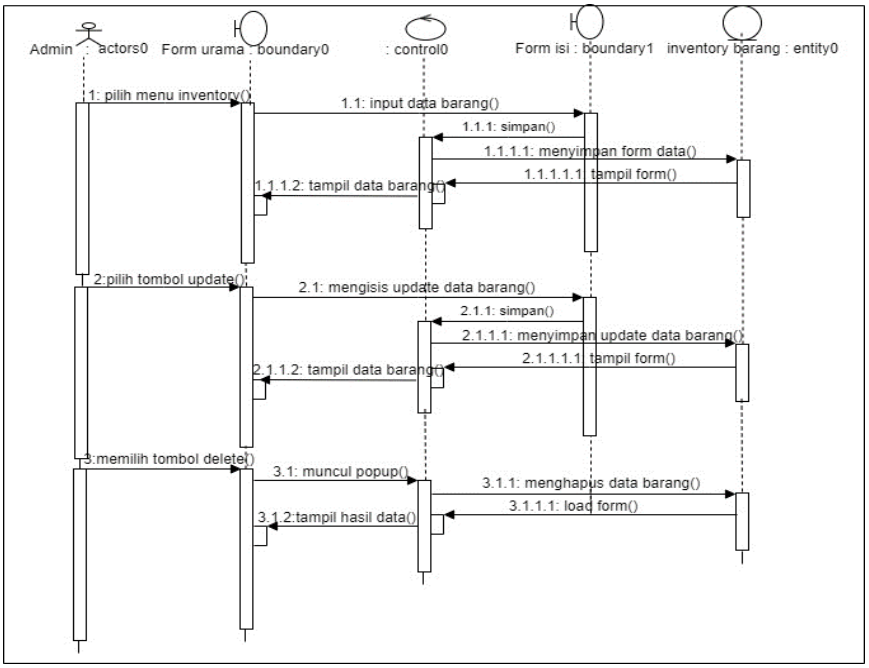

Figure 7. Sequence Diagram

5. User interface
In this research, an inventory information system can be implemented based on the results of the user interface design as follows:

a) User Interface Login Page

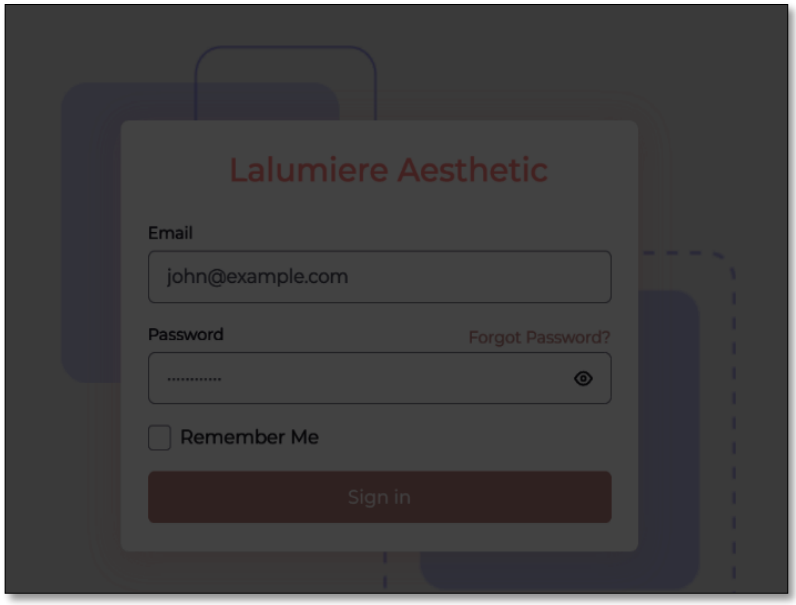

Figure 8. Login page

The Login page can be used by all users, such as admin, warehouse admin, purchasing department, and sales department. To enter the inventory information system, users can log in by entering their email and password and clicking the Sign in button. Next, the system will display the inventory information system's dashboard page or main menu.

b) Incoming Items Page

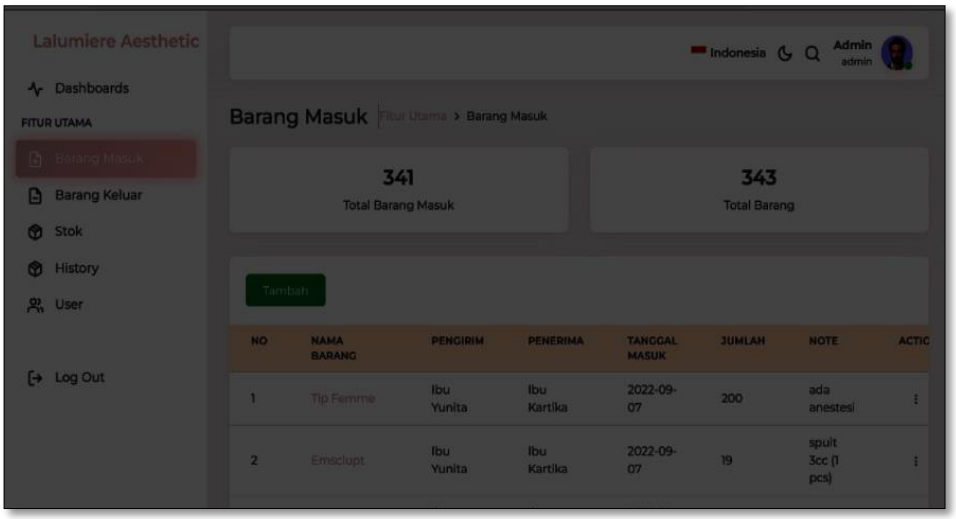

Figure 9. Incoming goods page

To manage incoming goods, in the menu on the dashboard, select the incoming goods menu, then select the add button to input incoming goods data. Next, the system will save the incoming goods data that has been input.

c) Outgoing Goods Page

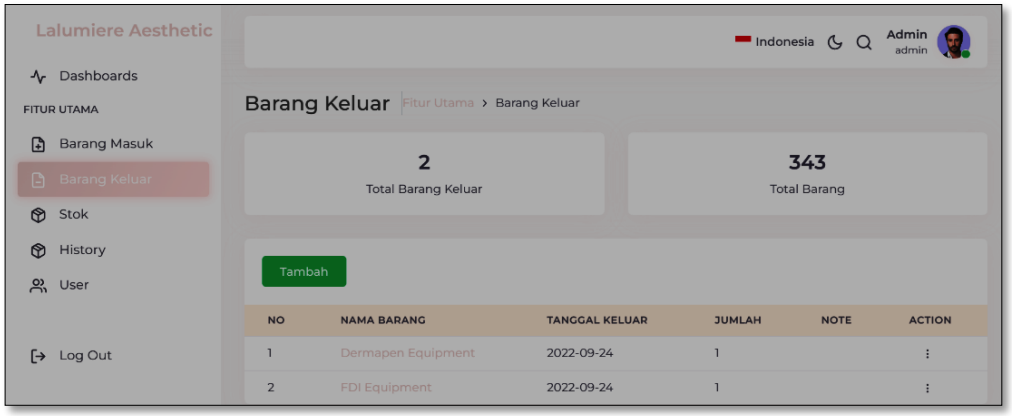

Figure 10. Outgoing goods page

To manage outgoing goods, in the menu on the dashboard, select the outgoing goods menu, then select the add button to input outgoing goods data. Next, the system will save the outgoing goods data that has been input.

4. Conclusion

This research can draw several conclusions, such as the importance of optimizing inventory management. It is important to optimize inventory management in the context of company business sustainability. Highlights how efficiency in inventory management can have a positive impact on financial balance and environmental impact. Contributing to operational efficiency, the implementation of an optimized inventory information system can significantly improve a company's operational efficiency, reduce storage costs, and optimize resource use. Positive impact on sustainability inventory optimization practices can positively impact business sustainability, both from an economic and environmental perspective. This strategy can help companies adapt to market changes and minimize negative impacts.

Integrating the latest technologies, such as predictive analytics, artificial intelligence, or IoT, is important in achieving inventory optimization goals. This technology can improve responsiveness and quality of decision-making. External party involvement emphasizes the importance of better engagement with external parties, including suppliers and customers, to improve collaboration and overall supply chain effectiveness. Challenges that need to be faced may be faced during the implementation and optimization of an inventory information system. This challenge can involve technological aspects, internal policies, or stakeholder resistance. Provides practical recommendations for companies wishing to adopt or improve their inventory information systems and suggestions for further research in this area.

By summarizing these findings in conclusion, this research can provide a comprehensive view and significantly contribute to understanding and practice in optimizing inventory management to achieve corporate business sustainability.

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