

Design of a Web-Based Goods Inventory Information System for an Office Stationery Store

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Abstract

Hasco Stationery Store, located on Jalan Perintis Kemerdekaan Km 09, is a business specializing in printing and office stationery sales. Effective management of stock availability, purchasing, and sales processes is crucial to meeting customer needs. Prior to implementing an integrated information system, inventory management at the store was performed manually by employees, who relied on estimates and experience to record stock, check inventory, and place purchase orders. This manual approach proved inefficient and prone to errors, including inaccurate stock calculations, recording mistakes, and data loss. To address these challenges, this study employed the waterfall development method to design and implement a web-based inventory information system aimed at enhancing the efficiency and accuracy of inventory management processes. Data were collected through interviews with the store owner, direct observations, and analysis of relevant documents, supplemented by a literature review on stock management principles and information system development. The resulting system simplifies stock management, reduces errors, and improves overall operational efficiency, providing a robust solution for inventory management at the Hasco Stationery Store.

Keywords: Inventory Management System; Office Stationery Store; Stock Management Efficiency; Waterfall Development Method; Goods Inventory Information System.

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Introduction

Efficiency and accuracy in managing inventory of goods is one of the important factors that determine the operational success of an office stationery (ATK) store (Alwepo, 2024; Rakasiwi, 2024; Shabani et al., 2021). In today's digital era, many stationery stores still rely on manual methods such as recording in books or spreadsheets to monitor stock (Arief Yanto Rukmana et al., 2021; Budi Harto, Arief Yanto Rukmana, Rino Subekti, 2023; Hermayanti, 2023; Proxsis, 2024). This approach often causes various problems, such as recording errors, difficulty monitoring stock in real-time, and delays in making restocking decisions (Fajriyah, 2022; LI Sari et al., 2024). Therefore, a solution is needed in the form of a web-based information system that can automate the inventory management process in a more structured, fast, and accurate manner (Cahyaningrum & Sambharakreshna, 2024; Yasin et al., 2024).

The development of information technology opens up great opportunities to support the digitalization of business processes, including in the small and medium business sectors such as stationery stores (Sibarani, 2023; Wijoyo, Cahyono, et al., 2020; Wijoyo, Vensuri, et al., 2020). Web-based information systems have various advantages, such as easy accessibility through various devices and the ability to present data in real time (Rukmana et al., 2023; Saputra et al., 2023; Sudipa et al., 2023; (Ernanda, 2023). With this system, shop owners can monitor stock anytime and anywhere, reducing the risk of understocking or overstocking which can impact operational costs (Admin, 2024; Arisona, 2024; Imam, 2024). This shows the importance of an information system that is specifically designed for the needs of a stationery store. Designing an information system requires not only a technical approach but also a deep understanding of user needs (Budiman et al., 2024; Fadli et al., 2024; Harto et al., 2023; Setiawan et al., 2024). Each store has unique operational characteristics, so system design must be based on a thorough analysis of business needs (Kuswiandi, 2019; Lalu. M. Nisa. J. Urnika. W. Farid. Sepriano. D. Aulia. S. Ahmad. Kharisma, 2023; Munir, 2024;

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Wibisono & Dewantara, 2017). This research will cover needs analysis, design, development, testing, implementation, and maintenance of an inventory information system that can be easily accessed by store owners and employees.

This research is in line with research Ariyanto & Nuraeni (2024), with the title of Website-Based Office Stationery Inventory Information System. Furthermore, the research Priscilla & Damayanti (2022) with the title Analysis and Design of Information Systems for Office Stationery Stores (Case Study: Amarta Store). And research Thalia et al. (2021) with the title Website-Based Inventory Information System (Case Study: At Obyth Store).

Hasco Stationery Store is a company engaged in printing and selling office stationery located on Jalan Perintis Kemerdekaan Km 09. Office stationery stores are a type of business that provides various kinds of goods and office supplies to customers (Ajaib, 2022; Prima, 2024; W. Sari, 2024; Utoyo, 2017). In managing the store, the manager needs to pay attention to the available stock of goods, make purchases appropriately, and maintain a smooth sales process so that customer needs are met. Based on direct observations or observations through the store employees, before the integrated information system, inventory management of goods in office stationery stores was generally done manually. Employees are responsible for recording stock, checking inventory, and placing purchase orders based on their estimates or experience. However, this manual method is often inefficient and prone to errors, such as recording errors, inaccurate stock calculations, or loss of inventory data. Therefore, the use of technology is needed in these conditions. Given the many solutions that can be developed to make it easier for employees to process inventory. The development of an information system is carried out not only to facilitate the management of goods or inventory management but also to facilitate checking reports that can be accessed directly via the website.

Method

This research uses the waterfall method. The Waterfall method is one of the oldest and simplest software development process models (Adminlp2m, 2022; Bintang, 2023; Huda, 2023; Meilinaeka, 2023). This model has a sequential and linear approach, where each stage must be completed before starting the next stage. The name "waterfall" describes the process flow from top to bottom, like a waterfall, where each phase flows into the next (Agency, 2024; BSI, 2023; Senarath, 2021; Tekno, 2021; Wahid, 2020).

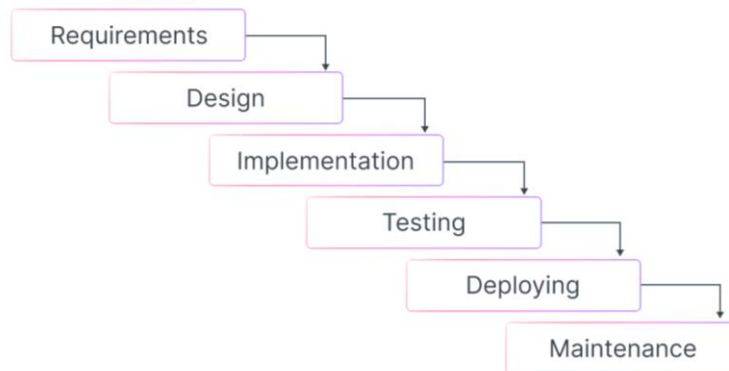


Figure 1. Stages of the waterfall method

The Waterfall method in developing information systems begins with the analysis stage, where researchers collect and analyze system requirements through interactions with store owners or other stakeholders to understand business needs and find efficient inventory management solutions. After that, in the design stage, researchers design a system that includes system architecture, database design, and user interfaces that make it easier for store employees to manage inventory. Furthermore, the development stage is carried out by implementing the code and building features according to the specifications that have been designed. After development is complete, the system is thoroughly tested to ensure its functionality is as needed, including identifying and fixing bugs. If the system has passed the test, the implementation stage is carried out by entering the system into the production environment in the store, accompanied by training for employees. Finally, the maintenance stage is carried out routinely to monitor system performance, resolve problems that may arise, and ensure the system continues to run properly.

This system design uses use case design, use case is a method in system analysis and design which is used to describe the interaction between actors (users or other systems) with the system being developed (Bittner & Spence, 2003; Iqbal et al., 2020; Lesmono, 2024). In this context, "system" can refer to software, applications, or even specific business processes. The main purpose of a use case is to understand and describe how users or other actors will interact with the system, and what to expect from the system in various situations (Maulana, 2022; Setiyani, 2021). This process helps software analysts and developers to identify functional and non-functional requirements, and ensure that the system being developed will meet the needs of users and other stakeholders.

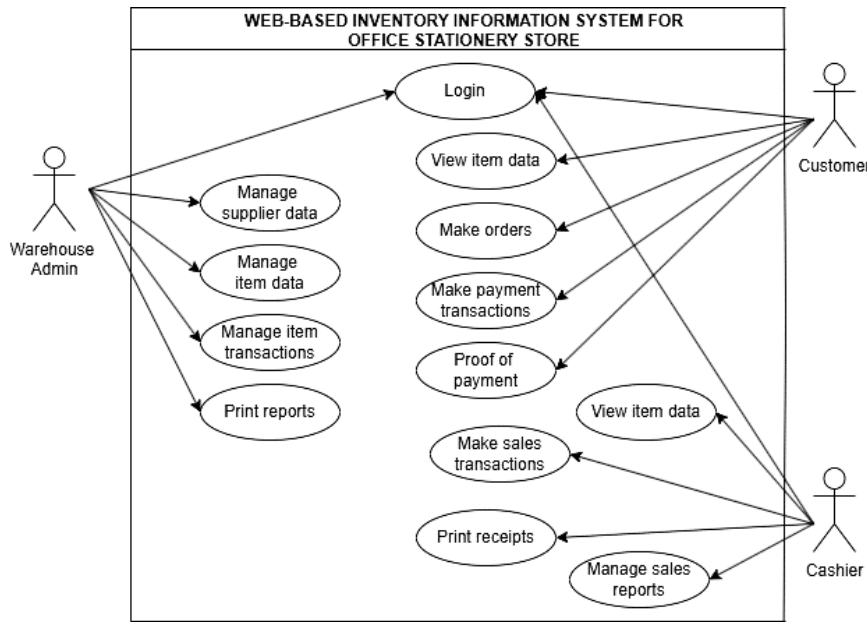


Figure 2. Use case diagram

Results and Discussion

Results

This study aims to design and develop an Inventory Information System to improve the efficiency of stock management and goods management processes at Hasco ATK stores. Data collection was conducted through interviews with store owners, direct observation, and analysis of related documents. In addition, we also conducted a literature study on the concept and principles of stock management and information system development methods.

Figure 3. Login page

In Figure 3 the login page will display a form containing columns to enter login information. This form usually contains two columns, namely "Username", and "Password" and also selects the user level. Users must enter the appropriate username and password to enter the system.

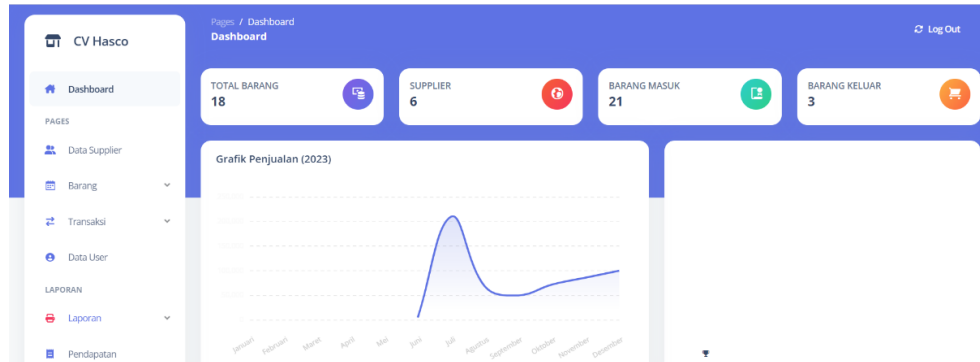


Figure 4. Dashboard page

In Figure 4, the dashboard page displays a summary of the overall inventory status of goods. This information is in the form of the total number of goods available, the number of supplier data, the number of goods in, and goods out, accompanied by a sales graph.

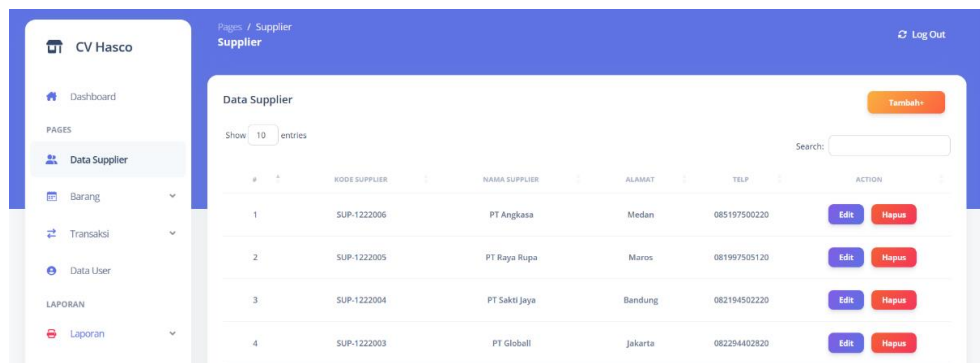


Figure 5. Supplier data page

In Figure 5, the supplier data page will display a complete list of all suppliers who are partners with the Hasco ATK store. Each supplier is usually presented in the form of a list with columns that include important information such as supplier name, code, address and contact as well as to add, delete, and edit supplier data.

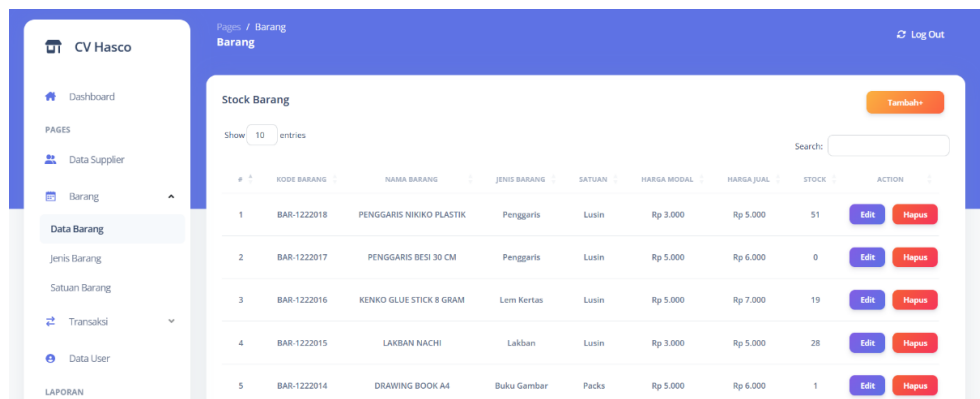


Figure 6. Item data page

In Figure 6 the item data page will display a complete list of all items available at the Hasco ATK store. Each item is usually presented in the form of a list with columns that include important information such as item name, product code, type, unit, price, and stock quantity. Also equipped with features to add, edit and delete.

#	ID TRANSAKSI	TANGGAL MASUK	KODE BARANG	NAMA BARANG	PENGIRIM	JUMLAH MASUK	SATUAN	ACTION
1	TRM-0223021	2023-02-04	BAR-1222001	SNOWMAN V1	PT Sakti Jaya	10	BOX	Hapus
2	TRM-1222020	2022-12-25	BAR-1222017	PENGGARIS BESI 30 CM	PT Raya Rupa	50	Lusin	Hapus
3	TRM-1222019	2022-12-24	BAR-1222003	FASTER HIGH GRADE C-600	PT Angkasa	200	BOX	Hapus
4	TRM-1222018	2022-12-24	BAR-1222002	SNOWMAN V2	PT Sakti Jaya	100	BOX	Hapus
5	TRM-1222017	2022-12-24	BAR-1222001	SNOWMAN V1	PT Surya Makmur	100	BOX	Hapus
6	TRM-1222016	2022-12-24	BAR-1222015	LAKBAN NACHI	PT Angkasa	32	Lusin	Hapus
7	TRM-1222015	2022-12-24	BAR-1222016	KENKO GLUE STICK 8 GRAM	PT Surya Makmur	19	Lusin	Hapus

Figure 7 Goods transaction page

In figure 7 of the goods transaction page, there are two types of incoming goods and outgoing goods transaction menus, where the incoming goods transaction will display incoming goods data such as transaction ID, date of entry of goods, goods code, goods name, sender, number of incoming goods. Also equipped with add, edit, and delete features.

#	ID TRANSAKSI	TANGGAL MASUK	KODE BARANG	NAMA BARANG	PENGIRIM	JUMLAH MASUK	SATUAN
1	TRM-0223021	2023-02-04	BAR-1222001	SNOWMAN V1	PT Sakti Jaya	10	BOX
2	TRM-1222020	2022-12-25	BAR-1222017	PENGGARIS BESI 30 CM	PT Raya Rupa	50	Lusin
3	TRM-1222019	2022-12-24	BAR-1222003	FASTER HIGH GRADE C-600	PT Angkasa	200	BOX
4	TRM-1222018	2022-12-24	BAR-1222002	SNOWMAN V2	PT Sakti Jaya	100	BOX
5	TRM-1222017	2022-12-24	BAR-1222001	SNOWMAN V1	PT Surya Makmur	100	BOX
6	TRM-1222016	2022-12-24	BAR-1222015	LAKBAN NACHI	PT Angkasa	32	Lusin
7	TRM-1222015	2022-12-24	BAR-1222016	KENKO GLUE STICK 8 GRAM	PT Surya Makmur	19	Lusin

Figure 8. Report page

In Figure 8, the report page has several menus, including supplier reports, stock reports, outgoing goods reports and incoming goods reports, which make it easier for the admin to summarize overall goods data.

Discussion

This study successfully designed and implemented a web-based Inventory Information System for the Hasco ATK store, addressing key challenges in stock management. The system enhances the efficiency of stock management, improves the accuracy of inventory records, and simplifies real-time monitoring of incoming and outgoing transactions. The transition from manual methods, which are often inefficient and prone to errors, to an automated system significantly reduces the risk of data loss, accelerates decision-making, and facilitates accurate inventory tracking. These

advancements align with the broader trend of digitalization, particularly in supporting small and medium-sized enterprises (SMEs).

The study's findings are consistent with previous research emphasizing the critical role of web-based information systems in improving business efficiency (Cahyaningrum & Sambharakreshna, 2024; Yasin et al., 2024). The results demonstrate measurable improvements in operational efficiency and reliability compared to traditional manual processes. Additionally, these findings corroborate the conclusions of studies by Ariyanto & Nuraeni (2024) And Priscilla & Damayanti (2022), which highlights the advantages of adopting web-based systems in inventory management.

By providing empirical evidence specific to the Hasco ATK store, this research contributes to the growing body of literature on the application of web-based inventory systems, particularly within the context of SMEs. The success of this system underscores its relevance in supporting the digital transformation of business processes, paving the way for increased productivity and competitiveness.

Conclusions and Suggestions

Conclusions

This study reviewed and analyzed the implementation of an inventory information system at the Hasco Stationery Store (ATK Hasco) to enhance efficiency, accuracy, and simplicity in stock management processes. The findings highlight several key benefits of utilizing an inventory information system. First, the system enables real-time stock monitoring, allowing store managers to manage inventory more effectively and prevent stock shortages or overstocking. Additionally, it facilitates accurate recording of sales transactions and goods receipts, streamlining inventory tracking and auditing processes. The implementation of this system also significantly reduces human error in stock management. Features such as automated identification and recording of goods ensure faster and more accurate inventory updates, minimizing the risk of stock miscounts or losses. Overall, the inventory information system provides a robust solution for improving operational efficiency and reliability in managing office stationery inventory at ATK Hasco.

Suggestions

Based on this research, we would like to provide some suggestions that can help Hasco stationery stores implement a goods inventory information system:

1. **Feasibility Study:** Conduct a comprehensive feasibility study to evaluate the need, benefits, and costs involved in implementing an inventory information system. Be sure to consider factors such as investment costs, long-term benefits, and integration with existing systems.
2. **Choosing the Right System:** Choose an inventory information system that suits the needs and operational scale of the Hasco ATK store. Make sure the system has relevant features, such as real-time stock recording and transaction tracking capabilities.
3. **User Training:** Provide adequate training for Hasco ATK store staff who will use the inventory information system. Ensure that they understand the functionality of the system and can optimize its use in managing ATK inventory.
4. **Maintenance and Updates:** Perform routine maintenance and updates to the inventory information system. Ensure that the system is always running well, data security is maintained, and supports the operational needs of the growing Hasco ATK store.

Evaluation and Improvement: Conduct periodic evaluations of the effectiveness and efficiency of the inventory information system that has been implemented. Identify areas that need improvement and continuously improve the system in accordance with the development of the Hasco ATK store.

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