
The Design of A Web-Based Inventory Information System for Msmes

Hikmatul Maulidah¹, Krisdiyawati²

^{1,2}Department of accounting, Program Studi DIII Akuntansi Politeknik Harapan Bersama, Tegal, Jawa Tengah, Indonesia

ABSTRACT: The aim of this research is to design a trade goods inventory information system for MSMEs. Information technology that has experienced rapid growth allows companies to use information technology to run company operations. This is used by many companies to avoid several omissions in terms of accounting records if done manually. Accounting record negligence that often occurs is in inventory. UMKM "Deepa" Electronic as an MSME that sells household electronic goods has used several inventory accounting recording applications that have been sold freely in the market but there are several needs that cannot be met by the financial recording application, so it returns to using Microsoft Excel for inventory inventory activities. However, Microsoft Excel does not have a database management system so that the data that has been inputted cannot generate reports automatically. This makes inventory activities less efficient. The solution to this problem is to design a website-based inventory information system using the Prototype method. The results of this study are the design of inventory information systems in MSMEs to make inventory more effective and efficient.

KEYWORDS: Accounting Information System, Inventory System, Website system, Prototype accounting.

INTRODUCTION

The rapid development of the times means that the business world cannot be separated from technology, such as the implementation of information systems in a company (Farida & Sutopo, 2023). Almost all companies in terms of decision making, dissemination of information, increasing work effectiveness and service have used information systems. This has a significant impact on aspects of work that require the use of computerized systems to achieve efficiency (Fatimah et al., 2020). This method is used by many companies to avoid negligence in accounting records if done manually. Mistakes in accounting records that often occur are in inventory.

Inventory accounts are reported in the statement of financial position as part of the current assets group. Inventory is goods held or owned by the company for sale or reprocessing for the Company's operational activities (Fatimah et al., 2020). Merchandise inventory is an important asset for a company, especially if it has various types and has a high turnover rate. The problem that often arises regarding the inventory of goods is not knowing exactly the amount and condition of remaining goods in the warehouse, which can cause goods to be stored for too long, excessively, shortages or running out of goods, damage, and other possibilities that can result in inventory records being different from the existing inventory. it's actually in the warehouse (Prakasita N & Nugroho, 2018).

MSME "Deepa" Electronics is a trading business that sells electronic goods. So far, MSMEs have tried several accounting recording applications, but there are several needs that cannot be met by these financial recording applications, so the company returns to using Microsoft Excel for inventory inventory activities. Microsoft Excel does not have a database management system so the data that has been input cannot produce reports automatically. This is supported by research (Rohman & Bhakti, 2023) which explains that Microsoft Excel does not have a (DBMS) Database Management System, because it does not yet have complete facilities such as not being able to input the preparation of inventory reports automatically in a short time. This makes inventory inventory activities less efficient, there are delays in the delivery of information and the correctness of calculations is less guaranteed.

To overcome this, it is necessary to design a website-based inventory information system that can help create a fast, accurate and accountable information system. A website (web) is a collection of several pages available via the internet network to provide information. (Firmansyah et al., 2021). The computerized inventory information system that will be designed is expected to make inventory inventory more effective and efficient, considering the characteristics of electronic merchandise inventory which has many brands, types and very diverse items so that companies need an accounting recording system that suits their needs. company.

The advantage of the inventory information system designed in this research compared to the inventory information system in previous research is that this system is able to input several items of goods in 1 transaction, making it easier for users to input purchase and sales transactions. Researchers hope that the design of this system will produce an inventory information system design that can assist the inventory inventory process according to the needs of MSMEs.

THEORETICAL FRAMEWORK

Inventory Information System

An accounting information system is a system that processes data and transactions for produce information that assists in planning, monitoring, and operating a business. The Goods Inventory Information System is a system used to input goods inventory data into a database, so that there are no errors in input, output and making reports based on the desired data (Setiyanto et al., 2019). The inventory accounting system aims to record mutations for each type of inventory stored. This system is closely related to the sales system, sales returns system, purchasing system, and purchase returns system stated that the purpose of the inventory information system (Widiyanti & Wibowo, 2021)are as follows

- a) Provide information about inventory from recognition to the receiving process with appropriate procedures.
- b) Provide information about existing inventory flow so that you can determine the level of control required.
- c) Monitor inventory so that its existence can be calculated economically.

It can be said that a good and integrated inventory accounting information system will help companies make decisions and establish policies. Companies can process data through input and processes to produce inventory reports, incoming goods transaction reports, and outgoing goods transaction reports as needed(Giovani & Novianty, 2020).

Inventory

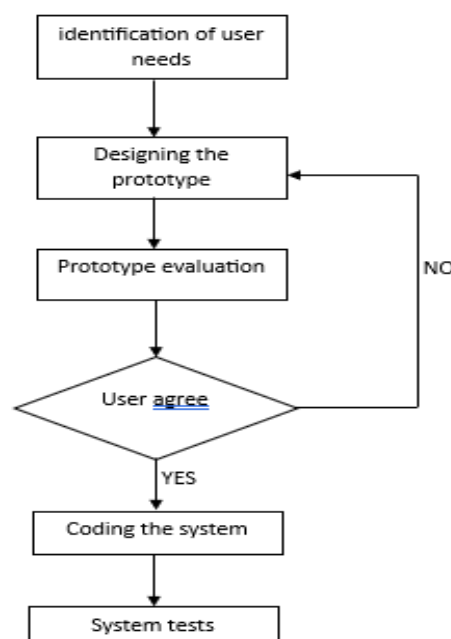
Inventory is goods held or owned by the company for sale or reprocessing for the Company's operational activities (Fatimah et al., 2020). There are 2 methods of recording inventory (Sarirah Fitriana, Damayanti, 2021), namely :

1. Periodic System. An inventory recording system is carried out at the end of each period, so the inventory value will only be known at the end of the period. The inventory account is not used to record inventory receipts due to purchase transactions and is not used as a deduction due to sales transactions. Information regarding inventory is not obtained from the inventory account, just as the cost of goods sold cannot be known for each ongoing sales transaction
2. Perpetual System. Recording is carried out continuously or continuously, both for recording quantities and basic prices so that the balance can be known at any time. Merchandise purchase transactions are recorded by debiting the inventory account for the purchase price. In this system, when sales of merchandise do not use a purchase account, the company makes two journal entries, namely recording the sale of merchandise at the selling price and recording the cost of goods sold.

RESEARCH METHOD

The object of this research is "Deepa" Electronics, namely MSMEs that sell household electronic goods. The data collection technique in this research is observation and interviews (Jaya, 2020; Sugiyono, 2018). This inventory information system will be created by implementing a prototype model, namely collecting information regarding user information needs quickly. The prototype will be evaluated by users and used to refine software development needs(Firmansyah et al., 2021). The advantage of using the prototype method is that users are directly involved in the analysis and design process (Fridayanthie et al., 2021).The complete stages of the prototype method are as follows:

Figure 1. Stages of the Prototype Method



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1. Identify User Needs

Analyze the needs of existing problems. Identification of information system user needs is carried out by interviewing users regarding the desired information system. Identification of user needs is also carried out by direct observation

2. Designing Prototypes

Create a model of the existing problem. Design is carried out by arranging the requirements used into an initial prototype as an illustration of the system that will be built.

3. Prototype evaluation

The description of the system to be built is evaluated at this stage with the aim of obtaining suggestions and input from information system users. If at this stage there are still revisions, then improvements and redesign of the prototype must be carried out. If the user agrees, they can proceed to the system coding stage.

4. System Coding

The agreed prototyping is then translated at this stage into the PHP programming language.

5. System Testing

Black box testing is a testing method that is carried out only by observing execution results through test data and checking the functionality of the information system (Manurung, 2019).

RESULTS AND DISCUSSIONS

Identify User needs

Identification needs is the very first step in the procedure for creating a software product. Researchers conduct an analysis of needs related to software design and development. The following is an identification of user needs in designing a sales accounting information system for MSMEs:

1. This system is designed to meet the needs regarding the purchasing process and sales process so that users can easily use it.
2. The system can be accessed by owners and employees. Employees can input stock data, suppliers, customers, purchases, sales of goods, access stock reports, purchase reports and sales reports. Meanwhile, owners can access stock reports, purchase reports and sales reports
3. The system must be able to provide information regarding purchase and sale transactions of goods as well as inventory stock
4. The system can print final inventory reports, net purchases and net sales automatically with Excel and PDF versions

Designing Prototypes

After identifying user needs, the next step is to build a prototype of the information system. Some of the inventory information system displays are as follows:

1. Login Form; is a form where the user enters data in the form of a username and password to be able to enter and access the system

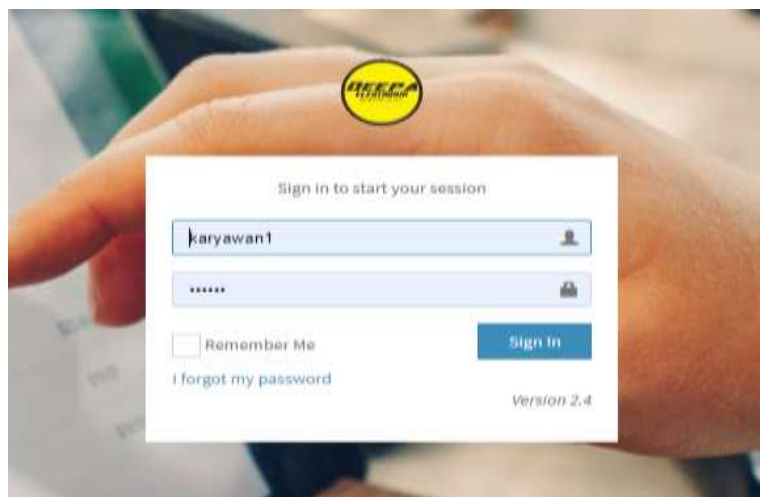


Figure 2. Login Display Prototype

2. Dashboard Menu; After the user logs in, the dashboard menu display appears. In this dashboard there are several main menus such as item data, customer data, supplier data, purchases, sales and reports
3. Menu Main Goods; The main item menu consists of 3 sub menus, namely item form, item list, and item import

The screenshot shows the 'Detail Pesanan' (Order Details) page in the 'Berang' application. The page is for a user named 'Naryani'. The order details are as follows:

- Kode barang:** 770234
- Nama barang:** Buku
- Status:** Batal
- Jumlah minimum:** 0
- File gambar:** The image shows a book cover with the title 'The Girl on the Train'.
- Harga:** 100000
- Harga total:** 100000

The page also features a sidebar with navigation links and a top navigation bar with user information.

Figure 3. Item Form Sub Menu Prototype

4. Main course Customer; After the user inputs item data in the main item menu, the user then needs to input customer data in the main customer menu. On the dashboard the main customer menu consists of the customer form sub menu, customer list sub menu, import customer sub menu.

The screenshot shows the 'Pelanggan' (Customer) form in the 'Sistem Persediaan' application. The form is titled 'Pelanggan' and has a subtitle 'Add Existing Customer'. It contains the following fields:

- Nama Pelanggan:** A text input field.
- Alamat:** A text input field.
- No:** A text input field.
- No HP:** A text input field.
- Email:** A text input field.

At the bottom of the form, there are two buttons: a green 'Save' button and an orange 'Cancel' button. The left sidebar shows the navigation menu with 'Pelanggan' selected. The top bar shows the application name 'Sistem Persediaan' and the user 'Karyawati'.

Figure 4. Customer Form Sub Menu Prototype

5. Supplier Main Menu; After the user inputs customer data in the main customer menu, the user then needs to input supplier data in the main supplier menu on the dashboard. The main supplier menu consists of the supplier form sub menu, supplier list sub menu, import supplier sub menu

The screenshot displays the 'Pemasok' (Supplier) registration page within the 'Sistem Persediaan' (Inventory System) application. The page features a sidebar menu on the left with options like Berbelanja, Pengadaan, Pengiriman, Pemasok, and Pemasok Baru. The main content area is titled 'Pemasok' and contains a form for adding a new supplier. The form includes fields for 'Nama Pemasok', 'Alamat awal', 'Nomor', 'Jenis', 'E-mail', 'Kode Pos', 'Telepon', and 'Alamat'. A green 'Simpan' (Save) button is located at the bottom of the form.

Figure 5. Supplier Form Sub Menu Prototype

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6. Main Menu purchases

- a. The purchase form sub menu is a form used to fill out purchase transactions for goods from suppliers and purchase returns. During the purchasing process, the amount of stock will increase according to the amount used for the purchase transaction. Meanwhile, when purchasing returns, the amount of stock will decrease according to the number of purchase returns. Click the purchase menu→Click on new purchase and a display like the one below will appear. In sub menu *form* purchase *user* must fill in the item code, item name, quantity, unit price, discount, total amount.

Figure 6. Prototype Sub Menu Purchase Form

- b. The purchase list sub menu displays purchases that have previously been entered in the purchase form sub menu. Click the main purchase menu→Click the purchase list sub menu, a display like the one below will appear. In the purchase list sub menu there are copy, import excel, import pdf, print, CSV, columns, search features. And there is a feature to edit and delete the purchase list that has been displayed.
- c. The purchase returns list sub menu displays purchase returns that have previously been entered in the purchase form sub menu. Click the main purchase menu→Click the purchase returns list sub menu, a display like the one below will appear. In the purchase returns list sub menu there are copy, import excel, import pdf, print, CSV, columns, search features. And there is a feature to edit and delete the purchase returns list that has been displayed.

Figure 7. Sub Menu Prototype Purchase Returns List

7. Main Menu Sales

- a. The sales form sub menu is a form used to fill in sales transactions for goods from customers and sales returns. During the sales process, the amount of stock will decrease according to the amount used for the sales transaction. Meanwhile, during sales returns, the amount of stock will increase according to the number of sales returns. Click the sales menu→Click on new sales and a display like the one below will appear. In sub menu *form* sale *user* must fill in the item code, item name, quantity, unit price, discount, total amount.

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Figure 8. Sales Form Sub Menu Prototype

- b. The sales list sub menu displays sales that have previously been entered in the sales form sub menu. Click the main sales menu → Click the sales list sub menu, a display like the one below will appear. In the sales list sub menu there are copy, import excel, import pdf, print, CSV, columns, search features. And there is a feature to edit and delete sales lists that have been displayed.
- c. The sales returns list sub menu displays sales returns that have previously been entered in the sales form sub menu. Click the main sales menu → Click the sales returns list sub menu, a display like the one below will appear. In the sales returns list sub menu there are copy, import excel, import pdf, print, CSV, columns, search features. And there is a feature to edit and delete the sales returns list that has been displayed.

Figure 9. Sales Returns List Sub Menu Prototype

8. Report Main Menu

- a. The purchase report sub menu is used to view a list or report of purchase transactions that have been made. In this form there is a date feature (from and to) to filter purchase data. If the user wants to see purchase data from a specific date, the user can enter the desired date.

Figure 10. Prototype Purchase Report Form

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After the user's desired date is entered, a purchase report will appear as shown below. This purchase report can be exported via Excel or PDF

- b. The sales report sub menu is used to view a list or report on sales transactions that have been carried out. In the sales report form there is a date feature (from and start) to filter sales data. If the user wants to see sales data from a specific date, the user can enter the desired date.

Figure 11. Prototype Sales Report Form

After the user's desired date is entered, a sales report will appear as shown below. This sales report can be exported via Excel or PDF

- c. The stock report sub menu is a report that is used to view all final merchandise available. In the stock report form there is a date feature (from and to) to filter the data.

Figure 12. Prototype of Stock Report Form

After the user's desired date is entered, a sales report will appear as shown below. This sales report can be exported via Excel or PDF

Evaluation of Inventory Information System Prototype

After designing the prototype system, the next step is evaluating the prototype. This prototype evaluation was carried out by researchers together with MSME actors to screen software development needs. MSME players evaluate this prototype by referring to the system requirements and inventory accounting information system flowcharts in their MSMEs.

From the results of the prototype evaluation with MSME owners, the owner provided an evaluation so that on the main page of the dashboard a stock warning menu was added to warn users of what merchandise needed to be purchased because the stock in the warehouse was running low. Then the system designer added a stock warning menu on the dashboard page as shown in the following image

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Figure 13. Stock Alert Menu Prototype

After the system designer added a stock alert menu to the dashboard, the MSMEs agreed with the results of the prototype design that had been carried out by the researchers so the next step was to code the system by the system designer. The coding stage is the implementation stage of the software to be created. This implementation process is carried out in accordance with the prototype that has been previously evaluated.

SYSTEM TESTING

After the application is designed and improved, the next step is a trial which is directly tested by MSME players. The method used is black box testing, testing all functions using software to see whether they comply with the specifications required by the owner. The following are the results of black box testing

Table 1. Blackbox Testing

Test Components	Expected results	Results obtained	Information
Save feature	The system will save the results of the transaction data input	The system can save the results of transaction data input	In accordance
Close feature	The system will return to the dashboard menu	The system can return to the dashboard menu	In accordance
Added Features	The system will return to the form menu	The system can return to the form menu	In accordance
View feature	The system will display the transaction history	The system can display transaction history	In accordance
Edit Feature	The system will display the transaction history which can be edited	The system can display transaction history that can be edited	In accordance
Delete feature	The system will delete transaction data	The system can delete transaction data	In accordance
From and to date period features	The system will display a clickable calendar according to the month and year the user wants	The system can display a clickable calendar according to the month and year the user wants	In accordance
Show feature	The system will display the report results	The system can display report results	In accordance
Export PDF menu	The system will download the report in PDF form	The system can download reports in PDF form	In accordance
Export Excel menu	The system will download the report in Excel form	The system can download reports in excel form	In accordance

DISCUSSIONS

Electronic "Deepa" MSMEs currently still use a recording system that only uses Excel so that recording errors often occur, resulting in less accurate financial report results. Based on this, researchers designed an inventory information system. This system design starts from identifying user needs, designing a prototype, evaluating the prototype, coding the system, and testing the system. During the prototype evaluation, MSMEs provided input to add a stock alert feature for items that were running low in the warehouse. This makes it easier for MSMEs to purchase merchandise from suppliers so that before entering the system coding stage, the system

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design is carried out again in accordance with the company's suggestions. Based on the results of system testing using black box testing, all features can be used properly according to the company's needs

The design of this website-based inventory information system displays several menus that can be accessed, such as item data menus, supplier data, customer data, sales, purchases and reports. An inventory information system that has been designed to be able to produce inventory report information, purchase reports and sales reports automatically on a computerized basis. The report information produced by this system comes from every sales and purchase transaction entered in the purchase form and sales form. The process of inputting data and searching for data can be done quickly and easily. The benefit of this research is to make it easier for companies to inventory inventory of merchandise, input purchase and sale transactions for merchandise in a computerized manner, so that companies can control final inventory, sales and purchases each period automatically.

CONCLUSIONS

After completing the design of the inventory information system, the researcher drew the conclusion that the design of this system started from identifying user needs, designing a prototype, evaluating the prototype, coding the system, and testing the system. The design of this website-based inventory information system also displays several menus that can be accessed, such as item data menus, supplier data, customer data, sales, purchases and reports. These findings can be developed and used to solve problems of merchandise inventory, purchasing and sales control. However, apart from that, it is also necessary to maintain and check operating systems, hardware and software as well as increase human resources. The limitation of this research is that this operational system was created based on the needs of the research object, so of course it will be different from other companies in other countries.

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