

# Designing *Ikhwan* Shop Management System with Desktop-based Multi-User

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## Abstract:

The *Ikhwan* Shop provides goods and cellphone repair services, but the system that runs in the shop records incoming and outgoing goods, and the results of repair services are still done by writing in a hand-written shop logbook. Therefore, a management system, an application designed to cover all activities running in the store, is needed. The activities are selling pulses, snacks, office stationery, receiving damaged cellphone repairs, and serving consignment of supplier goods. The system is equipped with a calculation of net and gross income and data collection related to employee salaries. After managers, cashiers, and technicians tested and implemented the system, it was concluded that it followed the business processes running at the *Ikhwan* shop. The system testing results with Blackbox show that all system functions can run well, so management activities run more effectively and efficiently.

**Keywords:** Management System, Application, *Ikhwan* Shop, multi-users, effectively and efficiently



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## 1. INTRODUCTION

Trading is an activity that everyone commonly carries out. This activity aims to sell a good or service to interested customers who need the goods or services [1][2]. The trading process that is often found in the market is carried out directly, where the seller hands over goods or services to the buyer, and payment is made by the buyer without using an official note, usually only using a scrap of paper on which the details of the goods purchased and the amount of payment to be paid by the buyer are written [3], the weakness of this model is one of them is the absence of a file system that stores details of the sales made in each transaction, not to mention the unknown amount of money income and expenses incurred, therefore, the recapitulation process, and the calculation of profit-loss cannot be done accurately.

The development of technology has changed all activities to be more concise, where all activities will be stored in a file system (database) [4][5]. If in the future it is needed, it will be easy to find the data. The sales process at present is commonly used using various applications. Related to the results of the research that has been described, it can be concluded that the need for a management system that can cover all activities in *Ikhwan* Shop, including a system that can manage the process of sales transactions, services, supplier consignments and recapitulation of gross and net income. This research aims to create a management system that can cover the entire activities process in the *Ikhwan* Shop.

## 2. THEORY

Research conducted by Ruslan and Ines explains that cashier services at the Bogor Wholesale store, which were initially carried out manually, have caused many problems, one of which is wrong in writing transaction details, as well as other issues including recording stock of goods that do not match the actual conditions. After making a website-based sales information system, the problems that arise can be minimized; the drawback of this system is the unavailability of facilities for consignment and service transactions [6].

Similar research has been conducted by Rudi and Ahmad, where in their study, they discuss the sales process, which is still carried out manually by the cashier with the help of a calculator for data collection of goods which is still also manual, which makes the sales process ineffective and efficient. Still, after taking steps to implement a web-based cashier system with the spiral method, the sales process has become more efficient and computerized. Still, this application has no menu for service transactions and supplier consignment [7].

Suminten conducted another research by making a website-based sales information system at *Mart Serba Guna Blora*. The system covers customer data, item data, cashier data, owner data, and transaction data; where after being implemented, the system can facilitate cashiers in entering item data, stock reports, and transactions and can help manage employee data, but the system does not have facilities for service and consignment transactions, as well as financial recaps related to net income and gross income [8].

### A. Basic Language

Basic language is a programming language included in the high-level language category because this programming language already resembles human language, which is easy to understand [9][10].

### B. XAMPP

Xampp is a locally based server engine that provides various facilities, including databases with MySQL types, PHP, etc. This server machine is widely used because it has quite a lot of storage capacity, and its use is relatively easy; besides that, it is a server machine that is distributed free of charge [11][12].

### C. MySQL

MySQL is a relational database management system (RDBMS), which is a package of the Xampp server; where this database is one of the choices in making database-based applications because the flexibility in using this database is one of the factors [11][13].

#### D. Rapid Application Development (RAD)

RAD is a system design and development method that developers have widely used because the process of designing a system can run faster and more efficiently with this method [14][15][16].

#### E. Data Collection

Some methods of data collection carried out to support the design of this management system are as follows [17][18].

### 3. METHOD

In this research, rapid application development (RAD) [14][15][16] is a method used in designing management systems where the steps in the method are as follows:

#### A. Observation

The observation step is carried out to see and document the processes and activities related to the sales and service process at *Ikhwan* Shop directly.

#### B. Interview

The interview step aims to dig deeper into information about the business processes running at *Ikhwan* Shop. This is done by asking the shop owner, cashier, and technicians directly, as well as elements related to the shop.

#### C. Literature Study

This step aims to find references related to the system to be built, where the sources come from scientific articles, proceedings, books, reports, and other sources.

#### D. System Design Method

In building a management system, the RAD model is the model to be used, which strongly supports the processes in system design with faster processing time. [15][19].

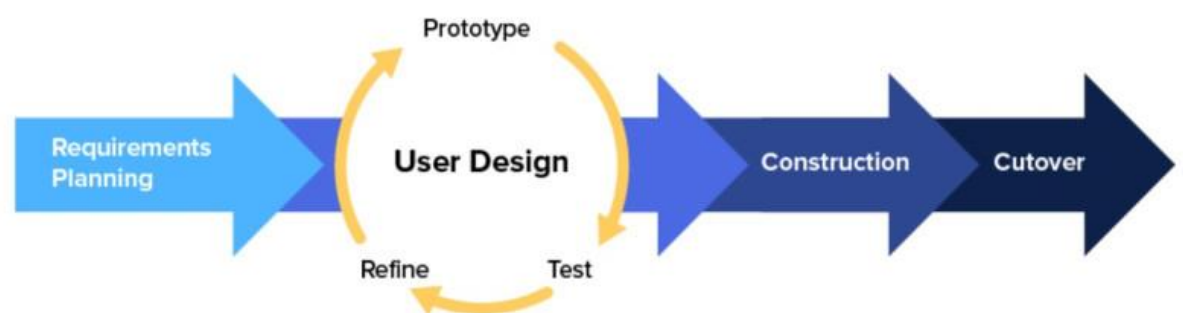


Fig 1. Rapid Application Development (RAD) method [16][19]

Furthermore, from Figure 1, the Rapid Application Development (RAD) method, each point is explained as follows:

1. Requirement Planning

At this stage, all related aspects discuss the required needs, discuss existing problems, and find solutions through a technological approach.

2. User Design

After the needs related to the management system's design have been obtained, the next step is to design the planned system, such as the Unified Modeling Language (UML), including use case diagrams, activity diagrams, and sequence diagrams, and running business processes.

3. Construction

This stage is the core step of the process of creating a pre-planned system, which by looking at the business processes that have been previously designed. This creation is done by transforming designs into program codes that will be made into a management system.

4. Cutover

After the programming stage has been completed, proceed with the system testing step, where the management system is tested using the black box and white box methods; this aims to find deficiencies or errors that exist in the system that has been built if everything has been done and no system errors are obtained, then the management system is ready for trial with users.

#### 4. RESULT AND DISCUSSION

Furthermore, in the discussion of the results of this study, several parts will be presented to provide solutions to the above problems. Use case diagram [5][20], which serves as the flow of the system that has been created, where the flow is described with symbols that are interconnected and interact in a system. Moreover, Figure 2 shows a use-case diagram of the *Ikhwan* shop management system with three actors with different access rights. Where access from the manager actor can perform all functions in the system, the cashier actor can only perform transaction services with customers, add item data (cannot edit), and the technician actor can only input information related to repair services into the system.

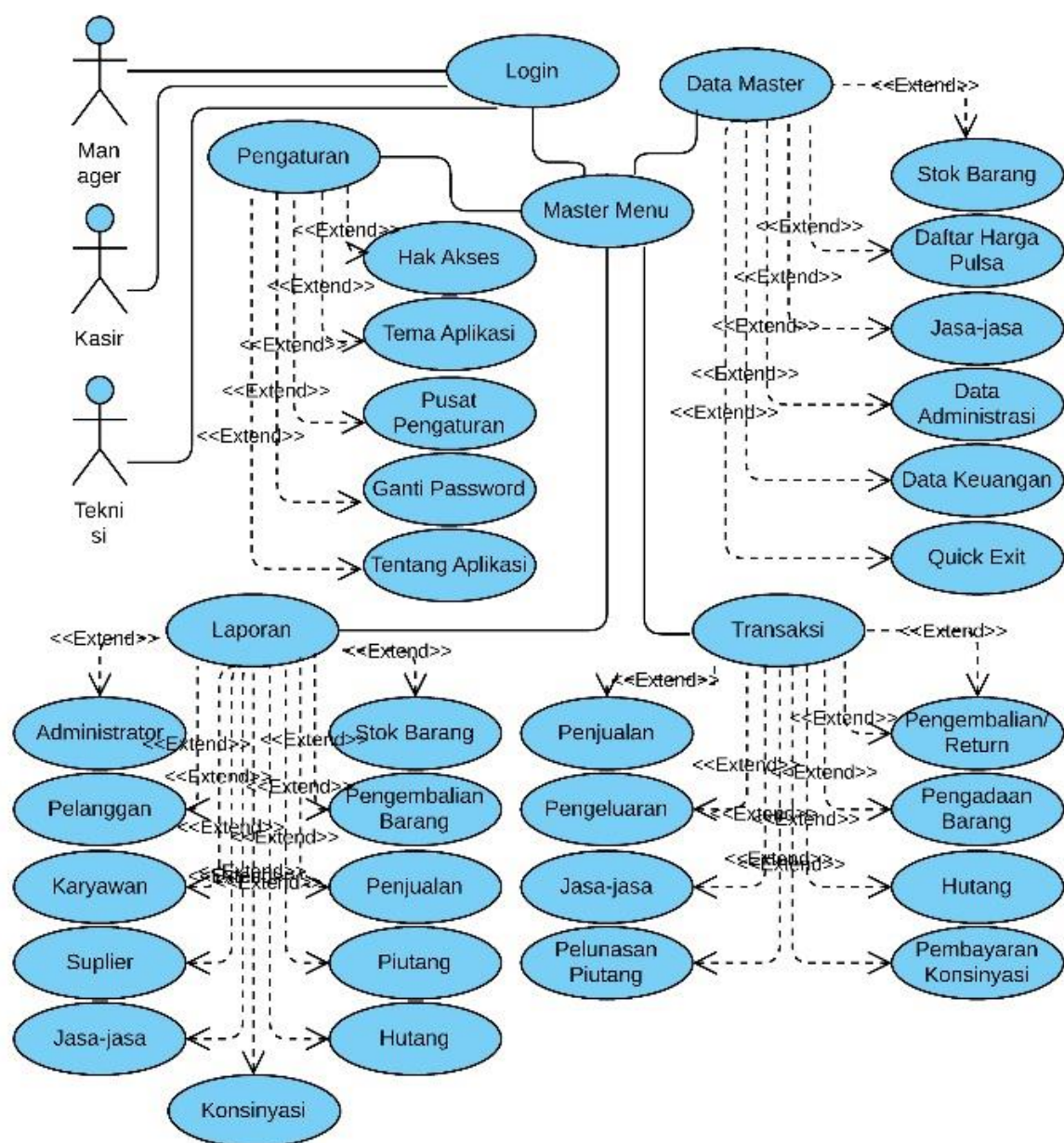


Fig 2. Use case of *Ikhwan* Shop Management System

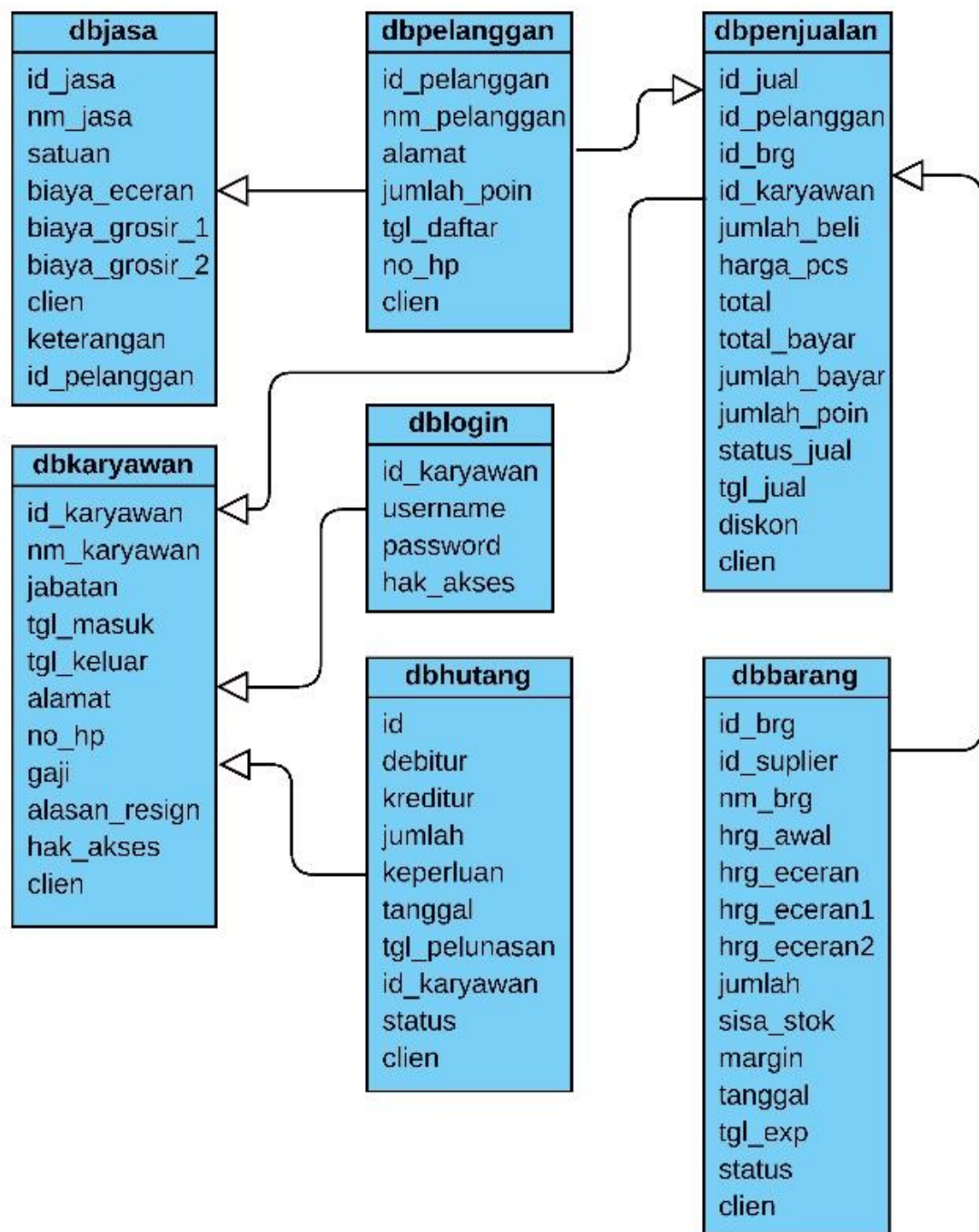


Fig 3. Class Diagram of Ikhwan Shop Management System

Moreover, Figure 3 provides an overview of the Ikhwan shop management system's class diagram [21], where several interrelated or related tables exist. An activity diagram is a workflow in a system where the chart shows the activities carried out by elements related to the system [22][23]. An overview of the activity diagram that runs on the Ikhwan Shop management system is shown in Figure 4.



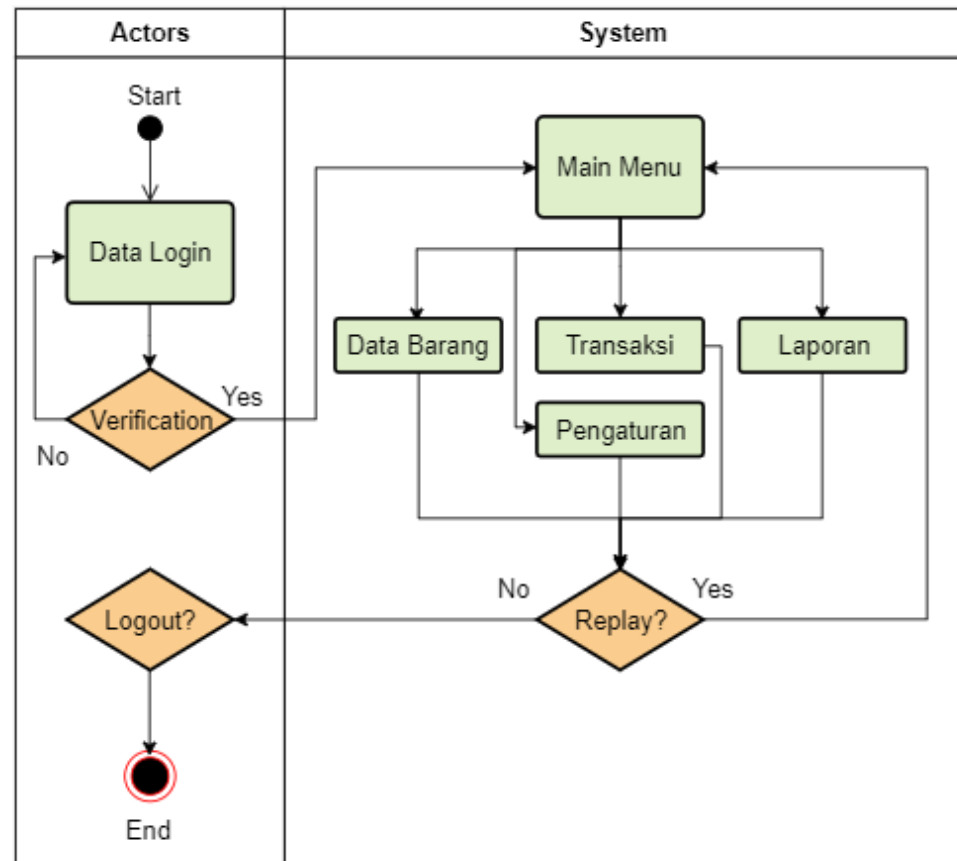


Fig 4. Activity Diagram of Ikhwan Shop Management System

Furthermore, at the system implementation stage, several important menus exist in the Ikhwan Shop management system, where the menu is shown as follows:

### 1) System Login

This form serves as the main entrance to access [24] all resources in the management system, where the appearance of this form is shown in Figure 5.

The screenshot shows the login interface of the Ikhwan Shop Management System. The background is dark with a golden-yellow text "Selamat Datang" (Welcome) at the top right. On the left, there is an illustration of a set of keys. The login fields are labeled "Username :" and "Password :", each followed by a text input box. Below the input fields, there is a digital clock displaying "10.59.20" and the date "05 Februari 2024". At the bottom right, there are two buttons: a blue "Login" button with a key icon and a red "Cancel" button with a red 'X' icon.

Fig 5. Login Form of Ikhwan Shop Management System

## 2) System Main Menu

The main menu is the center of the availability of all functions of the system owned by the *Ikhwan* Shop management system, where these functions include data collection of goods, customers, employees, sales transactions, consignments, services, and reports and other application settings, on the main menu also displays some essential information, including displaying information on the status of goods that are running out with stock below the minimum limit, goods that are almost expired, goods receivables and services receivables. The following is a view of the main menu of the management system shown in Figure 6.

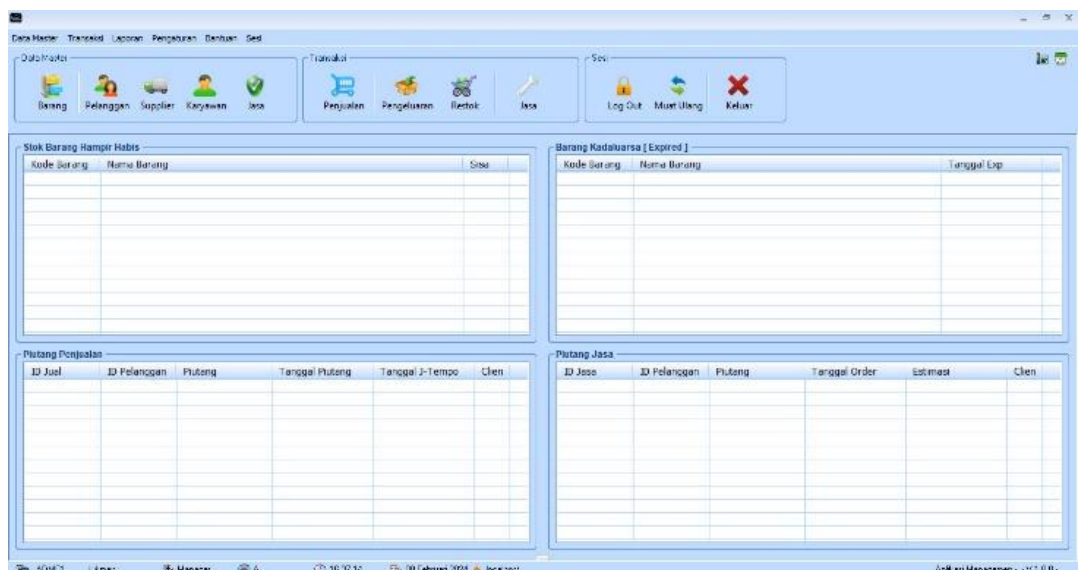


Fig 6. Main Menu of *Ikhwan* Shop Management System

## 3) Item Data Menu

The item data menu covers all data related to items in the *Ikhwan* shop, where the interface presented in the item data menu is shown in Figure 7.

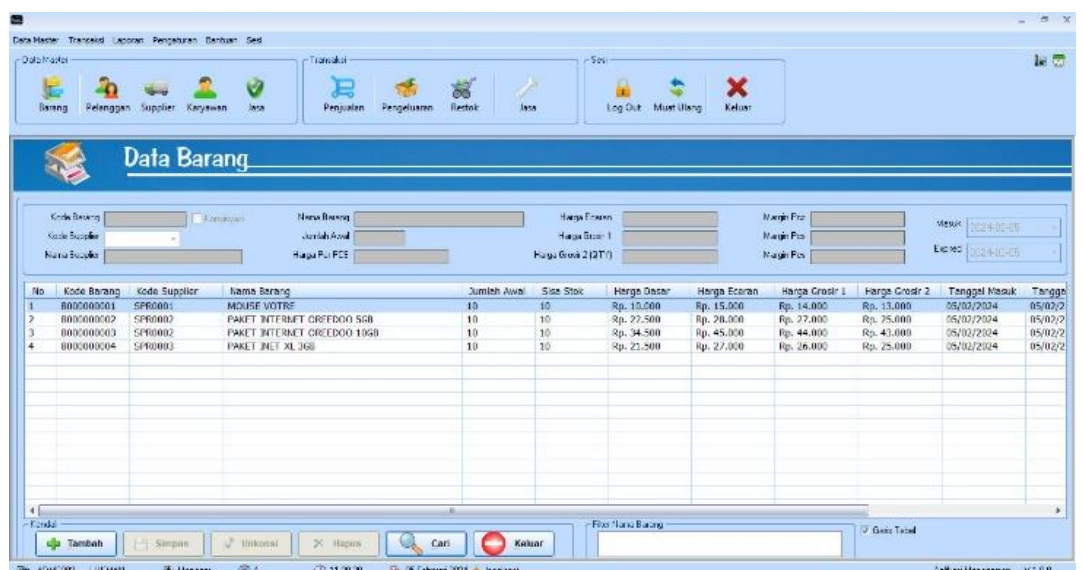


Fig 7. Item Data Menu in the *Ikhwan* Shop Management System



#### 4) Finance Master Menu

The financial master menu on the *Ikhwan* shop management system provides all financial records, including financial sales of goods, service transactions, and so on. This menu will provide details regarding the financial income and expenses at the *Ikhwan* shop. An overview of the financial master menu is shown in Figure 8.

Rekapitulasi	
MODAL AWAL (A)	1.000.000
MODAL HUTANG (B)	0
JUMLAH PEMASUKAN (C)	0
JUMLAH PENGELUARAN (D)	0
<b>TOTAL (A+B+C)</b>	<b>1.000.000</b>
LABA KOTOR (TOTAL - (D))	1.000.000
LABA BERSIH (TOTAL - (A+B+Rekap Piutang))	0
SISA KEUANGAN (TOTAL - (D+Rekap Piutang))	1.000.000

Fig 8. Finance Master Menu on *Ikhwan* Shop Management System

#### 5) Sales Transaction Menu

The sales transaction menu is used to make transactions in cash or debt, where the appearance of the sales transaction menu is shown in Figure 9.

KODE	NAMA BARANG	HARGA	QTY	TOTAL
B000000001	MOUSE VOTRE	15000	2	30000
B000000002	PAKET INTERNET OREEDOO 5GB	28000	1	28000

Fig 9. Sales Transaction Menu in the *Ikhwan* Shop Management System

## 6) Sales Invoice

The sales invoice informs the customer of the goods or services purchased, and the display of the sales invoice that runs on the *Ikhwan* shop management system is shown in Figure 10.


 <b>IKHWAN SHOP</b> Jl. Ampel, No.2 RT.002/003 Kalisoka, Dukuhwaru, Tegal HP. 08576347297		<b>INVOICE</b>	
<b>Kepada Yth.</b> Nama : Umum No Tlp : - Alamat : -		<b>No. Invoice :</b> AC240208001 <b>Sales :</b> lukman <b>Tanggal :</b> 08-Feb-2024 <b>Pembayaran :</b> Cash <b>Clieen :</b> A	
NAMA BARANG	HARGA	QTY	JUMLAH
MOUSE VOTRE STD	17.000	1	17.000
UFD TOSHIBA 16G	55.000	1	55.000
<b>Note :</b> 1. Barang yang sudah dibeli tidak dapat dikembalikan 2. Periksalah barang, sebelum Anda terima 3. Garansi tidak berlaku apabila segel rusak 4. Penjualan ini sah jika sudah diberi stempel Toko			<b>Sub Total</b> 72.000 <b>Diskon</b> - 2.000 <b>TOTAL</b> 70.000
<b>Penerima</b>  _____ Umum		<b>Hormat Kami</b>  _____ lukman	

Fig 10. Sales Invoice on *Ikhwan* Shop management system

Moreover, system testing is carried out to ensure that the system that has been built can perform operations following the instructions that have been previously implanted. Where the flow[25][26] of the system that has been made must follow the business processes in the *Ikhwan* shop, this test is done by testing software that focuses on the software's functionality. The test results that were carried out are shown in Table 1.

**Table 1.** Blackbox Testing Results

No.	Test object	Test method	Description
1	Login Access on Login Form	- Incorrect Login data input - Correct Login data input	- Login Process Failed - Login Process Successful
2	All Menus on the Master Menu Form	Opens all menu functions on the Master Menu form	All menus work as planned
3	CRUD (Create, Read, Update, Delete) operation on the Item Data menu	Test all buttons on the Item Data form	All buttons function according to their function
4	CRUD operation on the Customer Data menu	Testing all buttons on the Customer Data form	All buttons function according to their function
5	CRUD operation on the Employee Data menu	Test all buttons on the Employee Data form	All buttons function according to their function
6	CRUD operation on the Finance Master Data menu	Testing all buttons on the Finance Master Data form	All buttons function according to their function
7	CRUD operation on the Sales Transaction menu	Test all buttons on the Sales Transaction form and perform Sales Transaction.	All buttons function according to their function.
8	Reports	Calling all reports in the management system	All report functions can run as expected

Moreover, after the management system has been tested and implemented, and the user has expressed his suitability for the *Ikhwan* shop management system, the next stage is to provide an understanding to system users regarding the need to maintain the system from the client and server side. This is so that every activity at the *Ikhwan* shop can run without problems, and the management system runs as it should.

## 5. CONCLUSION AND SUGGESTION

From the results of the design and testing carried out related to the *Ikhwan* shop management system, it can be concluded that the system can run following the business processes that run at the *Ikhwan* shop, and the management system has contributed in the form of increasing the level of effectiveness and efficiency in sales activities, data collection of goods and services, and other resource management through the management system to maximize the function of this management system, it is necessary to develop mobile-based applications so that the level of portability increases.

## 6. ACKNOWLEDGMENTS

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## AUTHOR CONTRIBUTIONS

All Authors are responsible for building Conceptualization, Methodology, analysis, investigation, data curation, writing—original draft preparation, writing—review and editing, visualization, supervision of project administration, funding acquisition, and have read and agreed to the published version of the manuscript.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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