

## ANALYSIS OF GOODS MANAGEMENT SYSTEM IN THE COMMUNICATION AND INFORMATICS DEPARTMENT OF SERDANG BEDAGAI DISTRICT

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**Abstract**—The current problem is that the Serdang Bedagai district communication and informatics office is experiencing difficulties in managing incoming and outgoing goods. Management is currently carried out manually and cannot be viewed online so that many errors occur, one of which is a mismatch between the stock of goods recorded and the physical stock of existing goods. The goods management system that will be built in this study uses the waterfall model and PHP and HTML programming languages as well as CSS to design the web appearance. The system has 9 entities, namely: officer, user, sender, person in charge, goods, recipient, detail\_recipient, expenditure and data\_dinas. The results of the implementation of the proposed system are more optimal management of goods and help the performance of the warehouse admin in making real-time stock update reports and borrowing goods.

**Keywords:** Waterfall, PHP, CSS

**Intisari**—Permasalahan saat ini dinas komunikasi dan informatika kabupaten serdang bedagai mengalami kesulitan didalam pengelolan barang masuk dan keluar. Pengelolaan saat ini dilakukan secara manual dan belum bisa di lihat secara online sehingga banyak terjadi kesalahan salah satunya ketidakcocokan antara stok barang yang dicatat dengan stok fisik barang yang ada Sistem manajemen pengelolaan barang yang akan dibangun dalam penelitian ini menggunakan model waterfall dan bahasa pemrograman PHP dan HTML serta CSS untuk mendesain tampilan web. Sistem memiliki 9 entitas yaitu : Petugas, pengguna, pengirim, penanggung jawab, barang, penerima,

detail\_penerima, pengeluaran dan data\_dinas. Hasil implementasi pada sistem yang telah diusulkan pengelolaan barang lebih optimal serta membantu kinerja admin gudang dalam membuat laporan update stock dan peminjaman barang secara realtime.

**Kata Kunci:** Waterfall, PHP, CSS

### INTRODUCTION

The current problem is that the goods management system at the Serdang Bedagai district communication and informatics office still uses the Microsoft Excel program to store data on incoming and outgoing goods as well as the stock of goods in the warehouse. With the current system used to manage data on dozens of items, it is very confusing for the warehouse admin ((Pratama et al., 2020)(Agustian & Ramadhani, 2022) . The old system that was implemented also created a number of problems such as: incompatibility between the recorded stock of goods and the physical stock of existing goods , takes time to search for the required data, errors often occur in processing input and data and delays in reporting stock of good. Currently, the leadership is having difficulties in making a decision whether the item is worth buying or not because the reports and presentation of management data must be updated first by the warehouse admin.

Based on these problems, the Serdang Bedagai District Communication and Informatics Service requires a goods management system that can provide real-time reports, so this research will

propose a web-based goods management system using the system development method. waterfall SDLC model . This system that will be created records every process in the flow of an item, starting from the entry of goods, checking of goods, requesting goods(Ernawati, 2020) , approval of goods(Riswanda & Priandika, 2021), condition of goods to releasing goods from the warehouse (Tirzasari et al., 2022). Several system development studies use models Waterfall SDLCs such as: (Hasanudin, 2020)(Gani, 2022) in their research developed a web-based goods inventory system using the waterfall model. The system built can manage incoming and outgoing goods data, inventory data, ordering goods . Furthermore, by (Aji & Pratmanto, 2021)(Norhayati et al., 2022) overcoming the problem of recording inventory of goods, namely recording expenses and income. Other research put forward by (Gunawan et al., 2021)In implementing a new system, it is better not to suddenly, but first make adjustments between the old system and the new system. Similar research was also conducted by (Makki & Durbin Hutagalung, 2022)(Therry, 2022) The inventory information system that has been built can function according to the design and waterfall model.

## MATERIALS AND METHODS

### A. Place And Time Of Research

The time of this research was carried out for 4 months, from September to December 2022. The place of research was conducted at the Office of Communication and Informatics, Serdang Bedagai Regency.

### B. System Development Method

The system development method used in this research uses the waterfall SDLC model . The stages of development can be seen in Figure 1.

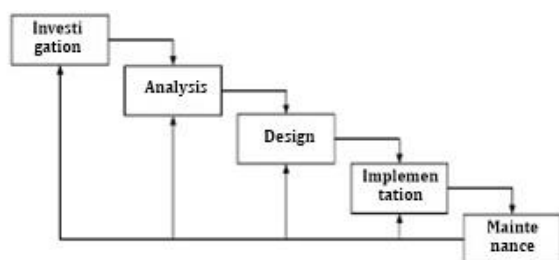


Figure 1 Waterfall scheme (Sanjaya et al., 2022) (Yennimar et al., 2019)

In Figure 1 you can see the model that will be used in system development. It starts with conducting an investigation to determine whether the problem was the previous one. Then carry out a system analysis to find out the needs of the system to be built and after obtaining the required data it

will proceed to the system design stage (Rizal et al., 2020) . At this stage the illustration of the system to be built is illustrated with a Flowchart as a system flow model and an ERD (Entity Relationship Diagram) as a relationship model design between databases (Rizal & HS, 2019) . Furthermore, at the implementation stage using the programming language PHP and HTML and CSS to design the web appearance. The final stage, namely the maintenance stage, is carried out when the information system has been operated. At this stage, process monitoring, evaluation and changes (improvements) are carried out if necessary.

## RESULTS AND DISCUSSION

### A. Current System Analysis

System problems that are currently running at the Serdang Bedagai District Communication and Informatics Service can be seen in Figure 2 and Figure 3.

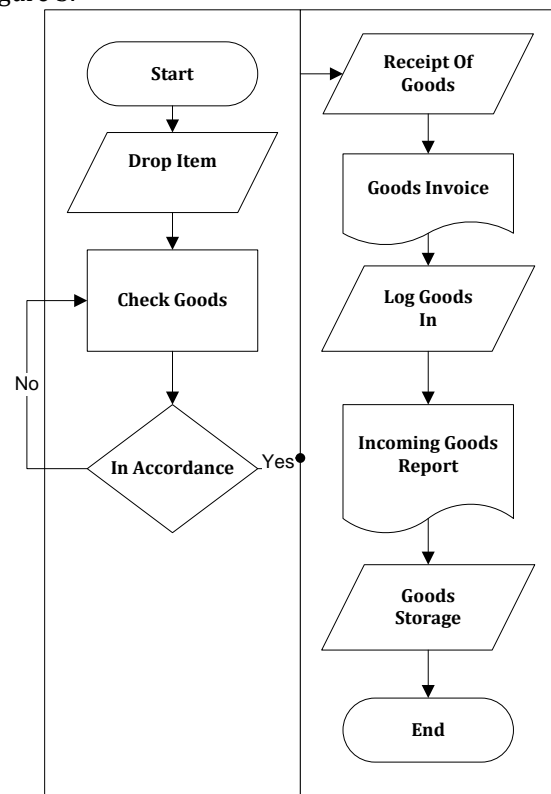


Figure 2. Flowchart of the old incoming goods system

In Figure 2 you can see the system process that is currently running for incoming goods, starting with the supplier arriving and delivering the goods , then the employee will check the goods , if appropriate with the order will be accepted and if not the sender will be asked to re-check the goods , the employee signs the order note from the sender and records using the Microsoft Excel application. The final stage of goods is stored in the warehouse.

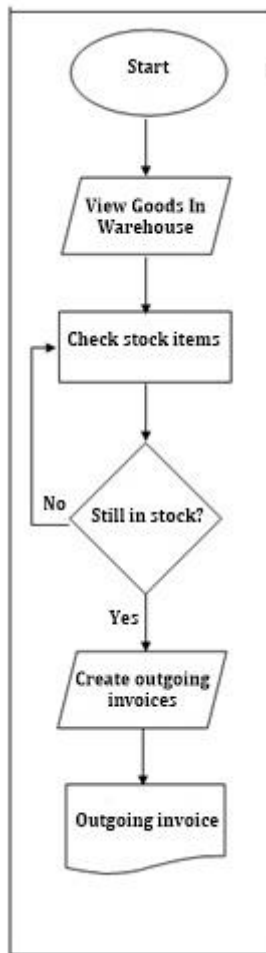


Figure 3. Flowchart of the old system of goods coming out

In Figure 3 you can see the system process that is currently running for outgoing goods, starting with looking directly at the stock of goods then creating an invoice for outgoing goods without any recording in the outgoing goods report system.

### B. Proposal System Analysis

The proposed system is designed and will be developed in web form with the hope of helping in printing reports and recording in real time so that it is easier for employees to get information quickly. The following are some of the uses of this information system later:

1. Make it easier to record inventory data, because it will automatically calculate if there are later incoming or outgoing goods.
2. There is a search feature for income and expenditure report results to make it easier for the admin and warehouse staff to print reports of income or expenditure of goods.
3. With the approve feature, purchases of goods become more controlled by ascertaining whether the goods are worth buying or not. Expenditure of goods is also more controlled with this feature.

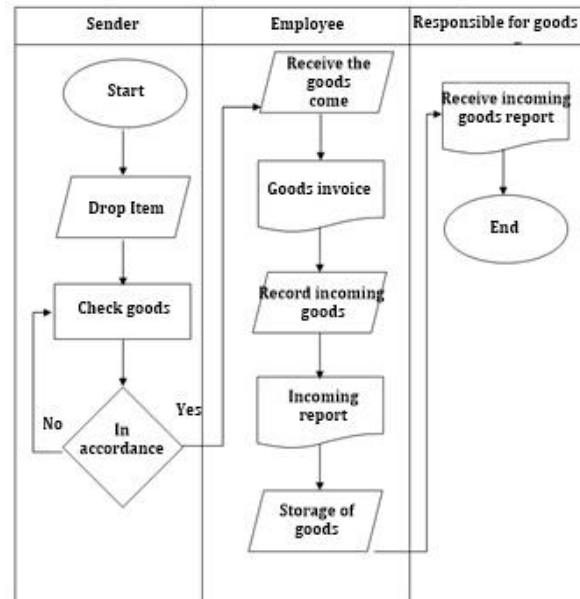


Figure 4. Flowchart of the proposed incoming goods system

In Figure 4 you can see the process of the proposed system stages that will be made, the proposal process is not much different from the old system, the difference is by adding a person in charge so that all items can be reported online.

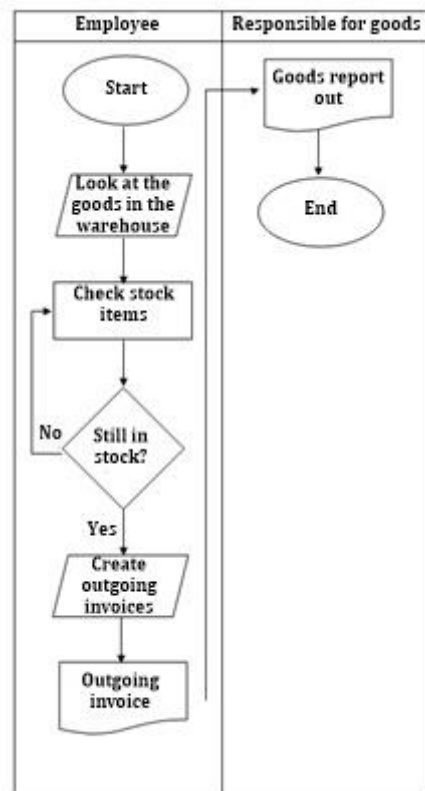


Figure 5. Flowchart of the system that proposes goods out

In Figure 5 you can see the process of the proposed system stages that will be made, the proposal process is not much different from the old

system, the difference is by adding a person in charge so that all outgoing goods can be reported online and makes it easier for employees to get stock information without having to check in to the warehouse. The ERD system to be built can be seen in Figure 6.

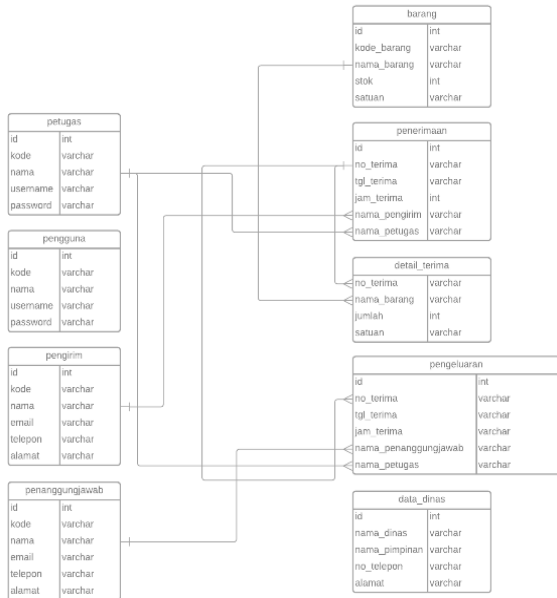


Figure 6. ERD Incoming and Outgoing Goods System

The proposed ERD image for the Incoming and Outgoing Goods Management Information System at the Serdang Bedagai Communication and Informatics Service can be seen in Figure 6. In this research proposal it has 9 entities namely: officer, user, sender, person in charge, item, recipient, detail\_recipient , expenses and data\_dinas.

**C. Implementation Of Testing and Evaluation**

The results of the implementation of the design of the goods management system at the Ministry of Communication and Information in this study used the programming language PHP and HTML and CSS to design the web appearance.

**1. Login Page**



Figure 7. Login Page

In Figure 7 it can be seen on this page that users registered in the system can log in using their username and password , there are three levels, namely admin, employee and person in charge.

**2. Goods Page**

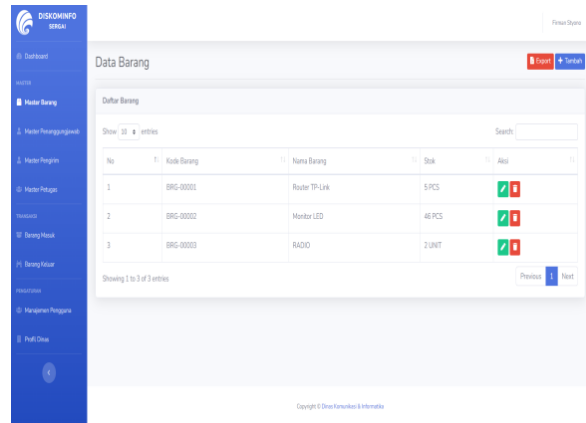


Figure 8. Stock Goods page

In figure 8. You can see the appearance of the stock item page . This page is used by the admin to add, change, delete, and view item stock data . This page is also the start page after the admin has successfully logged in. On this page, the admin can print stock reports.

**3. Incoming Goods Transactions**

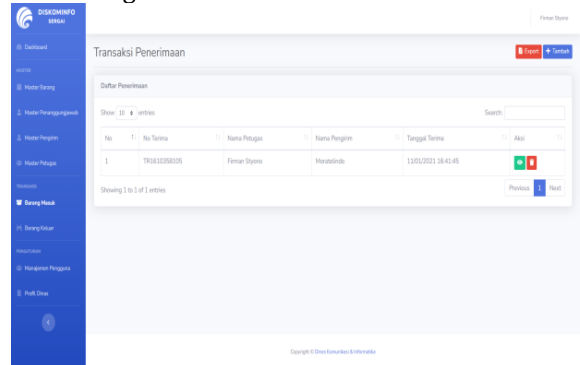


Figure 9. Entrance Goods Page

In Figure 9 you can see the display of the incoming goods page. This page is used by admins, employees and persons in charge to add, change, delete, and view incoming goods data. On this page you can also print an incoming goods report.

**4. Exit Goods Transaction Page**

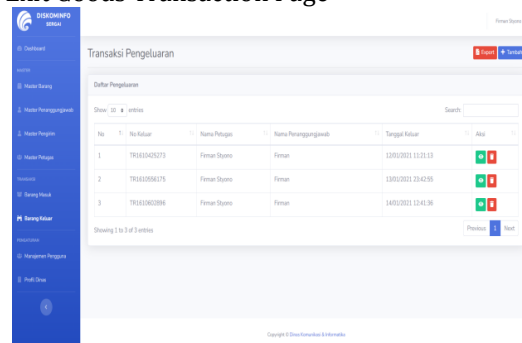


Figure 10. Outgoing Goods Page

In Figure 10 you can see the display of the outgoing goods page. This page is used by the admin to add, change, delete, and view outgoing item data. On this page you can also print data on outgoing goods and ask the recipient to sign it as proof of loan and archive.

5. Goods Delivery Page

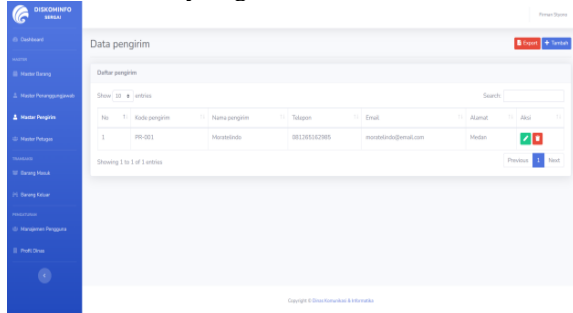


Figure 11. Implementation of Goods Delivery Data Pages

In Figure 11 you can see the display of the goods delivery page. This page is used by the admin and the person in charge to add, change, complete, and view data on borrowing goods and can print data on borrowing goods and ask the borrower to sign it as proof of borrowing and archives.

D. System Testing Results

To find out the successful implementation of the system that has been done, it is necessary to test the system. The testing method used is Black box, testing is carried out by Warehouse admins, users, senders, persons in charge of goods, recipient\_detail officers, service data cost report makers and leaders. The stages of testing that have been carried out are as follows:

Table 1. Testing of the goods management system

No	Description	Procedure	Input	Output	Results	Conclusion
1	System login testing	login page	Fill in the username "staf45" and password "12345"	Enter the system (stock item)	Log into the system	Good
2	Testing the	Open the	Fill in the	The data	The data	Good

	addition of data stock goods	item stock page and click add item	data item name, item type, item description, quantity, unit, and image	is displayed on the stock item page	is displayed on the stock item page	
3	Testing the edit of goods stock data	Open the item stock page and click edit on the stock data	Change the item name, item type, item description, unit, and image data	Data changes on the stock item page	Data changes on the stock item page	Good
4	incoming goods data	Go to the incoming goods page and click add goods	Fill in the data item name, amount, description, and number	Data is displayed on the incoming goods page and data on the stock of goods increases	Data is displayed on the incoming goods page and data on the stock of goods increases	Good
5	Testing of incoming goods data editing	Open the incoming goods page and click on the incoming goods data	Change data amount, note number and description	Data changes on the incoming goods page and stock item s	Data changes on the incoming goods page and stock item s	Good

N o	Descr iption	Proc edur e	Input	Outp ut	Resu lts	Concl usion
6	Testin g added goods data out	Go to the item out page and click add item	Fill in the data item name, <i>quant ity</i> , recipi ent, and descri ption	The data is displ ayed on the outg oing good s page and the data on <i>the stock</i> of good s is redu ced	The data is displ ayed on the outg oing good s page and the data on <i>the stock</i> of good s is redu ced	Good
7	Exit item data <i>editin g</i> test	Go to the outgo ing good s page and click <i>edit on</i> the outgo ing good s data	Chan ge <i>the quant ity</i> , recipi ent, and descri ption data	Data chan ges on the outg oing good s page and <i>stock</i> item s	Data chan ges on the outg oing good s page and <i>stock</i> item s	Good
8	Testin g the additi on of goods borro wing and data	Open the item loan page and click add data	Fill in the data item name, <i>quant ity</i> , recipi ent, and descri ption	The data is displ ayed on the page for borr owin g good s and data on <i>the stock</i> of good	The data is displ ayed on the page for borr owin g good s and data on <i>the stock</i> of good	Good

				s is redu ced	s is redu ced	
9	Testin g the editin g of goods borro wing and data	Open the item lendi ng page and click edit	Fill in the data item the numb er of items retur ned and the date of retur n	The data is displ ayed on the item lendi ng page	The data is displ ayed on the item lendi ng page	Good

Based on table 1 it can be seen that the tests that have been carried out where all the tests that were carried out were successful and met expectations. With this, it is ensured that the goods management information system is running well and can be used immediately.

## CONCLUSION

Based on the trial of the proposed system that was carried out at the Bedagai Regency Communication and Informatics Service Serdang, the test ran smoothly without error problems with a total of 100 input data during testing. Problems such as: discrepancies between inventory records and physical inventory, takes time to find the required data, frequent data input errors and delays in reporting stock of goods have all been resolved with the new system implemented. The existence of this goods management system is also very helpful for the performance of the warehouse admin in making reports on stock updates and borrowing of goods so that reports can be viewed in real time by the leadership..

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