
Implementation of Web-based Supply Chain Management for Drug Stock Control at LAF Aesthetic Kisaran**Cristifani¹, Riki Andri Yusda², Rohminatin³**cristifani22@gmail.com¹, rikiandriyusda@gmail.com², rohminatin2019@gmail.com³^{1,2,3} Sekolah Tinggi Manajemen Informatika dan Komputer Royal

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Abstract

Laf Aesthetic Clinic is one of the beauty clinics in Kisaran which was established in 2006. Precisely located on Jl. Pelita, Pelita Asri Complex, No. 8A Kisaran and now has one more branch on Jl. Krakatau / Market, No.26 Gelugur Darat Medan. As in general, the Laf Aesthetic beauty clinic has drug sales services and facial and body care services. The problems that are often faced at Laf Aesthetic Clinics are managing drug data and checking the availability of the drug stock itself, which is still less effective and product sales transactions differ between transaction notes received by customers and goods coming out of the warehouse. Because in one day if several patients buy drugs in sufficient quantities, thus the stock in the warehouse will also be running low. Often there is a shortage of medicine stock because they don't check and count every medicine in the warehouse.

A. Introduction

The development of Information Technology in the current globalization period encourages the rapid presentation of information to meet the needs of all parties. With the support of a good information system, benefits will be obtained in the form of ease of storing and retrieving data. In addition, a company or organization that uses information systems will have a good advantage so that it can compete with other companies or organizations.

On the other hand, currently information technology has developed very rapidly. Information technology support can facilitate a job as well as saving time and costs, processing data faster, and decisions taken will also be more precise. Thus, work can be done more effectively and efficiently [1].

Implementation is a result obtained from a process that is in accordance with the objectives or policy objectives of an activity or activity itself. The word implementation boils down to the notion of an activity, namely the reaction or action of a system mechanism, implementation is not an activity but an activity that is planned and carried out in earnest to achieve activity goals [2].

Laf Aesthetic Clinic is one of the beauty clinics in Kisaran established since 2006. Precisely located on Jl. Pelita, Pelita Asri Complex, No.8A Kisaran and now has one more branch on Jl. Krakatau/Market, No.26 Gelugur Darat Medan. As in general, the Laf Aesthetic beauty clinic has a drug sales service and facial and body care services.

The problems that are often faced at the Laf Aesthetic Clinic are in managing drug data and checking the availability of drug stock itself is still less effective and product sales transactions differ between transaction notes received by customers and goods coming out of the warehouse. Because in one day if several patients buy a large amount of medicine, the stock in the warehouse will also be depleted. Often there is a shortage of stock of drugs because they do not check and count every drug in the warehouse.

Moreover, the process of entering and exiting drugs is still done by bookkeeping or manually, so you have to check and count the stock of drugs in the warehouse every day. Moreover, the existence of expired goods is not quickly known because there is no notification. There is a difference between the product that comes out and the transaction note made by the customer, namely the product sales transaction. Therefore, a computerized system is needed in order to process the data [3].

Supply Chain Management is a concept concerning product distribution patterns that can replace optimal product distribution patterns. For companies that still pay attention to the importance of material inventory, the application of SCM will contribute to reducing inventory costs which include storage, ordering, and stockout costs [4]–[6].

Supply Chain Management as an integrated approach that encompasses the entire material management process, provides orientation to the process of providing, producing, and distributing products to consumers [7]. The context of materials in the understanding of Supply Chain Management certainly does not only include raw materials and output (finished goods), but also includes auxiliary materials, components, spare parts, work in process (semi-finished goods) and

various types of equipment (supplies) used to support the company's overall operational activities[8].

The application of Supply Chain Management leads to a concept or mechanism to increase the productivity of all companies involved in the supply chain through optimization of quality and time[9], [10]. Drug stock control information system that can minimize losses on drugs that exceed the minimum expiration date and increase the efficiency of recording incoming and outgoing inventory at the Laf Aesthetic Clinic dr. Lisda Sari Harahap.

An improved information system is expected to help a company become more competitive and can further increase the effectiveness of a company. Laf Aesthetic Clinic Dr. Lisda Sari Harahap has the aims and objectives of building a drug information system with easy and fast access.

The objectives of this research are as follows:

1. To design an information system that can process incoming and outgoing drug inventory data at the Laf Aesthetic beauty clinic dr. Lisda Sari Harahap by implementing Supply Chain Management.
2. To improve time efficiency in providing information on the availability of drug stocks in the warehouse quickly, precisely and accurately at the Laf Aesthetic Beauty Clinic in Kisaran.
3. To make it easier to get information and process drug data in the warehouse by implementing Supply Chain Management.

Given the importance of the problems described earlier, an information system is needed in managing existing drug stocks at the Laf Aesthetic Clinic Dr. Lisda Harahap with the application of the Supply Chain Management method to improve performance in data processing and information flow so that it is more effective and efficient.

B. Research Method

To assist in the preparation of this research, it is necessary to organize a clear framework of stages. This framework is the steps that will be taken in solving the problems to be discussed. The research framework used is as shown in the figure below:

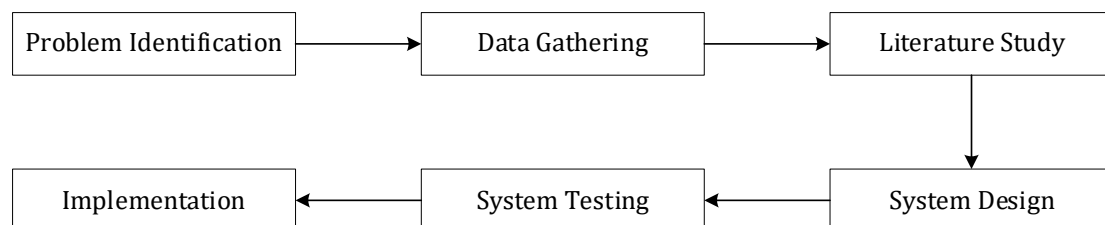


Figure 1. Research Framework

The waterfall method is used in this research to developing supply chain management website at Laf Aesthetic Beauty Clinic. This method is always commonly used for creating a software including website development [11]. This method always calls as a linear sequential approach that divided to analysis, design, implementation, testing, and maintenance [12][13]. Every phase has to completed before moving to the next phase, as follows:

1. Analysis is the first phase in waterfall method. In this phase researcher outlines the requirements for developing a supply chain management application program at Laf Aesthetic Beauty Clinic, starting from processing item data, sales transactions, supplier data, and consumer data. In addition, researcher analyzes and collects information about the software needed to develop the application. The analysis process is carried out by conducting interviews with the owner of the Laf Aesthetic Clinic and reviewed of related research and documents.
2. Design is the second phase. At the design phase, the design is done by designing Use Case Diagram, Entity Relationship Diagram, and User Interface for the application. Researcher design the appearance and features of the website following the needs of the users.
3. Implementation is the third phase. Implement the design into programing languages and the databases. Sublime text was used as the editor for the programming language, and SQL was used as the databases.
4. Testing is the fourth phase. At this phase, system must be verification to ensure the application work properly and meet the system requirements. Application testing using Black Box testing to reduce system error.
5. Maintenance is the fifth phase. Maintenance is carried out on application including fixing error, backup data, update data, and content update to maintain the performance of the application.

The research method used in this research is a qualitative method, research that is descriptive and tends to use analysis. This method collects data obtained directly through interviews with sources directly, making observations in the field and also obtained from the results of discussions[14], [15]. The purpose of this research method is to determine the object under study, namely to facilitate the Laf Aesthetic Beauty Clinic in Kisaran in obtaining information and processing drug data in the warehouse by implementing Supply Chain Management.

Data collection technique is a method that is systematic and objective in nature with the aim of obtaining and collecting data and information that is researched in detail and correctly[16]. In completing this thesis, the author uses the following data collection techniques:

1. Field Research

The field research that the author does is research and retrieval of the necessary data directly at the research site. The research was conducted by means of:

- a. Interview (Interview) is a data collection technique by asking questions directly to the relevant parties, namely the Laf Aesthetic Beauty Clinic Kisaran.
- b. Observation, namely data collection techniques by making observations or coming directly to the Laf Aesthetic Beauty Clinic Kisaran. This technique is used to determine the activities of the Laf Aesthetic Beauty Clinic in monitoring drug supplies.

2. Literature Study

Literature study is carried out by looking for literature sources in supporting research and providing adequate information to complete this research. The literature sources that the authors collect come from ISSN journals from 2018-2022.

C. Result and Discussion

This system is designed to help overcome the problems of the data management process to be more effective and efficient. The data management process includes stock data, data on ordering goods to suppliers, and data on purchasing goods by consumers. In its implementation, this system is used by several users, namely:

Table 1. Users of the system

User	Role
Admin	Authority to add, change, and delete data in the system
Supplier	Supplier of beauty products to Laf Aesthetic Clininc Kisaran
Owner	Control and view reports that occur at Laf Aesthetic Clinic Kisaran

Each user has their own access rights according to their role. The system admin is a user who can add, change, and delete data in the application system, both data about the Laf aesthetic clinic and supplier data.

Problem analysis

In analyzing the problem, the researcher analyzes the problems that occur at Laf Aesthetic Clinic Kisaran as follows:

1. Checking the availability of beauty product stock is still less effective and must check every product in the warehouse.
2. The process of recording the entry and exit of beauty products is still done by bookkeeping or still manual so that it is prone to data loss.
3. There are often differences between transaction notes received by customers and goods coming out of the warehouse.

Based on interview with the owner, it was found that data processing in Laf Aesthetic Beauty Clinic still relies on conventional and an online system is needed to facilitate data processing.

Design

Input design is very important in building a system, the quality of information or reports that will be generated later depends on the input we design. Input design also affects the records involved in data processing. The following is the Input design on the supply chain management implementation system.

```

graph TD
    subgraph LOGIN_BOX [LOGIN]
        direction TB
        U[Username : ]
        P[Password : ]
        L[Login]
        C[Cancel]
    end
  
```

Figure 2. Login Page Design

ENTRY DATA SUPPLIER

Nama Supplier	<input type="text"/>
Alamat Supplier	<input type="text"/>
Telp. Supplier	<input type="text"/>
Email Supplier	<input type="text"/>
Password	<input type="text"/>
Key	<input type="text"/>
<input type="button" value="Simpan Data"/> <input type="button" value="Reset"/>	

Figure 3. Supplier Input Page Design

ENTRY DATA PRODUK

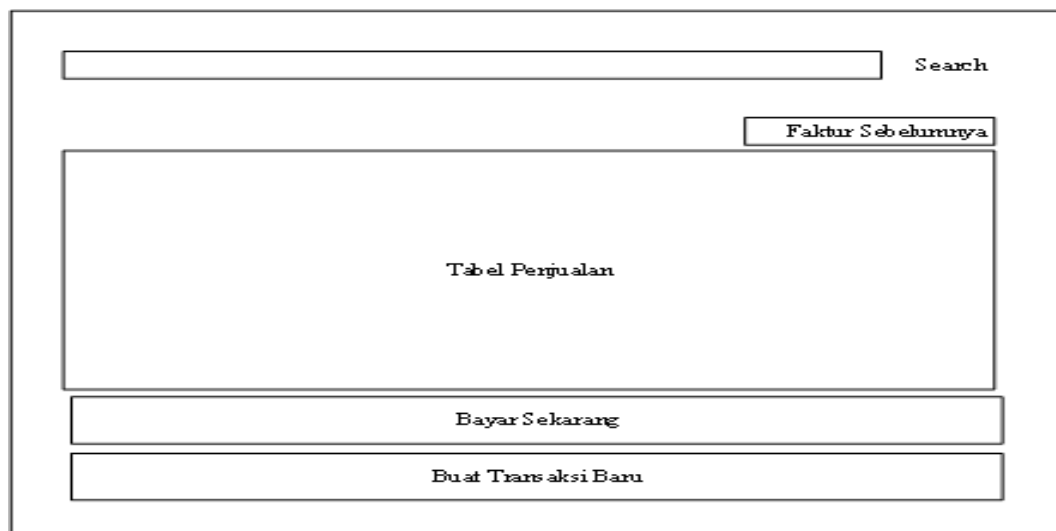
Nama Produk	<input type="text"/>
Pilih Kategori	<input type="text"/>
Pilih Supplier	<input type="text"/>
Stok	<input type="text"/>
Min. Stok	<input type="text"/>
Harga (Rp.)	<input type="text"/>
Detail Produk	<input type="text"/>
<input type="button" value="Simpan Data"/> <input type="button" value="Reset"/>	

Figure 4. Product Input Page Design

Invoice

<input type="text"/>	
CC:	
<input type="text"/>	
Judul	
<input type="text"/>	
Qty	Tanggal
<input type="text"/>	<input type="text"/>
Isi	
<input type="text"/>	
<input type="button" value="Kirim Pesan"/>	

Figure 5. Order to Supplier Page Design



The image shows a wireframe for a sales input page. At the top, there is a search bar with a 'Search' button to its right. Below the search bar is a button labeled 'Faktur Sekarang'. The main area of the page is a large rectangle labeled 'Tabel Penjualan'. At the bottom of the page, there are two buttons: 'Bayar Sekarang' and 'Buat Transaksi Baru'.

Figure 6. Sales Input Design

In design phase, researcher made a design of website appearance and feature that suits by the user needs.

Implementation

Implementation is the stage of application and at the same time testing for the system based on the results of the analysis and design that has been done in the previous chapter. In this chapter is the implementation of the results of the design that has been completed. The following is the result of the display of the web-based supply chain management application program for drug stock control at Laf Aesthetic.

The login view is a page for clarifying user or user rights in logging in to enter the system. After logging in users can use the system.



Figure 7. Log in Form

On this main page display, the admin can select the supplier menu, category, product, sales, order list, report, configuration and logout.

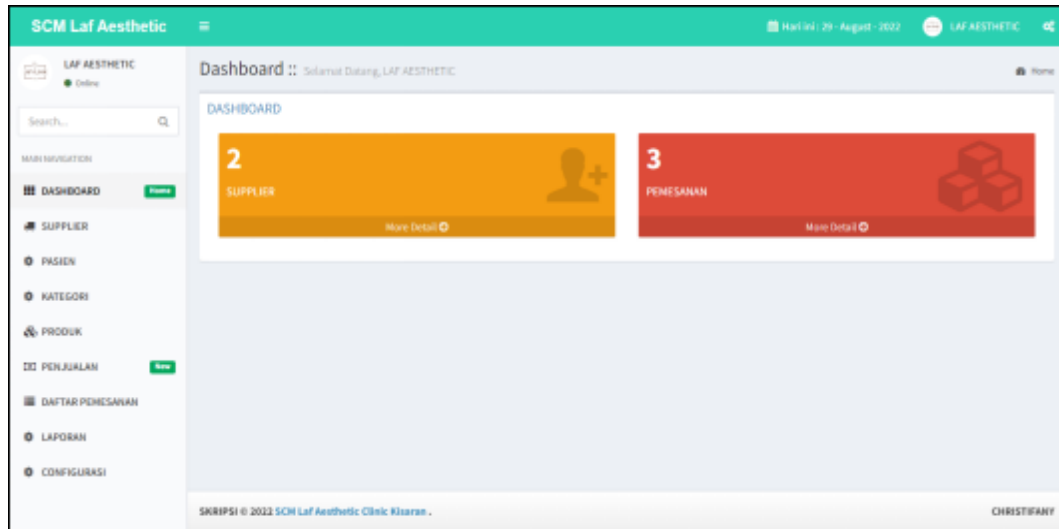


Figure 8. Admin Main Page

On this supplier menu page display, the admin can add supplier accounts and view available suppliers.

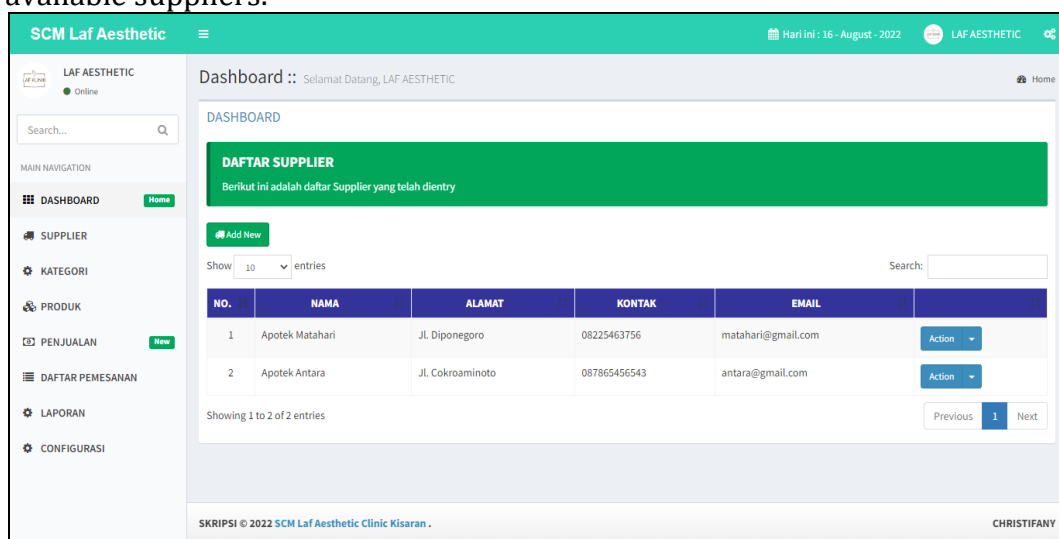


Figure 9. Supplier Page

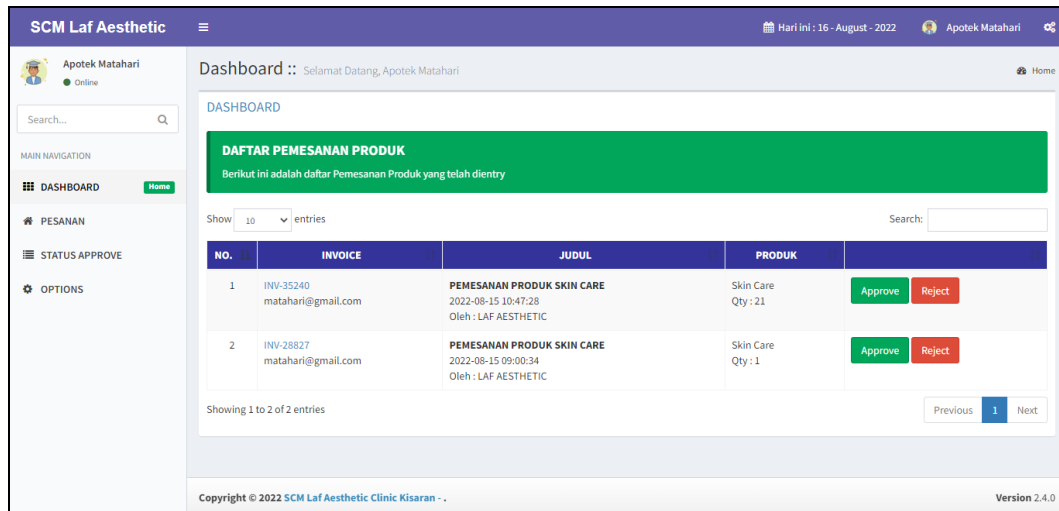


Figure 10. Supplier Order Page

In this product page view, the admin can manage drug data, such as adding, editing and deleting drug data.

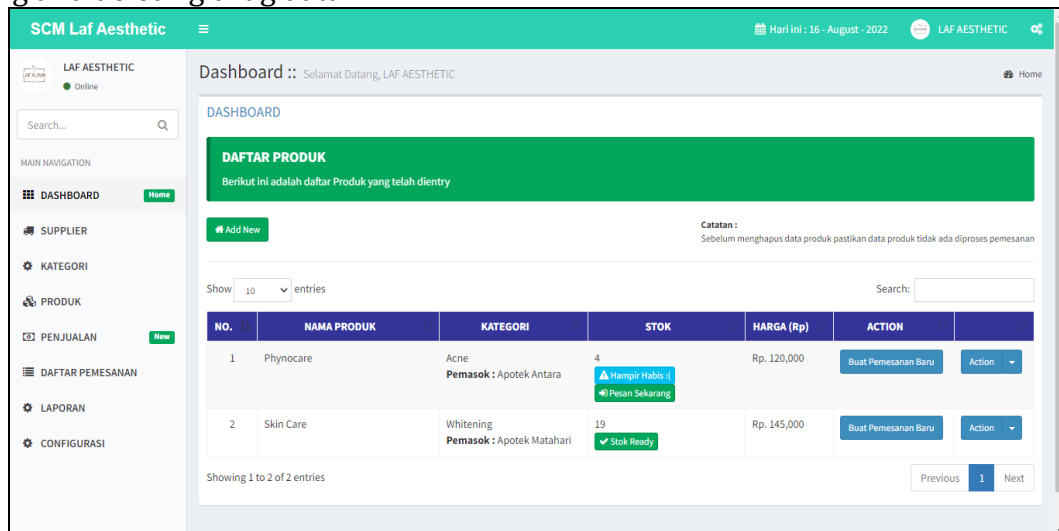


Figure 11. Product page

On the display of this order list page, the admin can see a list of orders that have been made to suppliers.

SCM Laf Aesthetic | Hari ini: 16 - August - 2022 | LAF AESTHETIC

Dashboard :: Selamat Datang, LAF AESTHETIC

DASHBOARD

DAFTAR PEMESANAN PRODUK
Berikut ini adalah daftar Pemesanan Produk yang telah dientry

Show: 10 entries | Search:

NO.	INVOICE	JUDUL	PRODUK	STATUS
1	INV-35240 matahari@gmail.com	PEMESANAN PRODUK SKIN CARE 2022-08-15 10:47:28 Oleh: LAF AESTHETIC	Skin Care Qty: 21	Sudah diterima
2	INV-28827 matahari@gmail.com	PEMESANAN PRODUK SKIN CARE 2022-08-15 09:00:34 Oleh: LAF AESTHETIC	Skin Care Qty: 1	Sudah diterima
3	INV-12548 antara@gmail.com	PEMESANAN PRODUK PHYNO CARE 2022-08-12 20:56:21 Oleh: LAF AESTHETIC	Phynocare Qty: 1	Sudah diterima

Showing 1 to 3 of 3 entries | Previous 1 Next

Figure 12. Product Order Page

In this sales report page view, the admin can print and view drug sales reports.

LAPORAN PENJUALAN BERDASARKAN TANGGAL

Berikut ini adalah data penjualan berdasarkan tanggal 2022-08-01 s/d tanggal 2022-08-16 ditemukan sebanyak 9 transaksi.

NO.	FAKTUR	TANGGAL / WAKTU	TOTAL BELANJA	POTONGAN	KASSA																			
1	35574	2022-08-15 10:52:54	Rp. 145,000	Rp. 0	LAF AESTHETIC																			
		<table><tr><th>NO</th><th>PRODUK</th><th>QTY</th><th>SUB TOTAL</th><th>POTONGAN</th></tr><tr><td>1</td><td>1660312337- SKIN CARE</td><td>1 @ Rp. 145,000</td><td>Rp. 145,000</td><td>Rp. 0</td></tr><tr><td colspan="3">TOTAL</td><td>Rp. 145,000</td><td>Rp. 0</td></tr></table>	NO	PRODUK	QTY	SUB TOTAL	POTONGAN	1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0	TOTAL			Rp. 145,000	Rp. 0							
NO	PRODUK	QTY	SUB TOTAL	POTONGAN																				
1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0																				
TOTAL			Rp. 145,000	Rp. 0																				
2	35098	2022-08-15 10:44:58	Rp. 145,000	Rp. 0	LAF AESTHETIC																			
		<table><tr><th>NO</th><th>PRODUK</th><th>QTY</th><th>SUB TOTAL</th><th>POTONGAN</th></tr><tr><td>1</td><td>1660312337- SKIN CARE</td><td>1 @ Rp. 145,000</td><td>Rp. 145,000</td><td>Rp. 0</td></tr><tr><td colspan="3">TOTAL</td><td>Rp. 145,000</td><td>Rp. 0</td></tr></table>	NO	PRODUK	QTY	SUB TOTAL	POTONGAN	1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0	TOTAL			Rp. 145,000	Rp. 0							
NO	PRODUK	QTY	SUB TOTAL	POTONGAN																				
1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0																				
TOTAL			Rp. 145,000	Rp. 0																				
3	33587	2022-08-15 10:19:48	Rp. 265,000	Rp. 0	LAF AESTHETIC																			
		<table><tr><th>NO</th><th>PRODUK</th><th>QTY</th><th>SUB TOTAL</th><th>POTONGAN</th></tr><tr><td>1</td><td>1660312337- SKIN CARE</td><td>1 @ Rp. 145,000</td><td>Rp. 145,000</td><td>Rp. 0</td></tr><tr><td>2</td><td>1660312356- PHYNO CARE</td><td>1 @ Rp. 120,000</td><td>Rp. 120,000</td><td>Rp. 0</td></tr><tr><td colspan="3">TOTAL</td><td>Rp. 265,000</td><td>Rp. 0</td></tr></table>	NO	PRODUK	QTY	SUB TOTAL	POTONGAN	1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0	2	1660312356- PHYNO CARE	1 @ Rp. 120,000	Rp. 120,000	Rp. 0	TOTAL			Rp. 265,000	Rp. 0		
NO	PRODUK	QTY	SUB TOTAL	POTONGAN																				
1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0																				
2	1660312356- PHYNO CARE	1 @ Rp. 120,000	Rp. 120,000	Rp. 0																				
TOTAL			Rp. 265,000	Rp. 0																				
4	33498	2022-08-15 10:18:19	Rp. 145,000	Rp. 0	LAF AESTHETIC																			
		<table><tr><th>NO</th><th>PRODUK</th><th>QTY</th><th>SUB TOTAL</th><th>POTONGAN</th></tr><tr><td>1</td><td>1660312337- SKIN CARE</td><td>1 @ Rp. 145,000</td><td>Rp. 145,000</td><td>Rp. 0</td></tr><tr><td colspan="3">TOTAL</td><td>Rp. 145,000</td><td>Rp. 0</td></tr></table>	NO	PRODUK	QTY	SUB TOTAL	POTONGAN	1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0	TOTAL			Rp. 145,000	Rp. 0							
NO	PRODUK	QTY	SUB TOTAL	POTONGAN																				
1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0																				
TOTAL			Rp. 145,000	Rp. 0																				
5	33439	2022-08-15 10:17:19	Rp. 145,000	Rp. 0	LAF AESTHETIC																			
		<table><tr><th>NO</th><th>PRODUK</th><th>QTY</th><th>SUB TOTAL</th><th>POTONGAN</th></tr><tr><td>1</td><td>1660312337- SKIN CARE</td><td>1 @ Rp. 145,000</td><td>Rp. 145,000</td><td>Rp. 0</td></tr><tr><td colspan="3">TOTAL</td><td>Rp. 145,000</td><td>Rp. 0</td></tr></table>	NO	PRODUK	QTY	SUB TOTAL	POTONGAN	1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0	TOTAL			Rp. 145,000	Rp. 0							
NO	PRODUK	QTY	SUB TOTAL	POTONGAN																				
1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0																				
TOTAL			Rp. 145,000	Rp. 0																				
6	31484	2022-08-15 09:44:44	Rp. 145,000	Rp. 0	LAF AESTHETIC																			
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NO	PRODUK	QTY	SUB TOTAL	POTONGAN																				
1	1660312337- SKIN CARE	1 @ Rp. 145,000	Rp. 145,000	Rp. 0																				
TOTAL			Rp. 145,000	Rp. 0																				

Figure 13. Report Page

The implementation result phase is the website application ready to be used by users. Researcher ensure the website function properly and meets the needs of all users.

Testing

Black box testing is a software testing method that tests the functionality of the designed application. The test plan for implementing web-based supply chain management for drug stock control at Laf Aesthetic is as follows.

Table 2. Admin Privilege Testing

Test class	Test detail	Description	Result
User login	Username and password	Enter your username	Up and

	verification	and password to log in and enter the main menu	running
Supplier menu testing	Process of displaying and managing supplier data with save, edit and delete actions	Manage supplier data and save to the database	Up and running
Categories menu testing	Process of displaying and managing categories data with save, edit and delete actions	Manage categories data and save to the database	Up and running
Product menu testing	Process of displaying and managing product data with save, edit and delete actions	Manage product data and save to the database	Up and running
Sale menu testing	Process sales transaction with pay action	Manage sales transaction and save to database	Up and running
Order menu testing	Process of displaying and managing order lists data with save, edit and delete	Manage order lists data and save to database	Up and running
Report menu testing	Process and displaying data and printing report	Manage, displaying and printing report data	Up and running

Table 3. Supplier Privilege Testing

Test class	Test detail	Description	Result
User login	Username and password verification	Enter your username and password to log in and enter the main menu	Up and running
Order menu testing	Process of displaying order data with approve and reject option	Approve or reject order made by laf aesthetic	Up and running
Approve and reject testing	Process of displaying the status of orders that have been approved or rejected	Manage order data	Up and running

Table 4. Owner Privilege Testing

Test class	Test detail	Description	Result
User login	Username and password verification	Enter your username and password to log in and enter the main menu	Up and running
Supplier menu testing	The process of displaying and managing supplier data with save, edit and delete actions.	Manage supplier data	Up and running
Report menu testing	Process and displaying data and printing report	Manage, displaying and printing report data	Up and running

After conducting a trial process on the website that has been designed, it is concluded that the designed website has functioned properly and meets users

needs. This website ready to launched and use to support the supply chain management system at Laf Aesthetic Clinic.

Maintenance

In this phase, maintenance measure monitoring using website security testing tool and website performance analysis tool to identify the vulnerability of the website. The development of the new features can be made according to users need. This website still needs routine maintenance to operate properly, efficiently, and effectively.

D. Conclusion

Laf Aesthetic beauty clinic has not implemented an information system for drug stock control, this has resulted in the clinic having difficulties in managing drug inventory and also in managing drug purchases to suppliers. To overcome this, a web-based stock and supplier management information system was designed. With the system designed, it can make it easier for the clinic to manage drug stocks and also in managing drug purchases to suppliers who supply drugs to the Laf Aesthetic beauty clinic.

E. Acknowledgment

Gratitude is extended to dr. Lisda Sari Harahap as the owner of the Laf Aesthetic beauty clinic.

F. References

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