DEVELOPMENT OF INFORMATION SYSTEMS SUPPLY CHAIN MANAGEMENT (SCM) IN CV. SKYLAR

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ABSTRACT

CV. Skylar is a company engaged in the garment industry which already has several trademarks. Production section 1 sometimes buy raw materials for orders that have not been paid by the customer so the company suffered losses due to excessive costs for raw material procurement, other problems occur in the production 2 in the production scheduling, raw materials that have been available sometimes not in accordance with Production schedules are made so that the delay. In addition the production part 1 has difficulty in scheduling the distribution due to delayed production and difficulty in determining the type of delivery.

The solution of the above problems is to build a supply chain management information system. Supply chain management is a series of activities covering Coordination, scheduling and controlling the procurement, production, supply and delivery of products or services to customers that include daily administration, operations, logistics and information processing from customers to suppliers. In the procurement of raw materials also apply the method just in time for the company can control the raw materials well.

The result of black box testing and beta testing has been done, it can be concluded that the built system can be accepted by the user. Works well and has assisted production 1 in determining raw material procurement and distribution scheduling and assisting production 2 in determining production schedule so that no delays occur.

Keywords: Supply Chain Management, Just In Time, Black Box.

1. INTRODUCTION

CV Skylar Company is a company engaged in the garment and located in Indihiang District Tasikmalaya City. This company has been established for approximately one year. At the beginning of its establishment, the company has only two trademarks, namely Skylar which sells shirts and Rauffa clothes that sell men's clothing. Over time, the company is growing and gradually adding several other trademarks, including Mazel, Bhagavaan, Digegel, Tariris, Center Point, Kazuhiro, Walmond etc. In carrying out its production activities, CV Skylar only run it when there is demand for goods (make to order).

Based on interviews with Mr. Enceng S who served as head of production 1, explained that the procurement activities of raw materials is done when there is demand of goods from the incoming consumer where the demand for goods can be done by online and offline. Raw materials ordered to suppliers only for the demand of goods that have been paid by the consumer either down payment (dp) or paid off. The problem that occurs is the production of 1 difficulty in determining the raw materials to be purchased, where sometimes the production of 1 ordering the raw materials for the demand of goods that have not been paid by consumers, this causes losses for the company because the company must spend excessive costs for the procurement of raw materials and For raw material storage costs.

Based on the interview with Mr. Andri who served as the head of production department 2, he explained that the production activity is done when the raw materials that have been ordered by the production 1 to suppliers have been available. In one day the company is able to do production for 60 pcs of garments. He also explained that the production part 2 sometimes finds difficulty in production scheduling. The available raw materials sometimes do not match the list of paid bookings and the production schedule has been made. This leads to irregular production schedules and the company loses production costs and production time and causes delays in product shipments to consumers resulting in decreased consumer confidence in the company.

Based on interviews with Mr. Enceng S who served as head of production 1, he explained that the delivery of goods to consumers is done once a day at 16.00 pm, delivery can be done through a professional delivery service and through courier company (especially tasikmalaya area). The company has two means of transportation for delivery ie two motors with maximum capacity of 40 pcs each. In this case the production part 1 has constraints in determining the delivery schedule because the production part 2 sometimes perform production activities for orders that have not made a payment. Production section 1 should request confirmation to production 2 to find out the production schedule. The

lack of information management related to production scheduling between production 1 and production 2 leads to production 1 difficulty in determining delivery schedules and to re-arrange delivery schedules previously promised. Consequently, consumer confidence in the company is decreasing.

In addition, the company also experienced constraints in the delivery schedule because sometimes the product will be sent beyond the maximum capacity of the shelter. This leads to delays in delivery and leads to reduced consumer confidence in the company.

From the above problems, the company CV Skylar need a means that can manage the information that handles the problem of the series of production, from the start of material procurement, goods production and distribution of goods. Supply Chain Management (SCM) which is a series of activities that include coordination, scheduling and controlling the procurement of raw materials, production, inventory and distribution of products, from customers to suppliers, the right choice to solve existing problems in CV Skylar company. Therefore it is necessary to build an information system Supply Chain Management (SCM) in the company CV Skylar.

1.1 Definition of Information System

The Information System includes a number of components (human, computer, information technology, and work procedures), something is processed (data becomes information), and is intended to achieve a goal or goal [1].

1.2 Information System Components

Stair (1992) explains that computer-based information systems (CBIS) within an organization consist of the following components:

1. Hardware, is hard perangat component to complete the activities of entering data, data processing, and data output.
2. Software, is programs and instructions provided to the computer
3. Database, which is a collection of data and information organized in such a way that is easily accessible to users of information systems
4. Telecommunication, is communication that connects between users of the system with the computer system together into an effective network.
5. Human, is personnel of information systems, including managers, analysts, programmers, and operators, and responsible for system maintenance [2].

1.3 Supply Chain Management

Supply Chain Management (SCM) is an integrative method or approach for managing an integrated product, information, and money flow involving parties from upstream to downstream consisting of suppliers, manufacturers, distribution networks and logistics services

An important principle in SCM is the transparency of information and collaboration both between the internal functions of the company and with the parties outside the company along Supply Chain [3].

Supply Chain Management, according to (Heizer & Rander: 2004), is an activity of managing activities in order to obtain the raw materials into processed or semi-finished goods and finished goods and then deliver the products to consumers through a distributed system. These activities include traditional purchasing functions plus other important activities that relate between suppliers and distributors. SCM may include the determination:

A) Transportation
B) Cash transfer transfers
C) Supplier
D) Distributors and receivables
E) Warehousing
F) Booking fulfillment
G) Share information on demand forecasting, production, and inventory control activities [4].

1.4 Supply Chain Management Strategy

Logistics strategy / SCM is needed to assist the achievement of desired corporate goals in company strategy. Innovation of SCM strategy approaches will enable companies to excel competing.

In planning the SCM strategy some sources of decision-making are needed. A strategic perspective for internal and external sources aims to be able to compete on the basis of product differentiation and / or focus. Elements of SCM strategy according to Sisilian and Satir (2000) consist of Primary Factors (competitive advantage, demand flexibility) and Secondary Factor (process capability, process time limit, and strategy risk) [4].

1.5 Perencanaan Supply Chain Management (SCM)

Supply Chain Management Planning consists of six topics, namely the level of planning, the extent of the planning area, the purpose of customer service, local facility strategy, inventory decisions, and transportation strategy..

1. Planning Level

SCM Planning aims to answer questions about what (what), when (when), how (how), it takes place in three levels, namely strategic, tactical, and operational.

2. The Area of Planning

Logistics activities involve four important decisions, including :

a) The level of service to the customer
b) Location of logistics facilities
c) Decision of inventory

d) Transportation decisions

3. Purpose of Customer Service

The following factors are very different from other factors, how the effort to meet customer service is in need of "art".

4. Local Facility Strategy

Logistics planning on site facilities, depends heavily on the geographic location of the resource location..

5. Decision of the Supply

Inventory decisions indicate how the inventory is regulated.

6. Transportation Strategy

The transport decisions used are highly dependent on modes, such as shipping size, delivery routes, and scheduling. [4]

2. RESEARCH CONTENTS

2.1 Supply Chain Management Analysis

CV. Skylar using make to order method in running its production activities, make to order is the process of production and purchase of raw materials is done only if there are orders from customers. In the series of work, CV. Skylar has two running streams: information flow and management flow. The flow of information in the company, among others, product ordering information from customer to sales, raw material order based on ordering information, raw material purchase information from production 1 to production 2, production progress information, and goods delivery information from production 1 to customer. This information flow will help the company to monitor all activities in the company. Companies can monitor data about orders from customers, can control the raw materials so that there is no shortage or void of raw materials, can monitor the progress of goods production. In the shipping activities the company can monitor the shipping type, whether through professional shipping services or through company employees.

Based on the work description owned by CV.Skylar, then Supply chain management applied has a framework for the construction of System to be built. Elements of Supply Chain Management (SCM) framework In CV.Skylar can be seen in the following table

Table 1. Elements of the Framework

No	Elements of the Framework	Sub Elements of the Framework	Deployment In System
1	Structure of Supply Chain Network	Struktur Vertikal	Internal Relations: Part 1. Sales Section 2. Production Section 1 3. Production Section 2 External Relations 1. Supplier 2. Customers
		Horizontal Position	CV. Skylar is in a position as a source to produce and deliver products to customers
2	Business Process Supply Chain	*Demand Management*	Manage incoming product orders from customers
		Procurement	The process of procurement of raw materials is done when there is an order from customers, procurement of raw materials purchased from suppliers
		Distribution	Arrange the delivery schedule and delivery type, whether through company employees or through professional shipping service and delivery status
		Return	The process of returning products from customers
3	Component Supply Chain Management	Workflow structure / Work Activity	1. Cooperation between CV. Skylar with suppliers for raw material procurement 2. Cooperation between CV. Skylar with the customer that the demand for

			the product in the form of clothing
		Structure of communication and information flow facilities	1. Communication and information between the company and the customer about the ordering of products through the company's social media accounts held by the sales department 2. Communication and information between the company and the customer regarding the return of the product through the company's social media account held by the sales department

1.2 Stages of Supply Chain Management

Stages in the information system with SCM approach strategy that will be built in CV. Skylar can be seen in figure 1

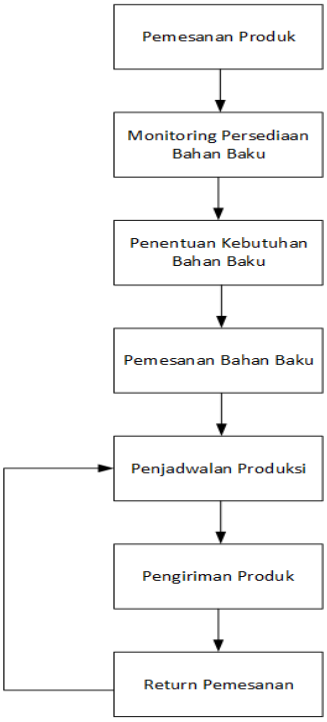


Figure 1. Suggest of Supply Chain Management

Here's an explanation of the picture of supply chain management stages in CV. Skylar:

1. Product Booking

The parts involved in the ordering activities of the product are the customer and the sales department in the company.

Product ordering activities can be done online and offline. Where to order online payment must be paid off, while offline payment can only with dp (down payment).

2. Raw Material Inventory Monitoring

The part involved in this stage activity is the production section 1. After the ordering activity, Production 1 section checks the remaining raw material inventory from the previous production, because the amount of raw material purchased from the supplier does not always match the needs.

3. Determination of Raw Material Needs

The part involved to determine the raw material requirement is the production part 1. The production section 1 will perform the calculation of raw material needs in accordance with the number of orders. The need for raw materials for production is reduced by residual or raw material inventory from previous production.

Calculation of raw material requirement using just in time method (JIT), with equation formula Rencana Material Raw Material Requirement = *Company production plan* x *raw material requirement* [5] (1).

4. Raw Material Ordering

The part involved in this phase is the production part 1. Production 1 ordering the raw materials after

the calculation to find the amount of raw material needs.

The ordering of raw materials is done to the supplier with the recommendation of the cheapest raw material price made by the system.

5. Production Scheduling

Production scheduling is done to determine the production schedule and check the progress of production, the extent to which production is done. The part involved in this stage is production 2.

To determine the production schedule used equation

Tpr = Tp + 1 + old ordering of raw materials (2)

Tpr = Date Production

Tp = Date of reservation

The equation is in accordance with the existing policy in the area of research.

6. Shipping Products

The product delivery stage is done by production 1. Production 1 will make the delivery schedule and determine the type of product delivery.

To determine the production schedule used equation

Tpr = Tp + 1 + old ordering of raw materials + old production (3)

Tpr = Date Production

Tp = Date of reservation

The equation is in accordance with the existing policy in the field of research.

7. Return Booking

This stage only occurs if the goods received by the customer suffered damage due to the negligence of the company or the existence of a non-conformity of the order with the goods received, is optional..

2.3 Use Case Diagram

In the system there are six users or users, namely admin, sales, customer, production 1, production 2, suppliers. The role of the actors can be seen in the use case diagram of figure 2.

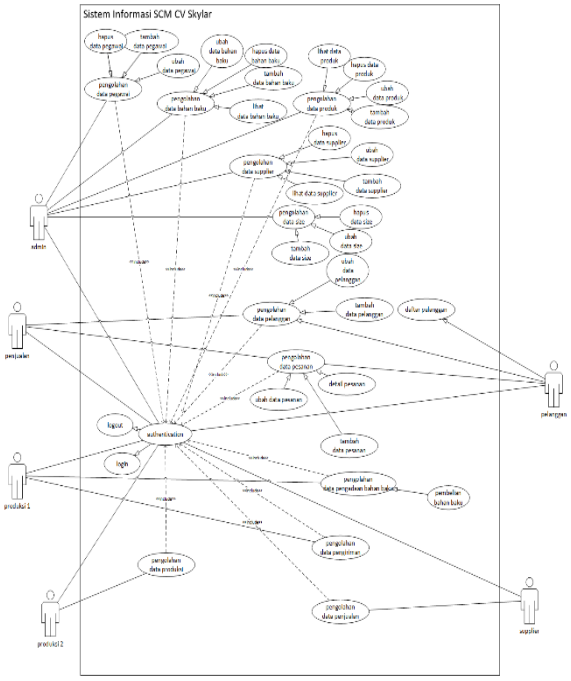


Figure 2. Use Case Diagram

2.4 Class Diagram

There are three types of classes in the system, namely Boundary class, Control class, and Entity class. The Boundary class is the class used to build the system interface. The Control class is a class that is used as the place for all existing processes in the system and also the validator that checks the validation of incoming data, and the Entity class is the class used as the data container or the data representation itself.

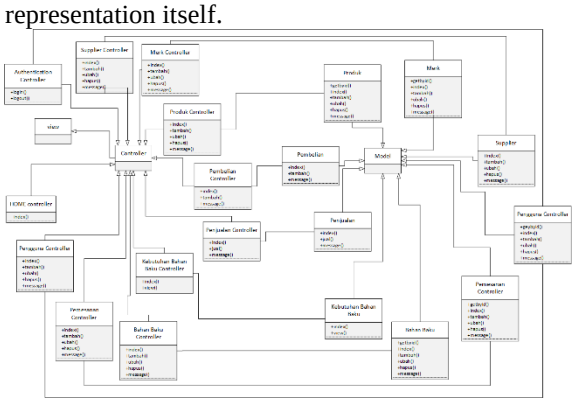


Figure 3. Class Diagram

2.5 Relationship Scheme

Relationship scheme is a way of arranging a relation by determining the relation name, the name of each field (columns / attributes) and the domain of each field that has the appropriate set of values.

The design of relation scheme can be seen in figure 4..

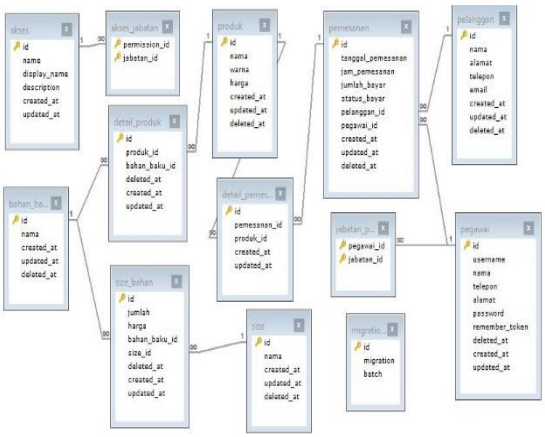


Figure 4. Relationship Scheme

2.6 Menu Structure

In the menu structure of the system to be built, there are several sections that can be accessed by each user. Users in this system are admin, production 1, production 2, sales and suppliers.

2.6.1 Admin Menu Structure

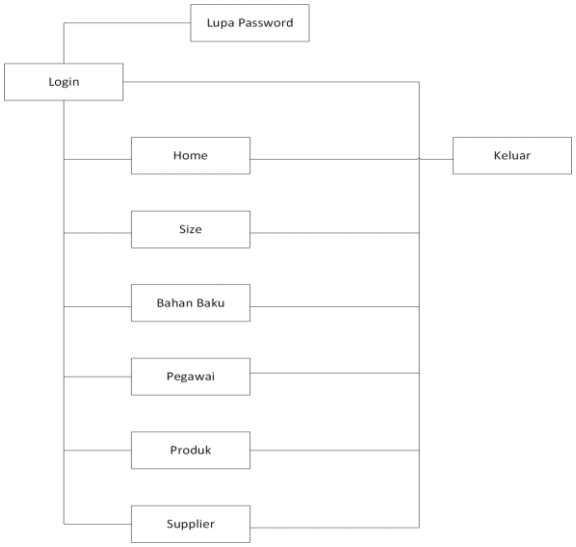


Figure 5. Admin Menu Structure

2.6.2 The Structure Of The Sales Menu

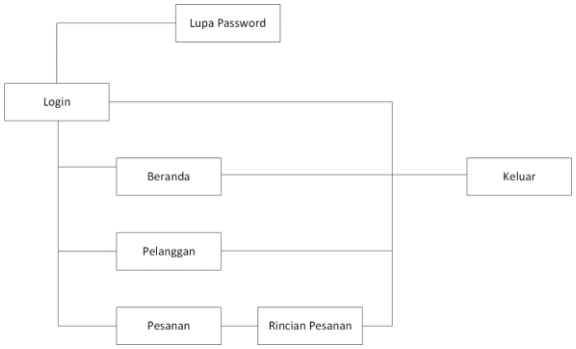


Figure 6. The Structure Of The Sales Menu

2.6.3 Produksi 1 Menu Structure

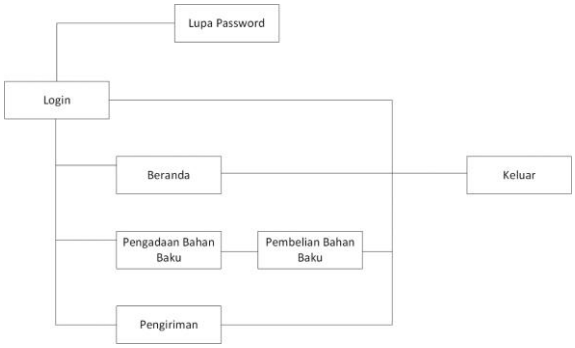


Figure 1. Produksi 1 Menu Structure

2.6.4 Produksi 2 Structure Menu

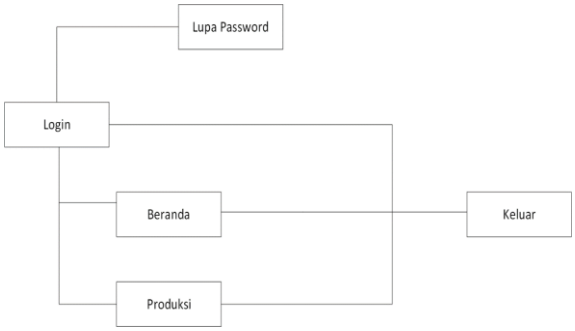


Figure 2. Produksi 2 Structure Menu

2.6.5 Supplier Structure Menu

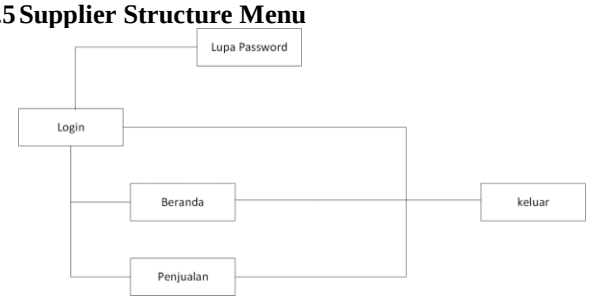


Figure 3. Supplier Structure Menu

2.7 Interface Implementation

a. Admin Interface Implementation

Table 2. Admin Interface Implementation

Menu	Description	File Name
Login	The page used to login to the system	login.php
Home	The main page after admin successfully login process	home.php
Size	The page used to process the data size	size.php

Raw material	The page used to process raw material data	bahanbaku.php
Employee	The page used to process employee data	pegawai.php
Produk	The page used to process product data	produk.php
Supplier	The page used to process supplier data	supplier.php

b. Sales Interface Implementation

Table 3. Sales Interface Impelemntation

Menu	Description	File Name
Login	The page used to login to the system	login.php
Home	The main page after admin successfully login process	home.php
Customer	Pages used to process customer data	pelanggan.php
Orders	The page used to process the order data	pesanan.php

c. Produksi 1 Interface Implementation

Table 4. Produksi 1 Interface Implementation

Menu	Description	File Name
Login	The page used to login to the system	login.php
Home	The main page after admin successfully login process	home.php
Procurement of Raw Materials	The main page after admin successfully login process	bahanbaku.php
Delivery	Pages used to process delivery data	pengiriman.php

d. Produksi 2 Interface Implementation

Table 5. Produksi 2 Interface Implementation

Menu	Description	File Name
Login	The page used to login to the system	login.php
Home	The main page after admin successfully login process	home.php
Produksi	The main page after admin successfully login process	produksi.php

e. Supplier Interface Implementation

Table 6. Supplier Interface Implementation

Menu	Description	File Name
Login	The page used to login to the system	login.php
Home	The main page after admin successfully login process	home.php
Sales	The page used to process raw material sales data	penjualan.php

2.8 System Testing

Testing the system is the most important thing that aims to find errors or deficiencies in information systems tested. Testing the system intended to determine the performance of information systems that have been made in accordance with the purpose of designing information systems. Testing to be done is to test the system built from the side of the system maker with Black Box testing.

Table 7. Black Box Testing

Test Case	Test Details	Type of Testing
Login	Login user	Black Box
Size	Add data size Change the data size Clear data size Search for data size	Black Box
Raw material	Add raw material data Change raw material data Clear raw material data Search raw material data	Black Box
Employee	Add employee data Change employee data	Black Box

	Clear employee data Find employee data	
Product	Add product data Change product data Clear product data Search product data	Black Box
Supplier	Add supplier data Change supplier data Clear supplier data Search Supplier data	Black Box
Costumer	Add customer data Change customer data Clear customer data Find customer data	Black Box
Orders	Add order data Find order data	Black Box
Purchase of raw materials	Buy Raw Materials	Black Box
Shipping order	Confirm delivery	Black Box

3. Closing

This chapter discusses how the conclusion of the end result of research is from the analysis, design and implementation, design, and testing of the Development of Supply Chain Management Information System in CV. Skylar. This chapter also discusses suggestions for important notes in further systems development

3.1 Conclusion

Based on the results of the tests and discussions that have been made then got the following conclusion :

1. Supply chain management information system can assist the production 1 in determining the raw materials to be purchased
2. Supply chain management information system can assist the production 2 in determining the production schedule.
3. Supply chain management information system can assist production 1 in determining the delivery schedule, both in terms of delivery time and in determining the type of delivery.

3.2 Sugestion

Suggestions that can be given to the development of supply chain management information system that has been made for further development can be explained as follows :

1. Supply chain management information system can be developed by adding some features to be better as add function to print data.
2. For the security of existing data within the system, it is better to have someone responsible for handling the security field.
3. Do maintenance within a period of several months or years to keep the system working properly

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