THE CONSTRUCTION OF INFORMATION SYSTEMS USING SUPPLY CHAIN MANAGEMENT APPROACH IN JEMBER II CV.

Doni Bayu Akbar[1] , Hani Irmayanti[2]
[1,2]Informatika - Universitas Komputer Indonesia
Jl. Dipatiukur 112-114 Bandung
E-mail : donibayuakbar94@gmail.com[1] , haniirmayanti@email.unikom.ac.id[2]

ABSTRACT

CV. Jember II is one of the companies engaged in the production of Towels located in Bandung Regency of West Java province. CV. Jember II uses the strategy of make to stock namely the existence of a production process prior to booking. Company CV. Jember II produce five different types of Towels namely Bath towel, Hand towel, Bathrobe, Bathmat, and Washlap. CV. Jember II has many consumers are scattered in an area of West Java. The purpose of this final task is to Facilitate Production in the Head determines the amount of raw materials that must be reserved to the supplier, to meet the raw material inventory in the warehouse. Simplify Delivery Head in the delivery process with the scheduling the delivery of products and the determination of the distance to the nearest ... Supply Chain strategies used are push supply Chain, because it is based on the appropriateness of the supply chain that occurs in the current company that is using the strategy of make-to-stock. Supply chain system was built from the upper part (upstream) to downstream (downstream). The method of forecasting the needs of raw materials used is a single moving average. Calculation of the predicted availability of raw materials in the warehouse using the method of safeguarding inventory (Safety Stock).

Keyword : Supply Chain Management, single moving average, Safety Stock, push supply chain, make-to-stock

1. introduction

CV. Jember II is one of the companies engaged in the production of Towels located in Bandung Regency of West Java province. CV. Jember II uses the strategy of make to stock namely the existence of a production process prior to booking. Company CV. Jember II produce five different types of Towels namely Bath towel, Hand Towel, Bathrobe, Bathmat, and Washlap. CV. Jember II has many consumers are scattered in an area of West Java. The company has a series of upstream work done by CV Jember II with supplier, namely procurement of raw materials to the supplier, do the reception of raw materials from suppliers, conduct the processing of raw materials into a finished product. While the activities contained in the downstream made by CV. Jember II is the product sales and distributing it to consumers.

Based on the results of the interview with Mr. Risman Professorpinch as the head of Production that the current CV. Jember II has the amount of data the results of sales of products ranging from January to June 2017 as much 67164 pcs (Appendix F), the largest number of sales was product Washlap type of towel with the number of sales as much as 17230 pcs (Appendix F). Based on facts obtained at the time period on sales data, products are sold each month is unknown due to the amount of consumer purchases, resulting in erratic Production Heads have difficulty in determine the amount of raw materials that must be reserved to the supplier to meet the production process during the period of the next month. This becomes a problem when the sales of the product increased causing the shortage of raw materials in warehouses, which resulted in the production process can not run smoothly.

Based on the results of the interviews have been conducted with Mr. Sopyan as the head of the sending State that the process of delivery of the products is carried out by the head of shipping to consumers often experience delays, cause delays product delivery experienced by Jember CV II i.e. because the company uses a shipping system (FIFO) First In First Out is to do a product delivery to consumers more used to make a purchase. This resulted in the delivery time required is longer due to the presence of scheduling/route has not been determined by the company. In addition there is still a problem in the process of shipment to the consumer due to the introduction of the officers did not know the route of delivery is good and right for sending the products which resulted in terlambatnya product delivery to consumers.

Based on the existing problems in current CV. Jember II i.e. it needs a means that can manipulate the supply chain information such as process data master, forecasting raw material, processing and shipping routes. Therefore, supply chain management is the right choice to handle the existing problems in the company.

Research Objectives

The purpose of this research is to build a Supply Chain Management information system in Jember CV II.

While the goals to be achieved from this research are:

1. Simplify the production Heads in determining the amount of raw materials that must be reserved to the supplier, to meet the raw material inventory in the warehouse.

2. Simplify the delivery Head in the delivery process by having shipment scheduling and determining the closest distance.

1. The CONTENT of PAPERS

2.1 company history

CV. Jember II stood on August 15, 1980. is a company engaged in towel products located in JL. Leuwi Pan Majalaya Kab. Bandung. CV. Jember II is a privately run family business down, companies started to be a CV in the year 2008. At first the company produced a bath towel, because the company's rapid development and given the interest in this society the higher the production bath towel then the owner of the company developed other products such as: hand towel, bathmat, washlap and bathrobe. Thus CV. Jember II increases with the infrastructure that has been adequate, the increase of employees and facilities work tools that make more and more and the increasing quality of the products on sale by Jember CV II.

CV. Jember II has several advantages such as: the resulting product quality is maintained and also design towel no less good than other competitors, applying Quality Control process so as to minimize errors and after sales service if there is a the discrepancy. To make a booking in Jember CV II by way of booking to the head of marketing with the other day the fastest delivery two days and at least four days. The company is using Push Supply Chain which supplies goods so it should be available in the warehouse, prior to booking.

2.2 Supply Chain Managememnt

Supply Chain (chain of procurement) is a system of funneling goods organization places of production and services to its customers. The chain is also a network or networks of interconnected organisations which have the same purpose, namely as best we can organise the procurement or distribution of the goods. [2]

The concept of the supply Chain is a new concept in looking at the question of logistics. The concept of a long look at the issue more as a logistics intern each company, and a possible solution was placed on solving in intern in the company respectively. While in this new concept, the problem of logistics is seen as a broader issue which is very long, starting from raw materials to finished goods used the end consumer, which is the chain of procurement. Therefore it can be said that the supply Chain is the logistics Networks. In this connection, there are a few major players which are the companies that have the same interests, namely:

1. Suppliers

The network originated from the supplier, which is the source that provided the first ingredient, where the chain of distribution of goods will be started. This first material can be in the form of raw materials, raw materials, materials, auxiliary materials, spare parts, merchandise and so on. The first source is named suppliers. Number of suppliers could be many or few, but suppliers typically amount to much at all.

2. Suppliers-Manufacturer

Chain first linked to the second, namely chain Manufacturer or plants or assembler or fabricator or any other forms that do the work of making, mengfabrikasi, mengasembling, assemble, convert, or completed goods (finishing).

3. Suppliers – Manufakturer – Distribution

Stuff already so generated by the Manufacturer already had to start distributed to customers. Although there are many ways for channelling merchandise to customers, the public is through a distributor and is usually reached by most of the supply chain. The goods from the factory via Keflavík transmitted to the warehouse distributor or wholesaler or wholesalers in large quantities, and in time the big traders will later transmit goods in smaller quantities to retailers or retailers.

4. Suppliers – Manufakturer – Distribution – Retail Outlets

Wholesalers usually has its own warehouse facilities or can be also rented from other parties. The warehouse is used for stockpiling goods prior to transferring it again to the retailer. Here again there is a chance to acquire the savings in the form of the amount of inventories and the cost of the warehouse, with the way the design patterns return shipment from the Manufacturer or warehouse to the store retailers (retail outlets). Although there are some factories that directly sell its results to the customer, but the relative amount not much and most use this pattern.

5. Suppliers – Manufakturer – Distribution – Retail Outlets – Customers

The retailers or retailers offers the goods directly to the customer or buyer or user of the item. That includes outlets are shops, stalls, Department stores, supermarkets, cooperative store, Mall, Club store, and so on, anyway the end where buyers make a purchase. New supply chain completely stopped after the goods concerned arrive at the user end of the goods or services.

2.2 Coverage SCM (Supply Chain Management)

SCM has the important principle i.e. SCM are information transparency and collaboration between existing internal functions inside or on the parties that exist outside the company in the scope of the supply Chain. When referring to a manufacturing company, the major activities that fall into the classification of SCM are: [2]

***1.** The activity of designing new products (Product Development)*
***2.** The activities of getting raw materials (proceurement, purchasing, control)*
***3.** The activities of production and supply plan (planning & control)*
***4.** The activity of doing production (production)*
***5.** delivery/distribution (distribution)*

The fifth classification is usually reflected in the form of a division of the department or Division with activities that are usually done. Distribution and forms of activities that normally exists at manufacturing companies can be seen in table 2.1.

Table 2. 1 the five main parts Coverage SCM [2]

Bagian	Cakupan Kegiatan
Pengembangan produk	Melakukan riset pasar, merancang produk baru, melibatkan *supplier* dalam perancangan produk baru
Pengadaan	Memilih *supplier*, mengavaluasi kinerja *supplier*, melakukan pembelian bahan baku dan komponen, memonitor *supply risk*, membina dan memelihara hubungan dengan *supplier*
Perencanaan dan Pengendalian	*Demand planning*, peramalan penjualan, perencanaan kapasitas, perancanaan produksi dan persediaan
Operasi / Produksi	Eksekusi produksi, pengendalian kualitas
Pengiriman / Distribusi	Perencanaan jaringan distribusi, penjadwalan pengiriman, mencari dan memelihara hubungan dengan perusahaan jasa pengiriman, memonitor *service level* di tiap pusat distribusi

2.4 Discussion

Analysis of the problem is an assumption of the problem which will be outlined in the procedures of data processing in information systems development program Supply Chaim Management in Jember CV II. Analysis of the problems of the system that is running at the moment is:

1. Head of Production have difficulty in determining the amount of raw materials production will be ordered to the supplier, because the number of booking the product often occurs the rise and decline.
2. The head of Shipping have difficulty in doing the process of distribution because of the existence of scheduling the delivery of products on a regular basis, so the inhibition in the process of distribution of finished products to consumers.

2.5 Analysis of forecasting

In predicting sales of products, there are several stages to do, namely as follows:

***i.** setting up the sales data from the previous period to be processed as data input.*
***II.** Calculating the forecast on sales data by using Single Moving Average method.*
***III.** Looking for the value of the MSE of the three forecasting technique above to find out the results of the smallest mistakes.*
***IV.** The values of MSE smallest of the three such methods that will be used as a result of forecasting for the next period.*

Forecasting is done by taking a sample of actual data washlap product sales from January to June 2017. Forecasting calculations that will be used in research that is using a Single Moving Average method because the data movement patterns showed a pattern of volatile data and has a level of error (error) the smallest. Here are the calculations done according the method used and the case happened CV. Jember II:

Table 3.3 product sales Washlap units of pcs

No.	Periode Tahun 2017	Data Penjualan Produk *Washlap*
1	Januari	2759
2	Februari	2936
3	Maret	2759
4	April	3027
5	Mei	2873
6	Juni	2876

From table 3.3 Washlap product sales in units of pcs gained sales data in the period January to June 2017, then the graph can be seen product sales Washlap with the units of pcs to find out the pattern of the data product sales. From the resulting data pattern we shall know the method that we will use in accordance with the pattern of the resulting data, generate graphics in product sales data of Washlap is as follows.



Figure 3.7 the graph Data and the actual product sales Washlap in units of pcs.

Based on actual data chart 3.7 image product Washlap in units of Pcs, then forecasting methods to be used is a Single Moving Average because the pattern of motion data showed a pattern of fluctuating sales changes.

Actual Product data from Washlap in January to June 2017, which will be used for forecasting in July 2017. Forecasting is done with the data product sales Washlap units of Pcs. Value of forecasting can be searched by using a Single method of Moving Average and for moving is moving 2 months to 5 months as a moving comparison.

The first thing to do is determine the moving used and predicted demand for the next period.

***a.** the calculation for moving 2 monthly*

Forecasting results for n = 2 is obtained by inserting the value of Xt 2 months prior to the month would like to note the results of peramalannya. Here are the details of the results of the calculation using the equation (2.3) for determining forecasting in March 2017:

$St_{juli} = Xt_{Mei} + Xt_{Juni} / N$
$= 2873 + 2876 / 2$
$= 2874,5$

***b.** the calculation for the moving 3 monthly*

Forecasting results for n = 3 is obtained by inserting the value of Xt 3 months prior to the month would like to note the results of peramalannya. Here are the details of the results of the calculation using the equation (2.3) for determining forecasting in April 2017:

$St_{juli} = Xt_{April} + Xt_{Meil} + Xt_{Juni} / N$
$= 3027 + 2873 + 2876 / 3$
$= 2925,3$ Pcs

***c.** the calculation for moving 4 monthly*

Forecasting results for n = 4 is obtained by inserting the value of Xt 4 months prior to the month would like to note the results of peramalannya. Here are the details of the results of the calculation using the equation (2.3) to determine the forecast in may 2017:

$St_{juli} = Xt_{Maret} + Xt_{April} + Xt_{Mei} + Xt_{Juni} / N$
$= 2759 + 3027 + 2873 + 2876 / 4$
$= 2883,75$ Pcs

***d.** the calculation for moving 5 monthly*

Forecasting results for n = 5 is obtained by inserting the value of Xt 5 months prior to the month would like to note the results of peramalannya. Here are the details of the results of the calculation using the equation (2.3) for determining forecasting in June 2017:

$St_{Juli} = Xt_{Februari} + Xt_{Maret} + Xt_{April} + Xt_{Mei} + Xt_{Juni} / N$
$= 2936 + 2759 + 3027 + 2873 + 2876 / 5$
$= 2894,2$ Pcs

These results demand forecasting product Washlap with moving 2 months until moving 5 months are described in the following table:

Table 3.4 Single Moving Average Forecasting Results In Washlap units of Pcs

No	Periode	Permintaan	Moving Average (Bulanan)			
			2	3	4	5
1	Januari	2759				
2	Februari	2936				
3	Maret	2759	2847,5			
4	April	3027	2847,5	2818		
5	Mei	2873	2893	2907,33	2870,25	
6	Juni	2876	2950	2886,33	2898,75	2870,8
7	**Hasil peramalan bulan Juli**		**2874,5**	**2925,3**	**2883,75**	**2894,2**

From the forecasting result data table must be calculated the value of the fault or error using the Mean Squared Error (MSE) to find out which approaches the level of accuracy of the ordering of product Washlap in units of Pcs made the most accurate reference forecasting in July 2017. How to count them as follows:

$$MSE = (X_{Maret} - F_{Maret})^2$$
$$MSE = (2759 - 2847{,}5)^2$$
$$MSE = -88{,}5^2$$
$$MSE = 7832{,}5$$

Menghitung MSE pada bulan Juli 2017 :

$$MSE = \frac{\sum |X_t - F_t|^2}{n}$$
$$MSE = \frac{45928{,}5}{4} = 11482{,}13$$

The result of the perjumlahan period of 3 to 6 period i.e. 45928.5 then divided 4 i.e. the overall period, then the results obtained by 11482.13 is a

result of the overall error of a period for moving 2 months.

Do the calculation of the MSE as above of moving 2 months until moving 5 months. Based on the results of the calculation of the MSE for the entire moving 2 months to 5 months to come by the table the results of the calculation of the overall value of MSE on a table here

Table 3.5 the calculation result in the product Washlap MSE units of Pcs

No	Periode	Permintaan	Moving Average (Bulanan)			
			2	3	4	5
1	Januari	2759				
2	Februari	2936				
3	Maret	2759	7832,25			
4	April	3027	32220,25	43681		
5	Mei	2873	400	1178,778	7,5625	
6	Juni	2876	5476	665856	517,5625	27,04
Mean Square Error			11482,13	236905	262,5625	27,04

Based on the results of the comparison table 3.4 error MSE with indicator 5 months looks N = 5 has the smallest error value error i.e. 27.04 then it can be inferred that in July 2017 CV. Jember II recommended procurement of raw materials for product type Washlap as much as 2894.2 Pcs = 2895 Pcs, derived from the results of the calculation:

$F_7 = (X_2 + X_3 + X_4 + X_5 + X_6) / N$
$= 2936 + 2759 + 3027 + 2873 + 2876 / 5$
$=$ **2894,2** Pcs

After the calculation is performed then noted that an estimated booking product Washlap in July 2017 i.e. of 2895 Pcs and forecasting results will be used in subsequent calculations process namely procurement of raw materials.
The smallest error is generated indicating that the level keakurataan forecasting high. Then from the results of forecasting the number of product Washlap production unit of Pcs for the next period determined using using the value N = 5.

3.1.4.4 the Bill Of Materials

to find out the amount of raw material that will be ordered data required BOM (Bill of Material) for one product washlap units of pcs. Presentation of the raw material for one product can be seen in Table 3.6.

No	Bahan Baku	Qty	Satuan
1	Benang Cotton Combed 10'S	200	Gr
2	Benang Obras 200 gr	0,02	Roll
3	Benang Bordir 150 gr	0,015	Roll
4	Pewarna textile 15 Ml	0,01	Btl
5	Satin Printing 500 slide	1	Slide
6	Plastik Polybag Bening 25x30 isi 100 lembar	1	Lembar
7	Duss Packing	1	Pcs

Table 3.6 BOMB for one product Washlap Pcs

From the table above, then the composition based on the results of a number of forecasting 2895 pcs multiplied by the rate of product composition washlap, so can the table as follows.

Table 3.7 Product Composition Washlap based on the Permalan

No	Bahan Baku	Persediaan (bom x hasil peramalan)	Satuan
1	Benang Cotton Combed 10'S	200 x 2895 = 579000	Gr
2	Benang Obras 200 gr	0,02 x 2895 = 58	Roll
3	Benang Bordir 150 gr	0,015 x 2895 = 44	Roll
4	Pewarna textile 15 Ml	0,01 x 2895 = 29	Btl
5	Satin Printing 500 slide	1 x 2895 = 2895	Slide
6	Plastik Polybag Bening 25x30 isi 100 lembar	1 x 2895 = 2895	Lembar
7	Duss packing	1 x 2895 = 2895	Pcs

3.1.4.5 Analysis Monitoring Inventories of products and raw materials

After finding out the composition of the product is Washlap, then the next step is to calculate safety stock products. Safety stock or inventory security serves to protect the errors in predicting demand during lead time. Application of the method of safety stock used for research is to do forecasting supplies of raw materials for the manufacture of Washlap products. An example of raw material inventory calculation based on the results of the inventory of products using the method of safety stock: product inventory Calculation
Note:
The number of forecasting in July 2017 = 2895/20 = 144.71 Pcs = 145 Pcs
Standard deviation number of forecasting in July 2017 (sd) = 145/5 = 29 Pcs Lead time of procurement to supplier (l) = 2 days
Standard deviation of lead time (sl) = 2/5 = 0.4
Sevice level 95% (Z) = 1.645
Solution:
SDL = Sd x √ (l)
SDL = 29 x √2
SDL = 41.1 = 42
Safety stock = Z x Sdl
Safety stock = 1.645 x 42
Safety stock = 69.1 Pcs = 70 Pcs

*Based on the results of calculation of safety stock above, then the CV Jember II should provide raw materials in accordance with the safety stock Washlap products i.e. a number of 70 pcs for each raw material that is by the way, Safety stock products * BOMBSHELL by one pcs Washlap. And the results of Safety stock for each raw material can be seen in the following table.*

Table 3.8 Composition products based on Safety stock Products

Nama Produk	***Safety stock* Produk**	**Nama Bahan Baku**	**Kebutuhan Bahan Baku berdasarkan *Safety stock* Produk**
Washlap	70 Pcs	Benang Cotton Combed 10'S	14000 gr
		Benang Obras 200 gr	2 Roll
		Benang Bordir 150 gr	1 Roll
		Pewarna textile 15 Ml	1 btl
		Satin Printing 500 slide	70 Slide
		Plastik Polybag Bening 25x30 isi 100 lembar	70 Lembar
		Duss packing	70 Pcs

Based on the results of the monitoring of the supply of a product that has been made then the company must manufacture products Washlap as many as 2895 pcs with details can be seen in the following table.

Table 3. 9 Monitoring Product Inventory

Nama Produk	**Sisa Stock Yang Ada**	***Safety stock***	**Status**
Washlap	35 Pcs	70 Pcs	**Tidak Aman**

Based on the results of the monitoring of the supply of a product that has been made then the company must manufacture products Washlap as many as 2895 pcs with details can be seen in the following table.

Table 3.10 the composition of products based on Product Inventory Monitoring

Nama Produk	**Jumlah Produk Yang Harus Diproduksi**	**Bahan Baku**	**Jumlah Bahan Baku Yang Dibutuhkan**
Washlap	2895 Pcs	Benang Cotton Combed 10'S	579000 gr
		Benang Obras 200 gr	58 Roll
		Benang Bordir 150 gr	44 Roll
		Pewarna textile 15 Ml	29 Btl
		Satin Printing 500 slide	2895 Slide
		Plastik Polybag Bening 25x30 isi 100 lembar	2895 Lembar
		Duss packing	2895 Pcs

After monitoring the supplies of the product then the next inventory monitoring process will be performed on raw materials will be presented in the form of a table, where it will be sorted based on the difference between the amount of raw materials needed by the rest of the stock There is. For example the presentation of monitoring will use Combed Cotton yarn of raw materials 10 's where the rest of the stock of raw material of Combed Cotton yarn 10 's is 579000 gr/570 kg. Presentation of monitoring inventories of raw materials can be seen in the following table.

Table 3.11 Monitoring Inventories of raw material

Nama Bahan Baku	**Jumlah Bahan Baku Yang Dibutuhkan**	**Sisa Stock Yang Ada**	***Safety stock***	**Status**
Benang Cotton Combed 10'S	579000 gr	7000 gr	14000 gr	Tidak Aman
Benang Obras 200 gr	58 Roll	1 Roll	2 Roll	Tidak Aman
Benang Bordir 150 gr	44 Roll	0,5 Roll	1 Roll	Tidak Aman
Pewarna textile 15 Ml	29 Btl	0,5 btl	1 btl	Tidak Aman
Satin Printing 500 slide	2895 Slide	35 Slide	70 Slide	Tidak Aman
Plastik Polybag Bening 25x30 isi 100 lembar	2895 Lembar	35 Lembar	70 Lembar	Tidak Aman
Duss packing	2895 Pcs	35 Pcs	70 Pcs	Tidak Aman

3.1.4.6 the procurement of raw materials.

Based on the monitoring of the supply of raw materials at the table 3.11 Then the amount of materials you ordered is the number of the required raw materials reduced the remaining stock in the added safety stock then the result can be seen in the following table.

Table 3.12 Needs raw materials

Nama Bahan Baku	Jumlah Bahan Baku Yang Dibutuhkan	Sisa Stock Yang Ada	*Safety stock*	Keterangan Pengadaan
Benang Cotton Combed 10'S	579000 gr	7000 gr	14000 gr	**Diadakan**
Benang Obras 200 gr	58 Roll	1 Roll	2 Roll	**Diadakan**
Benang Bordir 150 gr	44 Roll	0,5 Roll	1 Roll	**Diadakan**
Pewarna textile 15 Ml	29 Btl	0,5 btl	1 btl	**Diadakan**
Satin Printing 500 slide	2895 Slide	35 Slide	70 Slide	**Diadakan**
Plastik Polybag Bening 25x30 isi 100 lembar	2895 Lembar	35 Lembar	70 Lembar	**Diadakan**
Duss packing	2895 Pcs	35 Pcs	70 Pcs	**Diadakan**

Tabel 3.13 number of raw materials must be booked

Nama Bahan Baku	Jumlah Bahan Baku Yang Dibutuhkan	Sisa Stock Yang Ada	*Safety stock*	Jumlah Bahan Baku Yang Harus Dipesan
Benang Cotton Combed 10'S	579000 gr	7000 gr	14000 gr	572000 gr
Benang Obras 200 gr	58 Roll	1 Roll	2 Roll	57 Roll
Benang Bordir 150 gr	44 Roll	0,5 Roll	1 Roll	44 Roll
Pewarna textile 15 Ml	29 Btl	0,5 btl	1 btl	29 Btl
Satin Printing 500 slide	2895 Slide	35 Slide	70 Slide	2860 Slide
Plastik Polybag Bening 25x30 isi 100 lembar	2895 Lembar	35 Lembar	70 Lembar	2860 Lembar
Duss packing	2895 Pcs	35 Pcs	70 Pcs	2860 Pcs

After monitoring the supplies of raw materials in June 2017 so companies need to conduct procurement of raw materials to the supplier that has been doing the same job before. In this case the supplier will be selected anyway.

On ordering raw materials could have exceeded the results of the forecast, due to the possibility of a minimum purchase that became the rule from the selected supplier. The following table is the procurement of raw materials:

Table 3.14 Data Procurement of raw materials

Tanggal	Nama *Supplier*	Nama Bahan Baku	Qty	Harga	Jumlah
29/06/2017	CV. Sinar abadi	Benang Cotton Combed 10'S	572000 gr / 572 kg	Rp 113.500	**Rp. 64.922.000**
29/06/2017	PT. Iwamatex	Benang Obras 200 gr	57 Roll	Rp 9.500	**Rp. 541.500**
29/06/2017	CV. Almegatex	Benang Bordir 150 gr	44 Roll	Rp 10.000	**Rp. 440.000**
29/06/2017	PT. Sumber Jaya Textille	Pewarna textile 15 Ml	29 Btl	Rp 8.500	**Rp. 49.532.000**
29/06/2017	PT. Surya Karya Sentosa	Satin Printing 500 slide	2860 Slide / 4Pcs	Rp 100.000	**Rp. 400.000**
29/06/2017	PT. Sinar Agung Plastik	Plastik Polybag Bening 25x30 isi 100 lembar	2860 Lembar / 30 Pcs	Rp 25.000	**Rp. 750.000**
29/06/2017	Ragamas Sejati Packing	Dus packing	2860 Pcs	Rp. 1.600	**Rp. 4.576.000**
Total Harga					**Rp 121.161.500**

Payment is made after the delivery of raw materials was completed by the supplier in question, here is a table of payments of raw materials.

Table 3. 15 Payment Data on raw materials

Tanggal	Nama *Supplier*	Nama Bahan Baku	Qty	Harga	Jumlah	Status Pembayaran
29/06/2017	CV. Sinar abadi	Benang Cotton Combed 10'S	572000 gr / 572 kg	Rp 113.500	**Rp. 64.922.000**	Lunas
29/06/2017	PT. Iwamatex	Benang Obras 200 gr	57 Roll	Rp 9.500	**Rp. 541.500**	Lunas
29/06/2017	CV. Almegatex	Benang Bordir 150 gr	44 Roll	Rp 10.000	**Rp. 440.000**	Lunas
29/06/2017	PT. Sumber Jaya Textille	Pewarna textile 15 Ml	29 Btl	Rp 8.500	**Rp. 49.532.000**	Lunas
29/06/2017	PT. Surya Karya Sentosa	Satin Printing 500 slide	2860 Slide / 4Pcs	Rp 100.000	**Rp. 400.000**	Lunas
29/06/2017	PT. Sinar Agung Plastik	Plastik Polybag Bening 25x30 isi 100 lembar	2860 Lembar / 30 Pcs	Rp 25.000	**Rp. 750.000**	Lunas
29/06/2017	Ragamas Sejati Packing	Duss packing	2860 Pcs	Rp. 1.600	**Rp. 4.576.000**	Lunas
Sudah Dibayar					**Rp 121.161.500**	
Belum Dibayar					-	
Total Harga					**Rp 121.161.500**	

3.1.4.7 Delivery Analysis

Analysis of the distribution is made based on the presence of the delivery process or distribution process in the supply chain. Distribution is happening in lingkupan this form of supply chain products to consumers. Distribution is done by taking into account the distance to the closest, nearest distance determination will use the nearest neighbour method. Scheduling and monitoring of shipping activities conducted to consumers with the timetable agreed upon one another.

3.1.6.1 Analysis Database

Data base analysis on supply chain management information system in CV. Jember II will be built using Entity Relationship Diagram (ERD). ERD is a data model in the context of the entities and relationships described by the data. As for the chart depicted in Figure 3.9.

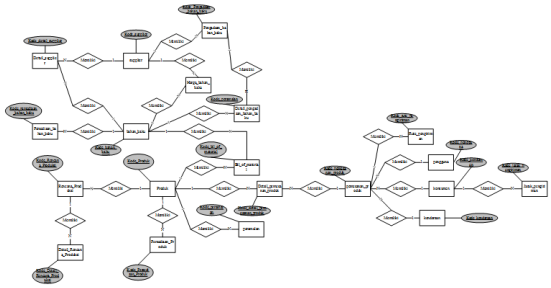


Figure 3.9 ERD information system building of Supply Chain Management in Jember II

CV.3.1.6.3 Diagram Konteks

Context diagram is a model to explain how data is used globally and is transformed to the process or describe the flow of data into and out of the system. Context diagram on the system can be seen in Figure 3.10.

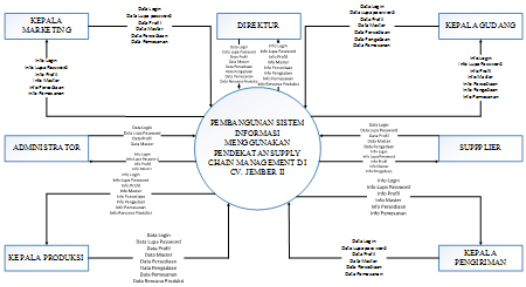


Figure 3.10 information system Context Diagram in Jember II CV.3.1.6.4 DFD (Data Flow Diagram)

Data Flow diagrams describe the flow of data from the source data (input) the giver to the receiver data (output). The flow of data that I need to know in order to be known when a data must be stored, processed and when to when to be distributed to other parts.

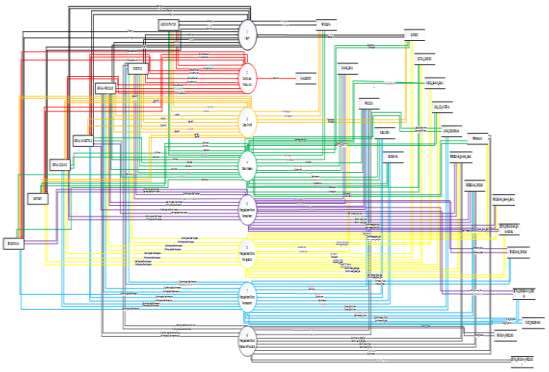


Figure 3.11 DFD Level 1

3.2.1 Table Relation

Table relation is used to describe the relationships between tables in the system in detail or clear. Table relation will be illustrated in Figure 3.28.

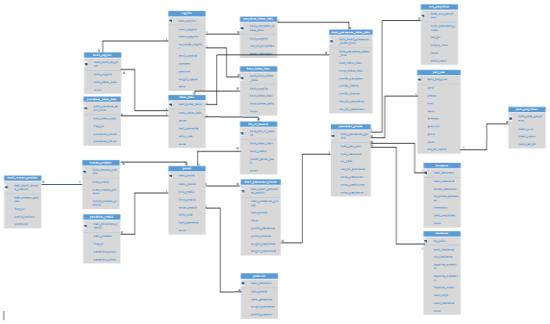


Figure 3.28 Table Relationship information systems Supply Chain Management CV Jember II

3.2.2 The Design Of The Interface

The design of the interface was created to illustrate the appearance of the program that will be used by the user to interact with the system are made. The design is based on the input and output to be generated when the application is implemented.

Design of interfaces in supply chain management information system in Jember CV II packed discussed as follows:

1. Login Interface Design

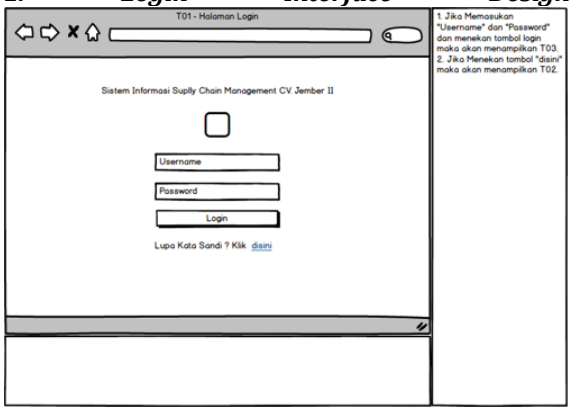


Figure 3.35 login interface Design

2. The design of the interface range Data Delivery

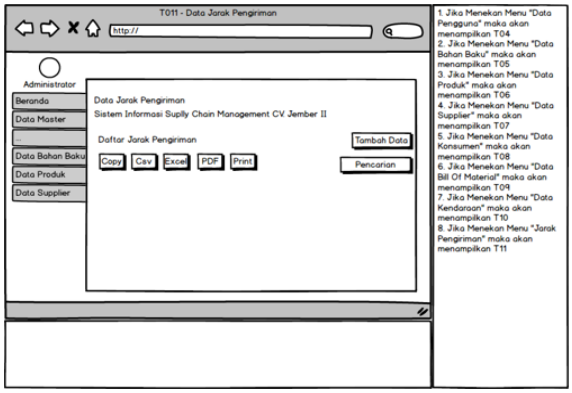


Figure 3.44 Shipping Distance Interface Design

3. *The Design Of The Interface Of Profile Data*

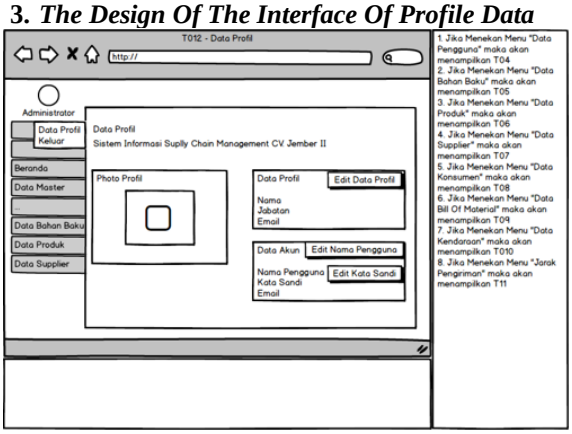


Figure 3.45 Profile Data Interface Design

3. CLOSING

Based on the results obtained from the research that has been done in the writing of this final project about the construction of information system in supply chain management CV Jember II then the conclusion to be drawn as follows:

1. supply chain management information system that can Facilitate this Head of production in determining the number of forecasting/raw materials that must be reserved to the supplier, to meet the raw material inventory in the warehouse.

2. supply chain management information system that can Facilitate the Delivery Head in the delivery process by having shipment scheduling and determining the closest distance. And advice based on all the results that have been achieved at present, supply chain management information system in Jember CV II still has some drawbacks. It is recommended to add things that can supplement the system. As for suggestions for the development of information systems, supply chain management is as follows:

1. Information systems still need to be developed more of a side view of the interface and the language to make it more attractive and easier to use.

2. The development of information systems to implement customer relationship management which include the sale of products and the handling of consumer complaints in order to ease in booking products.

BIBLIOGRAPHY

[1] Agus, Mulyanto, 2009; "Sistem Informasi Konsep & Konsep Aplikasi", Yogyakarta : Pustaka Pelajar.

[2] Pujawan, I Nyoman. (2005). *Supply Chain Management*. Surabaya: Guna Wijaya.

[3] Indrajit, Richardus Eko,. Djokopranoto, Richardus. (2002). *Konsep Manajemen Supply Chain : Cara Baru Memandang Mata Rantai Penyediaan Barang*. Jakarta: PT. Gramedia Widiasarana Indonesia.

[4] Arsyad, Lincolin, *Peramalan Bisnis*, Edisi pertama, BPFE Yogyakarta, 1997.

[5] Arif, M. Ruyanto, 2011; "*Pemrogaraman Web Dinamis Menggunakan PHP dan MySQL*", Yogyakarta: ANDI

[6] Nasution, Hakim dan Arman, *Perencanaan dan Pengendalian Produksi*, Graha Ilmu, Yogyakarta, 2008.

[7] Yakub, Pengantar Sistem Informasi, Yogyakarta, Graha Ilmu, 2012, ISBN 978-979-756-807-

[8] Sofjan, Assauri. (2004) *Persediaan pengaman (Safety Stock)*

[9] Kristanto, Andri, 2008, Perancangan Sistem Informasi dan Aplikasinya, edisi revisi, Yogyakarta: Gava Media.

[10] Yoviyanto, Evan. (2010). *"K-Nearest Neighbor (KNN)"*. diakses 03 Januari 2018 dari https://kuliahinformatika.wordpress.com/2010/02/13/buku-ta-k-nearest-neighbor-knn/