# *DEVELOPMENT OF SUPPLY CHAIN MANAGEMENT AT CV. KREASI BUNDA CHANIAGO*

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## ABSTRACT

CV. Kreasi Bunda Chaniago Is one of the companies engaged in the production of *Handy Craft* located in Subang Regency West Java, which was established in 2010. CV. Kreasi Bunda Chaniago produces various types of *Handy Craf., the* Currentlydemand forproducts *handy craft* from consumers every month is known to be erratic, resulting in the Production Section having difficulty in determining the number of production plans for the production of products every month. In the January-December 2017 period, product orders were not fulfilled because the amount of stock in the warehouse was insufficient, therefore the delivery duration required was longer with the estimated time. The *Supply Chain strategy* used was *Push Supply Chain*, because The company producesproducts *handy craft* for stock or ordinary called thestrategy *make-to-stock.* Calculation of the prediction of availability of raw materials in the warehouse using the method of *Safety Stock*, and the method of planning the amount of product production using two methods, namely *Single Exponential Smoothing* andmethod *Single Moving Average*. Based on the test results can be concluded that this system can help the head of production in planning the production amount the procurement section in determining the amount of raw material needed and facilitates the head of the warehouse in planning the scheduling and distribution of products to consumers.

**Keywords**: *push supply chain, make-to-stock, single moving average, single exponential smoothing, safety stock.*

## 1. INTRODUCTION

CV. Kreasi Bunda Chaniago is one of the companies engaged in Handy Craft Production, located in Subang Regency, West Java, which was established in 2010. The company produces various types of *Handy Craft*. CV. Kreasi Bunda uses thestrategy *make-to-stock*, namely the production process before ordering. [1]

CV. Kreasi Bunda Chaniago has a total of 22,348 product orders from January to December 2017 with 15,302 doll products, 1,712 pillows, 1,631 bags, 2,193 bags and 1,510 purses for the most number of orders, namely doll type with Bear Jojon products As many as 1787 small. Based on the facts obtained in the period of time the order of each type of handy craft every month is known to be erratic so that the production division has difficulty in determining the planned production amount. This is a problem when consumer demand forproducts *handy craft* increases, there will be a lack of even raw material vacancies in warehouses so that the production process stops because they have to wait for raw materials to return from suppliers, which results in a lack of stock ofproducts *handy craft* that are not fulfilled which sometimes resulting in cancellation of orders from consumers.

Based on the interview with Mr. Adi Nafah as the Warehouse Section stated that. In the January-December 2017 period the demand for products is not all fulfilled, the order is due to insufficient product quantities. That is because the stock of products *handy craft* warehouse mencukupi.Berdasarkan not the problems that occurred and which has been described above, the company CV. Kreasi Bunda Chaniago require a means to connect the *supply chain*-it. Therefore *Supply Chain Management* (SCM) is the right choice because the function of *Supply Chain Management* (SCM) itself is to connect business processes from *suppliers* to consumers.

The development goal of the development of *Supply Chain Management* in CV. Kreasi Bunda Chaniago creations are as follows:

1. Facilitate the Head of Production in determining the planning of the amount of product production while helping in determining the amount of raw material needed.
2. Facilitate the Head of Warehouse in the process of distributing products with the delivery scheduling and the right number of products.

## 2. RESEARCH CONTENT

### 2.1 The foundation of the theory

The foundation of the theory in writing this thesis will explain the theories related to *Supply*

*Chain Management* in CV. Kreasi Bunda Chaniago Chaniago.

### 2.1.1 *Supply Chain Management (SCM)*

*Supply Chain Management* is method or commonly called an approach that aims to manage the flow of information as well as products, in a connected or same / integrated way that involves many parties starting from the beginning to the end or commonly referred to from upstream to downstream. An important principle in SCM is collaboration between internal companies and external parties of the company along the *supply chain*. [1]

*Supply Chain* is a physical network, namely companies involved in supplying / sending raw materials / raw materials, producing certain products and goods, while distributing them to consumers. These companies usually include suppliers, factories, distributors and retailers. [2]

Three types offlow *supply chain* that must be managed can be seen in Figure 1.

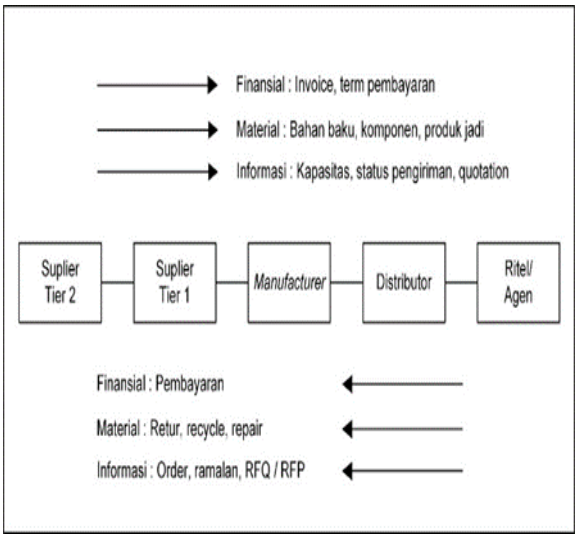



**Figure 1.** Model of Flow Simplification *Supply Chain*

### 2.1.2 Inventory

Inventory is an important asset of a company in the form of goods intended to support company performance / support the company's operational activities.[3]

Inventories of goods are materials or products that are owned or provided by certain companies to meet production needs, as well as finished products provided to fulfill product orders from consumers, distributors, and retailers in each period / time. [4]

### 2.1.3 Safety techniques Stock

Stock security functions to protect errors in predicting demand during the period of time between market / customer demand and product distribution. [4]

Here is the formula for determining *Safety stock* can be seen in Equation 1

$$Safety\ Stock = \text{Z x Sdl} \quad (1)$$

Where:

Z = *Service Level*

$Sdl$ = *Lead Time*

### 2.1.4Forecasting *Single Moving Average*

Method The *Single Moving Average (SMA)* method is a forecasting method which can assume market demand based on past data applied when market demand for the product will remain stable all the time to estimate the amount in the next period. [5]

systematically *moving averages* can be calculated by equation 2.

$$S_{t+1} = \frac{x_t + x_t - 1 + \cdots + x_t - n + 1}{n} \quad (2)$$

Description:

$S_{t+1}$ = Forecasting for each period to *t + 1.*

$Xt$ = Data / value in period t.

$n$ = Duration Moving Average

### 2.1.5 *Single Exponential Smoothing*

Method The *Single Exponential Smoothing* method is a method used for long and medium term forecasting where this method is used when conditions where the data weight in the previous period is different from the data in the current period and forms thefunction *Exponential*. [6]

Systematically *single exponential smoothing* can be calculated by equation 3.

$$F_{t+1} = aX_t + (1 - a)F_t \quad (3)$$

Description:

$F_{t+1}$ = Forecasting results for period t-1

$a$ = smoothing constant

$X_t$ = Data / Amount Value actual for period t

$F_t$ = forecast in period t

## 2.2 Analysis of *Supply Chain Management (SCM)*

Supply chain analysis is used to implement supply chain management approach to the system to be built, in the analysis stage of supply chain management in CV.Kreasi Mother Chaniago will be explained Model SCM, Section of Internal and External involved in the business processes that exist in the company, the scope of internal and external activities that exist in the company and the scope of information flow I am involved in internal and external activities contained in the CV.Kreasi Bunda Chaniago. try to increase additional value and competitiveness. Supply chain analysis is the one of framework analysis begin great quantities in the world of industry to increase additional value and competitiveness, Supply Chain Management is a strategic competitive tool for companies that make bersainganya logistical problems as a strategy to win the competition.Based on SCM analysis presented in the previous section, while themodel *supply chain* contained in CV.Kreasi Chaniago Mother can be seen in Figure 2.

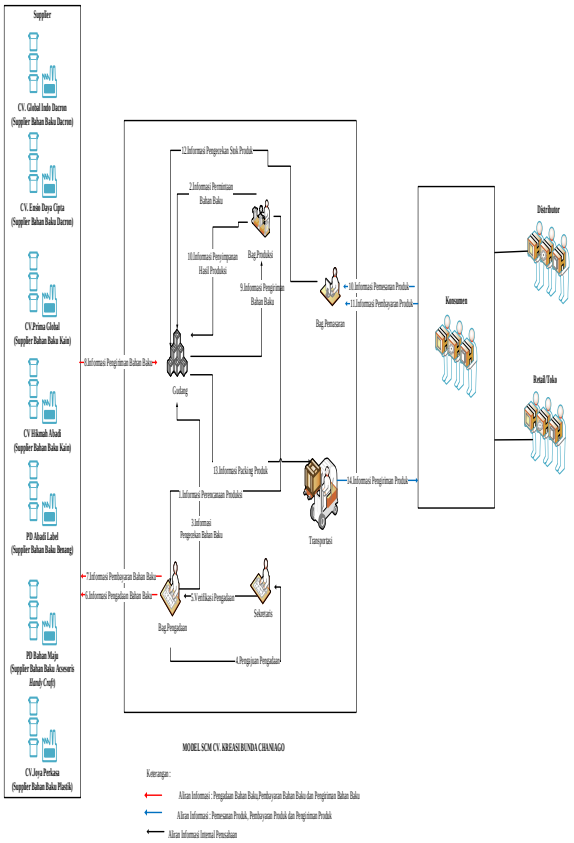


**Figure 2.** Model *Supply Chain* in ChaniagoMother CV.Kreasi

The analysis is *Supply chain* carried out to describe theprocess *supply chain management* that will be built in Bunda Chaniago's CV. Creation based on themodel *supply chain* in Figure 2. Theanalysis *supply chain* can be seen in Figure 3.

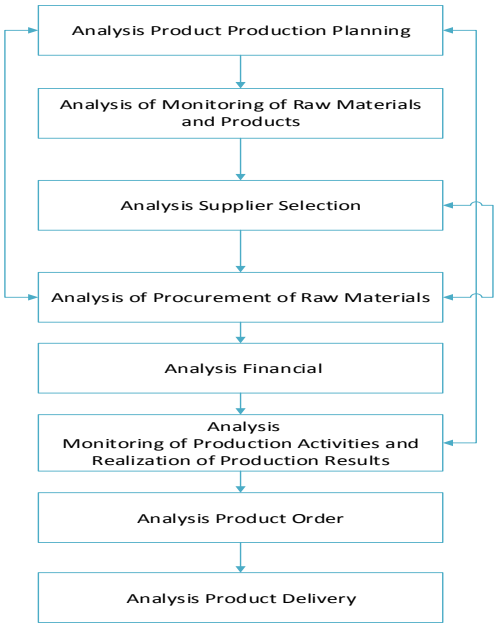



**Figure 3.** Stages. *Supply Chain Management* CV.Kreasi Bunda Chaniago

**1. AnalysisSelection *Supplier***

Selection *Supplier* is done by Mother CV.Kreasi Chaniagi by purchasing raw materials to *suppliers* based on the amount of raw material prices cheapest of any company.

**2. Analysis of Production Planning Product**

Planning Total Production of Products based on actual data on sales ofproducts *handy craft* in the previous period. Analysis at this stage is done to predict / predict how many *handy craft* must be produced. Then the results obtained will be used as a consideration for ordering raw materials to *suppliers.* Production Planning Products are carried out using 2 Methods of 9 *samples* productrepresenting each category of *handy craft* in the company, namely *Single Exponential Smoothing* for products, Doraemon, Minni Mouse, Animal Dolls, Bags and Wallets whileMethod is *Single Moving Average* Used for Production Planning for Tayo Products , Pillows and bolsters.

Examples of Total Production Planning Calculations Using Sample data for sales of Small Bear Jojon products for the period January-December 2017, Recapitulation of sales data is explained in Table 1.

**Table 1.** Data on Bear Dolls Sales Small Jojon

| No | Period | Sales Data |
|---|---|---|
| 1 | January | 150 |
| 2 | February | 150 |
| 3 | March | 135 |
| 4 | April | 152 |
| 5 | May | 142 |
| 6 | June | 160 |
| 7 | July | 140 |
| 8 | August | 150 |
| 9 | September | 150 |
| 10 | October | 163 |
| 11 | November | 150 |
| 12 | December | 145 |

Based on sales data of Small Bear Jojon, it can be seen the sales data chart to find out the method to be used in accordance with the data pattern produced. The following is the sales data pattern of the small Bear Jojon in the CV. The creation of Mother Chaniago can be seen in Figure 4.

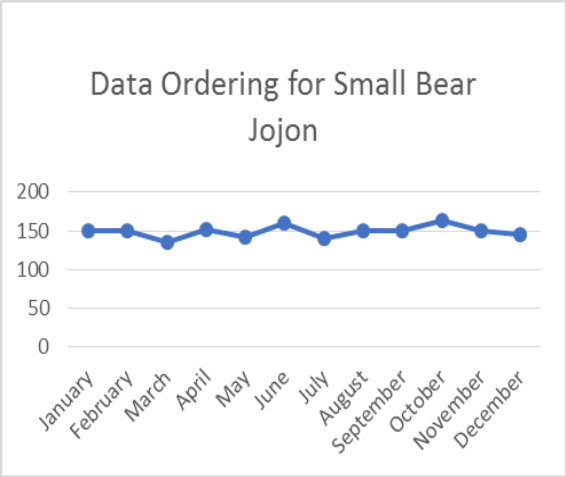



**Figure 4.** Small Jojon Bear Sales Chart

Based on calculations using theMethod of *Single Exponential Smoothing* Forecasting results for January 2018 the production plan for small jojon bear products is 146 Pcs.

### 3. Monitoring Analysis of Products and Raw Materials

After carrying out the production planning stage, the next step is to monitor where these stages are monitoring products and raw materials while determining the safe limits of raw materials in the warehouse in order to avoid the occurrence of raw material deficiencies by using themethod *Safety Stock*.. Based on Calculation of CV. The creation of Mother Chania must provide *Stock Safety* as many as 34 Pcs of.

**Table 2.** Product Composition of Small Jojon Bears

| No | Raw Material | QTY | Unit |
|---|---|---|---|
| 1 | Dacron Polyster B | 0.5 | Kg |
| 2 | Lasfur Cream Fabric | 0.5 | M |
| 3 | 8mm Eye | 2 | Pcs |
| 4 | 8mm Nose | 1 | Pcs |
| 5 | Tread Astra Krem | 1,25 Y | Y |

Based on the results ofcalculations *safety stock*, then CV. Creative Bunda Chaniago provides *safety stock* for the product which is 34 Pcs. The following is a product table and its composition and *safety stock*.

**Table 3.** Composition of Small Jojon Bear Products

| **Product Name** | ***Safety Stok*** | **Name Raw Material** | **Amount Of Raw Material** |
|---|---|---|---|
| Bear Small Jojon | 34 | Dacron Polyster B | 17 Kg |
| | | Lasfur Cream Fabric | 17 M |
| | | Astra Thread Beige | 42,5 Y |
| | | 8mm Nose | 34 Pcs |
| | | 8mm Eye | 68 Pcs |

**Table 4.** Monitoring of Inventories ofBear Products Small Jojon

| **Name** | **Production Forecasting Results** | **Existing Stock** | ***Safety Stock*** | **Status of** |
|---|---|---|---|---|
| Small Jojon Bear | 146 | 30 | 34 pcs | Unsafe |

Based on Table 4 it can be seen that the inventory of Small Bear Jojon products is in Unsafe status, the company must produce as many as 142 Small Bear Jojon Products. These results are obtained based on calculations (Production Forecasting Results - (*Stock Stock-Safety Stock*)

**Table 5.** Product Composition Based on Product Inventory Monitoring

| **Name** | **Number of Products Must Be Produced** | **Name of Raw** | **Material Number of Raw Materials needed** |
|---|---|---|---|
| Bear Jojon Kecil | 142 | Dacron Polyster B | 71 Kg |
| | | Kain Lasfur Krem | 71 Kg |
| | | Benang Astra Krem | 177,5 Y |
| | | Hidung 8mm | 142 Pcs |
| | | Mata 8mm | 284 Pcs |

**Table 6.** Inventory Monitoring of Raw Materials

| Materials Name of Raw Material | Remaining Stock in Stock | Safety Stock | Status |
|---|---|---|---|
| Dacron Polyster B | 15 Kg | 17 Kg | Tidak Aman |
| Kain Lasfur Krem | 15 M | 17 Kg | Tidak Aman |
| Benang Astra Krem | 500 Y | 42,5 Y | Aman |
| Hidung 8mm | 30 Pcs | 34 Pcs | Tidak Aman |
| Mata 8mm | 100 Pcs | 28 Pcs | Aman |

**4. Analysis of Raw Material Procurement**

In the analysis of raw material procurement, the procurement department will order materials based on planning the amount of product production and monitoring of existing products in warehouses that have previously been carried out by the production department Based on Monitoring and Production Planning So the company must procure raw materials as described in Table 7.

**Table 7.** Number of Raw Materials to Order

| Name of Raw Material | Number of Raw Materials Required | Remaining Stock There is Stock | Safety | Number of Raw Materials Ordered By |
|---|---|---|---|---|
| Dacron Polyster B | 71 Kg | 15 Kg | 17 Kg | 73 Kg |
| Beige Lasfur Cloth | 71 Kg | 15 M | 17 M | 73 Kg |
| Yarn Astra Beige | 177,5 Y | 500 Y | 42,5 Y | 280 Y |
| Nose 8mm | 142 Pcs | 30 Pcs | 34 Pcs | 146 Pcs |
| Eyes 8mm | 284Pcs | 100 Pcs | 68 Pcs | 252 Pcs |

After calculating the amount of raw material ordered, the company needs to submit raw materials to *suppliers* who have cooperated with the company.

**5. Financial Analysis**

This financial analysis is a process of financial sensitization that enters when there is a product order from the consumer to the company and the finance that comes out to procure raw materials.

**6. Analysis of Monitoring Activities of Production and Realization of Production Results**

In this analysis is a process of monitoring existing production activities arranged based on the stages of the planning process of the amount of product production carried out by the production department. This process aims to monitor the production activities carried out by the company in accordance with the plan and the final realization of product production. monitoring that can be known such as the date of production, what products are produced this month, the amount of production based on forecasting calculations, the amount of production of a particular month and the realization of planned product production.

**Table 8.** Number of Raw Materials that Must Be Ordered

| Production Date Product | Name | Number of Production (Forecasting Results) | Total Production of the Month | Production Realization |
|---|---|---|---|---|
| 1/01/2018 | Bear Jojon Kecil | 146 | 142 | 142 |

Meaning that the production being carried out on January 1, 2017 is producing Small Jojon Bears with the total production / planning forecasting results of 146 production quantities with the total produced 142 based on the product inventory monitoring that has been carried out previous.

**7. Product Order Analysis Product**

order analysis is an analysis of product ordering transactions that enter the company from consumers. As for the rules for minimum product ordering set by the company, namely 25 pcs /products *handy craft* .

**8. Product Delivery Analysis**

In this product delivery analysis, it is *monitoring* the shipping status, shipping scheduling and vehicle capacity that will be used in distribution. Delivery analysis is carried out so that the product reaches the end user at the right time and place and

knows the delivery status. Schedule of product distribution to consumers done on the schedule agreed between CV. Mother Chaniago's creation with consumers. The company can deliver orders to consumers only for the delivery of West Java and its surroundings, outside West Java the company uses expedition services to send it. Then the product delivery rules made by the company that is if consumers who have worked together at least 2 years more the company will provide a payment limit for 1 month and shipping will still be done even though payment has not been paid off, while for new companies becoming consumers usually shipping will be made if payment ordering products have been finished.

### 2.3 System Analysis and Design

Analysis is carried out on all system components that are being used and that are needed in the construction of an information system.

#### 2.3.1 Database

Analysis Analysis of the database on *Supply Chain Management* at CV. Kreasi Bunda Chaniago creation that will be built using the *Entity Relationship Diagram* (ERD). The diagram is illustrated in Figure 5.

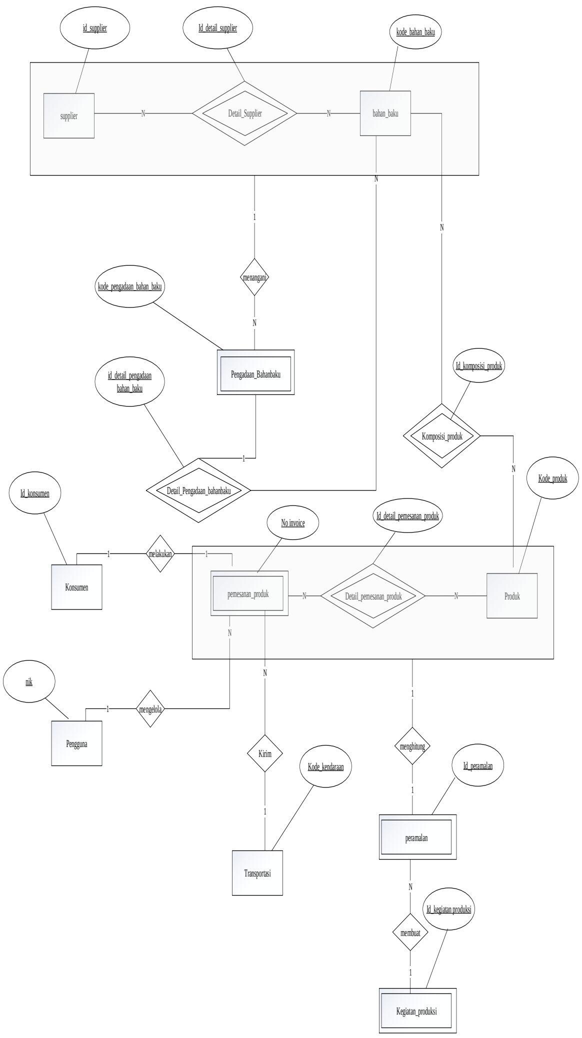


**Figure 5.** *Entity Relationship Diagram Supply Chain Management* CV. Creation Bunda Chaniago

#### 2.3.2 Context Diagram Context

diagram is a model that consists of the process of the scope of the system how data is transformed through a particular process or describe the entire system flow as a whole both input data data into and out of the system.

Context diagram in the system can be seen in Figure 6.

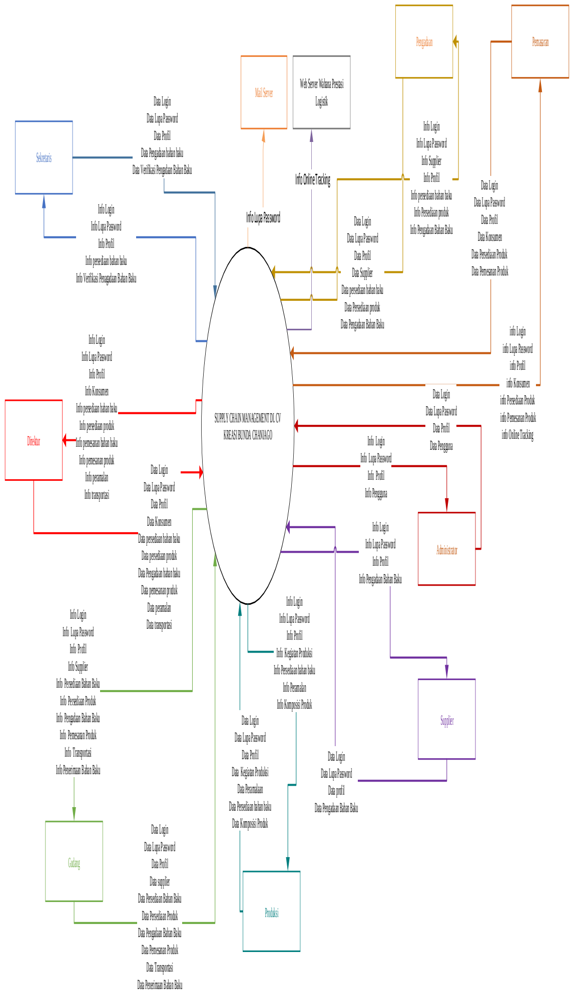


**Figure 6.** Context Diagram of *Supply Chain Management* CV. Creative Mother Chaniago

Based on the Context Diagram, there are 7 users who have each access rights in using the system while the access rights of the 7 users will be explained in Table 9.

**Table 9.** User Access Rights

| No | User | Hak Akses |
|---|---|---|
| 1 | Administrator | Using User Data |
| 2 | Director | Viewing Reporting Results from the Warehouse Section, Procurement Section, |

| | | |
|---|---|---|
| | | Production Section and Marketing Section |
| 2 | Secretary | 1. Sees the Raw Material Procurement Process as well as Approval or Cancellation of Raw Material Procurement Process<br>2. Making Reports All activities in the company |
| 3 | Marketing | 1. Manage Ordering Data.<br>2. Managing Consumer Data.<br>3. View Product Inventory Data.<br>4. Doing Online Tracking |
| 4 | Warehouse | 1. Managing Product Data.<br>2. Viewing Supplies of Products & Raw Materials<br>3. Managing Delivery of Products<br>4. Managing Receipts of Raw Materials from Suppliers |
| 5 | Production | 1. Managing Planning Total Production of Products / Product Forecasting<br>2. Managing Data Product Composition<br>3. Managing Production Activities |
| 6 | Procuremen t | 1. Procurement of Raw Materials<br>2. Managing *Supplier*<br>3. Data Managing Raw Material Data<br>4. Viewing Material Supplies Raw |
| 7 | *Suppliers* | Manageat the same time confirm the delivery of raw materials that have been ordered by the Procurement Section of the Company CV. Creation Mother directly in the System. |

### 2.3.3 InterfaceInterface

Designdesign is created to describe the program's appearance on the system which will be used by users to interact with the system to be built. [8]

The following is an example of designing a raw material procurement interface which can be seen in Figure 7.

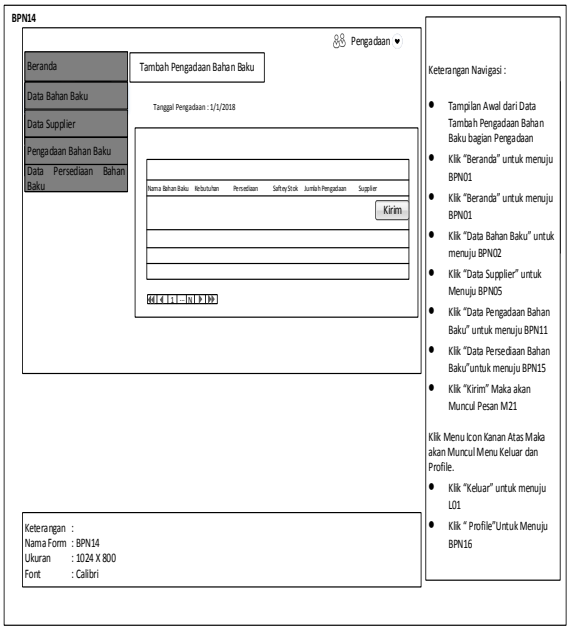



**Figure 7.** BPN04 Designing a Raw Material Procurement Interface

### 2.4 Implementation and Testing of a System The

implementation of a system is the stage of applying the results of a system analysis and design**.**

### 2.4.1 Interface

Implementation Implementation of the interface is a display of the interface on the system that is built. Interface implementation can be seen in Figure 9.

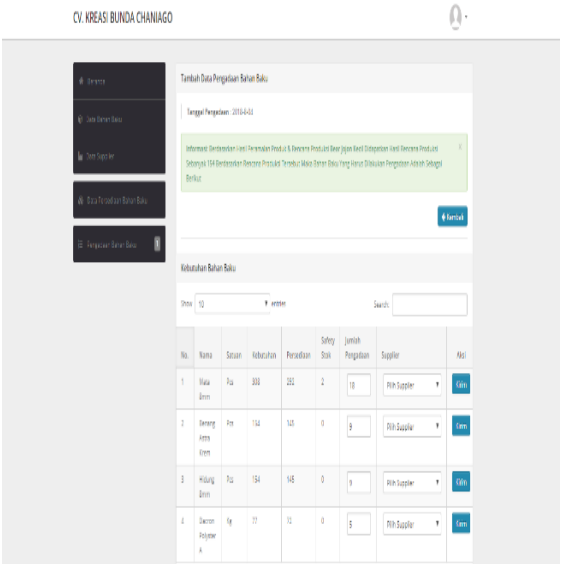



**Figure 9.** Implementation of Add Procurement Interface

### 2.4.2 System Testing System

testing is the most important thing that aims to find errors or shortcomings in the system being tested. The test intends to find out the system made has fulfilled the performance in accordance with the design objectives. [9]

**1. Functional**

Testing *Black box* testing is focused on the functional testing requirements of software / information systems built.

**2. End User**

Testing Testing focused on receiving *users* (end users) using UAT (*User Acceptance Testing*) which aims to find*defects*newfound by developers. [10]

Then testingacceptance *user* (end user) is testing the end user acceptance by using interviews to end users who use the system.

Interviews are conducted for users of the system consisting of administrators, secretaries, directors, procurement, warehouse, marketing and production departments. This research was conducted at CV. Kreasi Bunda Chaniago creation in order to find out the extent to which the system built can provide solutions and solutions to problems in the company.

## 3. CLOSING

In this section, explain the conclusions that contain the results obtained after the analysis, design, and implementation of the software design that was built and developed and suggestions that will provide notes for previous software development.

### 3.1 Conclusion

Based on the results obtained in this final assignment, the following conclusions can be drawn:

1. The information system built can facilitate the head of production in planning the number of production ofproducts *handy craft* as well as making it easier to determine the amount of raw material needed.
2. This information system can facilitate the warehouse head in planning product scheduling and distribution to consumers who haveproducts *ordered handy craft*.

### 3.2 Suggestions

Suggestions for the development of this supply chain system are some suggestions that can be done, including:

1. Information systems need development such as display to make it more attractive and easy to use.
2. Information Systems need development such as E-commerce to facilitate ordering transactions

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