DEVELOPMENT OF SUPPLY CHAIN MANAGEMENT AT FANSHOP

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ABSTRACT

Fanshop is factory company accesoris Viking persib that focuses on the production of t-shirts, jackets and switter. The process that occurs is the process of booking deals consumer products to companies experiencing constraints against the tersediaannya or void the product at the warehouse, caused by the number of transactions ketidakpastiannya bookings made by consumers. This makes it part of the warehouse have difficulty in determining the number of submissions to the purchasing of raw materials that require a waiting time of about two to three days, so it may inhibit the process of distributing the product.

Based on the existing problems in the current factory Fanshop, then needed a supply chain management system. This SCM system development goals to ease in the determination of the number of submissions to the purchasing of raw materials and facilitate in scheduling distribution of Products to consumers. The methods used for forecasting raw material is a single exponential smoothing and prediction using the availability of raw materials in the warehouse using the calculation of safety stock.

Based on research and testing results can be concluded that a system built in the warehouse section can facilitate determining the number of submissions to the purchasing of raw materials, allowing the general manager in schedule distribution and delivery information from the consumer.

Keyword : *Supply Chain Management, Single Exponential Smoothing, Safety Stock*

1. INTRODUCTION

Fanshop shirt factory began in early 2003 engaged in production and sale of a wide variety of merchandise items supporter Persib Bandung. Products that generate fanshop in the form of t-shirts, jackets and sweaters that are adults and children for football fans especially Persib Bandung. Factory outfit fanshop market its products to consumers in Bandung, Bekasi and Tangerang. Based on the results of the interview with Mr. Egi Setiawan as the head of the warehouse he say inside the factory, Fanshop has 12 suppliers for raw materials with the details of fabric, yarn, combed catton sablon, taslan tray, cotton, zipper. In the provision of raw materials, the factory has its own policy i.e. Fanshop head shed will do monitoring the amount of raw materials used each one week once and reported the estimated number of raw materials to commit to Purchasing procurement of raw materials, the next section will ask for approval of Purchasing procurement of raw materials to the General Manager to order raw materials to the supplier on the basis of that report. Head of warehouse experience difficulties in determining the amount of raw material that will be reported to the purchasing, because so far the head count only raw materials warehouse estimate only, so often a vacancy and a shortage of stock of raw materials to meet the needs of production so that, where the availability of the product so heavily influenced by the presence of supplies of raw materials of warehouse. Ordering raw materials to suppliers carried out to meet the needs of production where the reservation of the raw materials suppliers have done to pause long enough wait time could reach three to seven days from the start of the booking is done so that the raw materials received by the company which resulted in frequent shortages of stock or out of stock and resulted in the production process is not running smoothly. In addition the head shed any exposes about the booking process the distribution/delivery of finished products to consumers. In the process of contacting the head head of distribution warehouse to do some checking the availability stock products. Shipping is done using the 3 car unit in the box that have the factory Fanshop, with capacity up to 300 Pax which 12pcs/pax. Head of warehouse here admitted the difficulty of hers linked to estimate the time required for the process of distributing the product because when there are orders and the entire vehicle is used so that the process of distribution to consumers other should wait for the vehicles that are being used. These problems can be overcome by using a system of Supply chain management, Supply Chain Management function because it itself is to integrate business processes ranging from suppliers of raw materials, namely the suppliers of raw materials in

the process of making it into finished goods and distributed to consumers. the purpose of is for the management of the flow of raw materials/products and the flow of information in companies ranging from the acceptance of reservations from consumers, the procurement of raw materials, the reception of raw materials to product delivery to consumers.

2. THE CONTENT OF RESEARCH

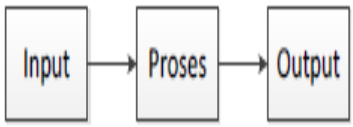
2.1 FOUNDATION of THEORY

2.2 System

The system is a set of objects that are closely related and mutually interacting and relations between objects can be viewed as a single entity that is designed for one purpose

2.3 The General form System

The General form of a system consisting of the input (input), process, and output (output). For more details, can see Figure 1. In the General form of these systems can perform one or more inputs and produces outputs will be processed in accordance with the plan that has been previously specified.



Picture 1 The General From Of a System

2.4 Characteristics of the system

As for the characteristics of a system, namely:

1. Components – components (Components)
   A system consists of a number of interacting components, which means mutual partners to form a single entity. System components or elements of the system can be either subsystems or parts of the system.
2. System Boundary (Boundary)
   The system limit is the limit between one system to another or by external environment. The limits of this system allows a system seen as a single entity.
3. The outside environment system (Environment)
   External environment of a system is beyond any limits of the boundaries of the system that affects the operation of the system.
4. Transportation (Interface)
   Nexus is a media liaison between one sub system with other subsystems.
5. The input (input)
   The energy input is entered into the system.
6. Output (output)
   The output is the result of energy processed and classified into useful output
7. Processing
   A system can have a part of the processing that will transform the input into the output.
8. Target (object)
   A system must have a goal or goals of the system urgently needs all the input

required system and generate output that will be on the system.

2.5 Information System

Information systems must not involve a computer. Information systems that use computer-based information system can be called a computer (Cumputer-Based Information System or CBIS). In practice, the term information system is more often used by no-frills computer-based although in fact the computer is an important part.

There are various definitions of system information, as listed in table 2.1. From these various definitions, it can be concluded that the information system includes a number of components (human, computer, information technology, and procedures work), there's something processed (data becomes information), and is intended to achieve a goal or destination [1].

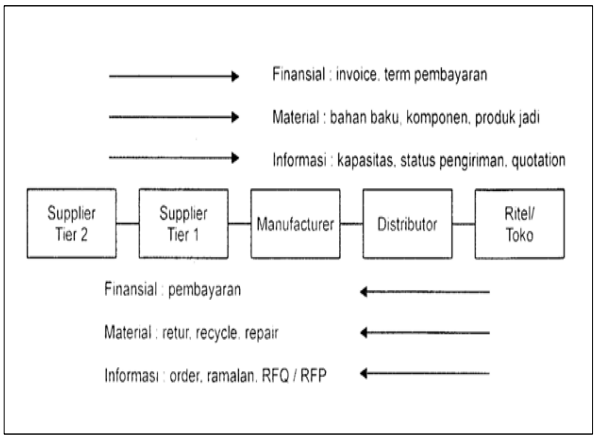
2.6 Understanding Suppy Chain Management (SCM)*)*

Supply Chain Management is the method or integrative approach to managing the flow of products, information, and integrated money involving parties ranging from upstream to downstream consisting of suppliers, factories, distribution network or services logstik [2].

2.7 Flow in the Supply Chain Management (SCM)

At a supply chain usually there are 3 kinds of flow that must be managed. First was the flow of goods that flow from upstream (upstream) to downstream (downstream). Examples are raw materials sent from the supplier to the factory. After the finished products manufactured, they are sent to the distributor, then to the retailer or retail, then to the end. The second is the flow of money and the like which flows from downstream to upstream. And the third is the flow of information that may occur from the upper to the lower or vice versa. Information about the preparation of the products still exist in each supermarket often needed by the distributor or the factory. Information about the availability of capacities of production owned by the supplier is also often required by the manufacturer. Here is a picture of model simplification supply chain and 3 kinds of managed stream:

:



Picture 2 Model Supply Chain Simplification and three kind of flow is Maintained

2.8 the theory of forecasting

To resolve the issue in the future is uncertain, people are always working to get it done with the model approaches that correspond to actual behavior data, so too do the forecasting. Forecasting (forecasting) demand for products and services at the upcoming and units is very important in planning and monitoring of production. A lot of forecasting has the meaning, then the forecasting needs to be planned and scheduled so that it will take a period of time at least in a period of time it takes to make and set a few things affect the discretion. Forecasting is required in addition to forecast what will happen in the future also the decision makers need to make planning. Forecasting is very diverse in the time horizon of forecasting, the factors that determine the actual result, type pattern and a variety of other aspects. To deal with such extensive use, several techniques have been developed. One of the techniques in forecasting that is a method of Smoothing. A noteworthy forecasting stages that must exist within the process of forecasting. There are six phases in the forecasting process, i.e:

1. Determine the purpose of divination.

How to forecast will be used and when the forecast will be needed? This step will give an indication of the level of detail required in the forecast, the number of resources (employees, time, computer, and cost) which can be justified, as well as the degree of accuracy required.

2. Sets the time span.

Forecast must indicate the span of time considering that lack decreases when a span is increased.

3. Select the forecasting technique

Acquire, analyze, and memberishkan
the right data. Obtain the data can include businesses that sigiifikan. After obtaining the data, the data may need to be "cleaned up" in order to remove foreign objects and data that are clearly not true before analysts.

This type of forecasting can be distinguished based on the timeframe, the scope and the methods used.

1. Based on the time period, forecasting differentiated into short term and long term.
2. Based on the spaces in scope forecasting forecasting differentiated into micro and macro.
3. Based on the method of forecasting, forecasting used differentiated into qualitative and quantitative methods.

Kaulitatif method is based more on intuition and judgement people doing forecasting than pemanipulasian (processing and penganalisisan) historical data is available. Techniques in qualitative methods consists of the Delphi technique, growth curve, Screenwriting, market research, focus groups, etc.

Quantitative methods are based on the manipulation of historical data available to adequately and subjective assessments to intuition or tapa from people doing the forecasting, this method generally is based on an analysis of the statistics. Quantitative forecasting can be applied when the following three conditions are met, namely:

1. information about the circumstances at the time of the then available.
2. The information that can be kuantitatif in the form of numeric data (numbers).
3. It can be assumed that some aspects of the pattern at the time ago will continue to the time will come (called the assumption of continuity).

An important step in choosing a method of periodic sequence (time series) for proper forecasting is by considering the type of pattern data, so that the most appropriate method with the pattern can be tested.

The main basis of the method of forecasting is that the kinds of patterns found in the data are foreseen would be sustainable. According to Makridakis, Wheelwright and McGee pattern data can be differentiated into four kinds of cycles and trends, namely (Makridakis, Wheelwright, & McGee, 1999):

1. The pattern of Horizontal (H) occurs when data values fluctuate around the average niai constant. Series such as this is the average value against the stationer, patterns
2. The seasonal Pattern (S) occurs when a series is affected by seasonal factors, such as the quarter of the year, months, or days of the day on Sunday.
3. the cyclical Pattern (C) occurs when the data is affected by long-term economic fluctuations such as related to the business cycle.
4. Patterns of Trend (T) occurs when there is an increase or decrease in long-term secular in the data

Forecasting is very diverse in the time horizon of forecasting, the factors that determine the actual result, type pattern and a variety of other aspects. For meghadapi use of such broad, several techniques have been developed. One of the techniques in

forecasting that is a method of Smoothing ***Single Exponential Smoothing***

In pemulusan this historical values, random errors in Align-Align to produce a forecast of "smooth" that seem to work well in certain circumstances. The simplest case of a Single Exponential Smoothing can be developed from equation (2.7) or more specifically from a variation on the equation as follows:

$$F_{t-1} = F_t + (\frac{X_t}{N} - \frac{X_{t-N}}{N})$$

(2.9)

Suppose a long observation is not available so it should be replaced with a value approach (approximations). One of the possible replacements are forecast previous period ft. by doing the substitution the equation (1.8) into equation (2.10) so that it can be written as (2.11).

$$F_{t-1} = F_t + (\frac{X_t}{N} + \frac{F_t}{N})$$

(2.10)

2.6 Safety Stock

Ordering an item until the item it comes necessary period of time varies from a few hours to months. The time difference between the time of order until the item came is known by the term Grace time (Lead Time). Grace time is influenced by the availability of ordered goods and the distance between the location of the customer and suppliers. The uncertain lag time resulted in a shortage of goods for example due to the use of goods that are greater than previously expected, thus it takes a safety (safety stock).

If the Safety Stock set too low, the supplies will be exhausted before the inventory replacement is received so that production could be disrupted or customer requests could not be met. Planning the supply of raw materials which have been taken into account but is often the raw material inventory is insufficient because of frequent meloncatnya supplies production company that supplies or goods damaged and does not meet the standards to meet consumer demand. [12]

Formula safety inventory (safety stock) can be calculated with equation (2.24)

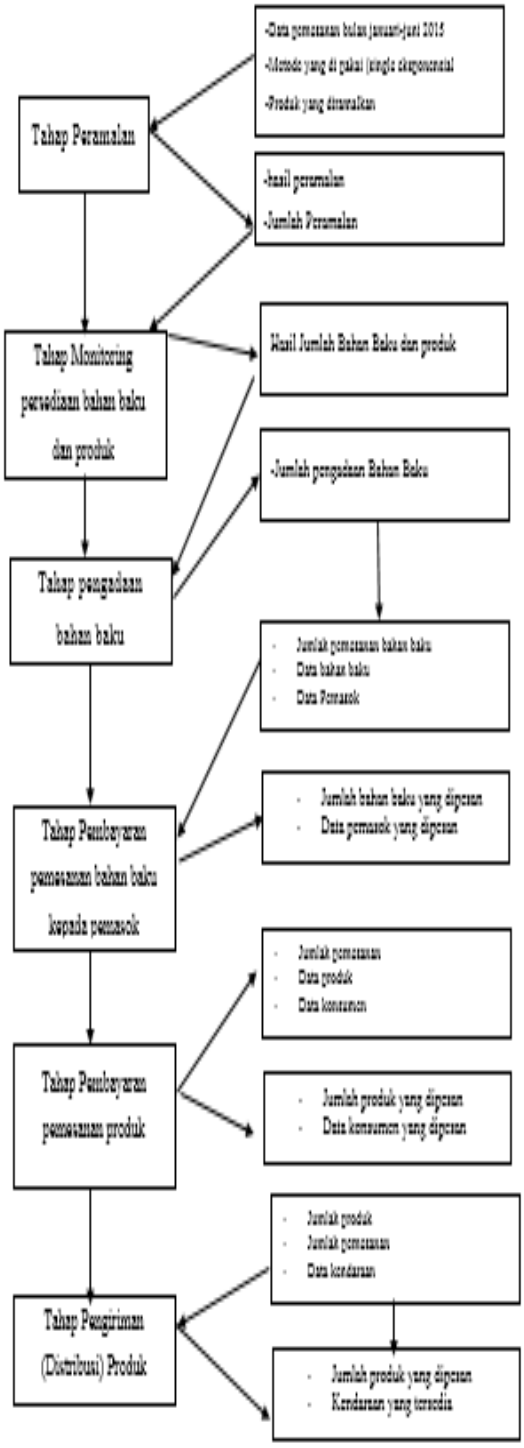
(2.24)

Description:

Z = Service Level 1.645 = NORMSINV 95% (the company's ability to service demand and uncertainty or translated from decision management) n

2.7 Analysis Stages of Scm

2.7.1 The analysis stage of the SCM



Picture 3 The analysis stage of the SCM

1. Stage Forecasting

Fanshop Shirt Factory to manage product demand data ordered by consumers and foreseeing for the procurement of raw materials in the next month of data demand for 6 months before that which requires a data query, by using the methods that will be used (single eksponential smoothing). In addition the company will provide scheduling for

production mengahasilkan production so it will be the right time.

2. The stage of monitoring the preparation of raw materials and products

After doing corporate forecasting, resistant monitoring the preparation of digudang products and determine how the limits of safe products that should be available digudang. In addition, the company controlling the preparation of products to avoid shortage of product in stock blanks/warehouse.

3. Stages of procurement of raw materials

After doing the preparation stages of raw materials, the company's procurement of raw materials to the pemosok in accordance with the amount that has been foretold.

4. Stage Payments to suppliers of raw materials

The company determines the amount of raw material that will be ordered and the Officer determines the suppliers that will be ordered. And the finance will issue costs in accordance with the data already in the set.

5. Produk Stage Payments products

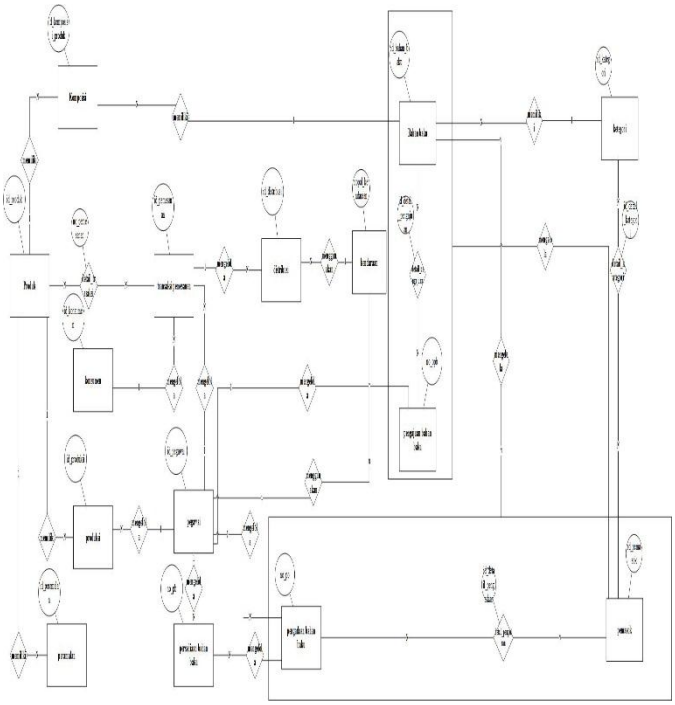
The company determines the number of products to be ordered and the Officer determines the consumer who would order. And the finance will issue costs in accordance with the specified data.

6. Delivery Phases (distribution) to the consumer

The company determines the type of vehicle and the officer who sent it and adjust the order of the agents to be sent up to the agents receive the products according to the booking.

2.9 Analysis Database

Analysis of database analysis is a collection of interconnected data and stored in one particular storage media without repetition. There is data that will be used in the manufacturing process of software information systems with supply chain management approach. In designing the database, the data model that will be used is an Entity Relationship Diagram (ERD).

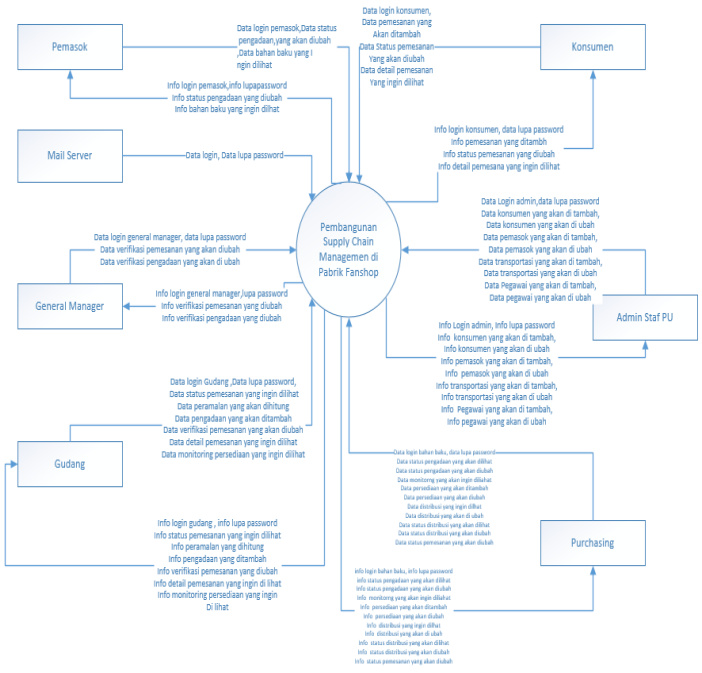


Picture 4 Entity Relationship Diagrams (ERD)

2.10 A Context Diagram

Context diagram is a model to explain how the global secacra data used to process or describe the flow of data into and out of the system

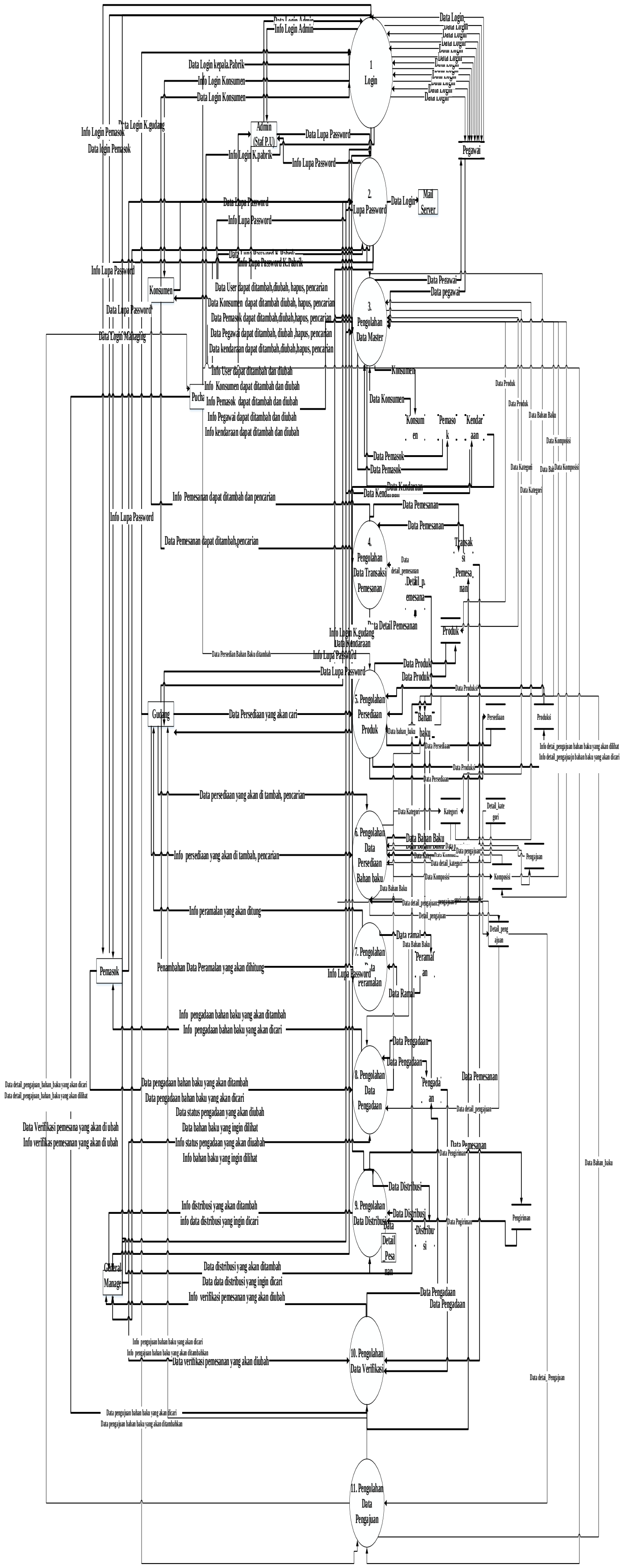
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Picture 5 System Context Diagram

2.11 DFD Level 1

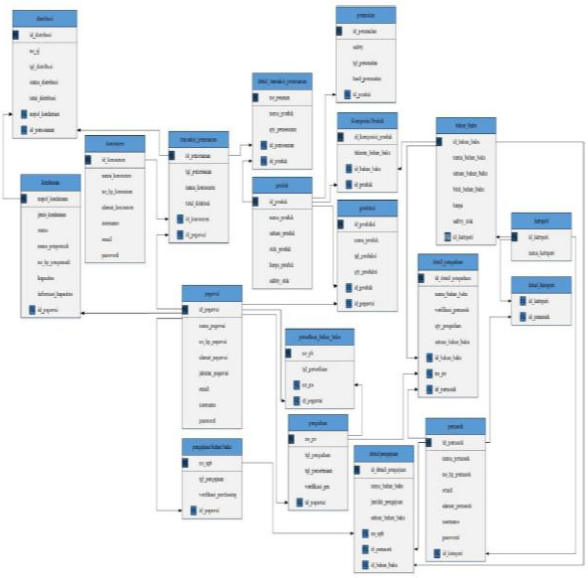
Data flow diagram shows how the flow of data and outlines the processes that occur in the system until the process in more detail. The processes that occur in the system until the process in more detail. DFD are described starting from DFD level 1.



Picture 6 System Data Flow Diagram Level 1

2.12 Scheme Relation

Describes the connectedness of tables in the system in detail or clear, then use table relationships.

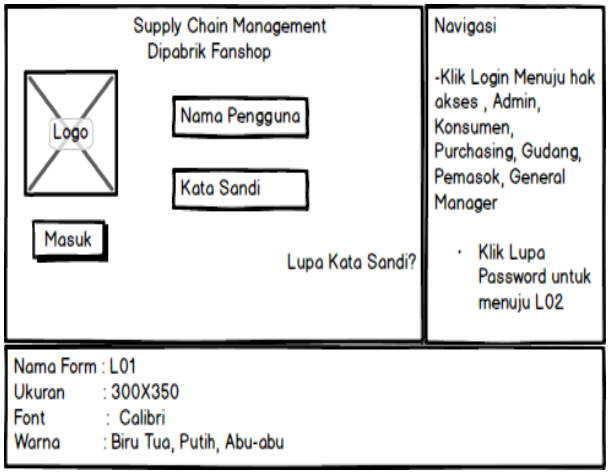


Picture 7 System Relation Table

2.13 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 display of the input as well as output either interface to be generated when the application is implemented.

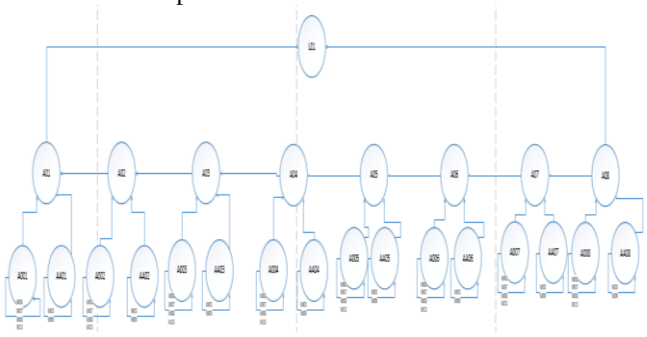
Design of interfaces in system development Supply Chain Management in the factory Fanshop are discussed as follows:



Picture 8 Design of Login Interface

2.14 The Design Of The Semantic Network

The design of the semantic network administrator is designing a network that connects the menus which can be accessed by the administrator (Staff PU) with an error message that occurs in each process



2.15 Testing

A diterpakan program at the Agency, then the program must be free of mistakes or errors. Therefore, the program must be tested in advance to find errors that might occur, this test method are either black box testing.

Understanding the black box itself i.e. the testing focused on the functional specifications of the software, the tester can define the set of input conditions and perform testing on functional specification program.

Black box testing focuses functional software requirements. This test seeks to find fault, among others:

1. Functions that are incorrect or missing
2. Error interface
3. Errors in data structures
4. Error Performance

Then, a test system is the most important thing that aims to find the error in the error distribution system that was tested. Testing is intended to find out the distribution system is made meets the performance according to the purpose of design.

The testing plan will do is to test the system in a way that was built in black box and beta. Development of testing system of distribution of the product in the factory based on the test data using the Fanshop data provided some of the data that has been provided.

3.CLOSSING

3.1 Conclusion

Based on the results obtained in the writing of this final project, mala can be drawn the conclusion as follows:

Supply Chain Management system that can facilitate this already built parts warehouse in determining the amount of raw material that will be submitted to Purchasing to meet production needs on the ppc.

Supply Chain Management system that is built it can ease the General Manager in scheduling booking of raw materials to suppliers.

3.2 Suggestions

As for suggestions for the development of distribution systems with supply chain management approach are as follows:

Supply Chain Management systems need to adannya the development of such a display to make it more attractive and easy to use.

Supply Chain Management systems need for development such as the scheduling of production to be observed the production process.

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