

Modern System in Distributed Supply Chain Management

S.Kannadhasan

Abstract— A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm. Supply chain connects the purchasing and selling process from different vendors. The system maintains purchase and selling process in various branches and incorporating the pattern discovery techniques in the SCM dataset, future demands for materials can be easily predicted. This prediction helps in increasing the customer satisfaction and the profit of both distribution centre and manufacturing firms.

Keywords— supply chain , service, manufacturing, SCM dataset.

I. INTRODUCTION

A supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm.

Traditionally, marketing, distribution, planning, manufacturing, and the purchasing organizations along the supply chain operated independently. These organizations have their own objectives and these are often conflicting. Marketing's objective of high customer service and maximum sales dollars conflicts with manufacturing and distribution goals. Many manufacturing operations are designed to maximize throughput and lower costs with little consideration for the impact on inventory levels and distribution capabilities.

Purchasing contracts are often negotiated with very little information beyond historical buying patterns. The result of these factors is that there is not a single, integrated plan for the organization---there were as many plans as businesses. Supply chain management is a strategy through which such integration can be achieved.

II. RELATED WORK

- ❖ It is the manual system process

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- ❖ Main task of existing system is to accept requirements from different areas, verify them and process.
- ❖ The need for computerization of existing system arose because of inaccuracy and irregularities.
- ❖ In the existing work, process related to inventory management, such as sales, stock maintenance are focused.
- ❖ Inter branch communication / transformation of goods via distribution centre are also performed by the SCM system

III. PROPOSED SYSTEM

- ❖ The system is completely web based application.
- ❖ The supply chain management system is an internet and intranet based application.
- ❖ The client has to only fill in appropriate option mention on the site for a particular information.
- ❖ The system should be user friendly.
- ❖ The proposed works not only involves in inventory management and in inter branch sharing; it also does prediction of future demands of customers. This prediction leads to prior knowledge of required materials at the manufacturing unit.
- ❖ Prediction is derived from discovering the pattern or knowledge from dataset available at distribution centre.
- ❖ Techniques used for pattern discovery are
 1. Market Basket Analysis → (Milk--Bread example)
 2. Apriori Algorithm.

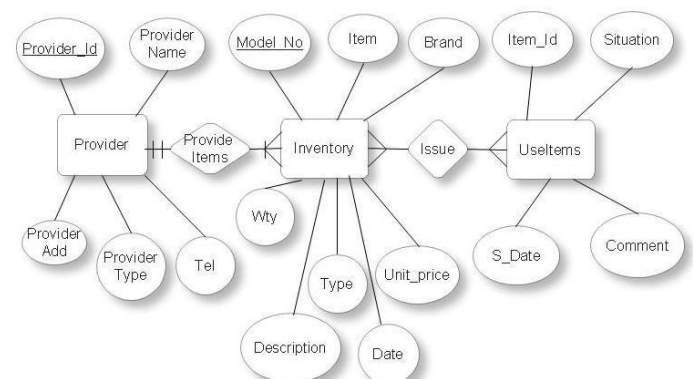


Figure 1: Inventory Management

3.1 Inventory Management

It involves in operations such as Admin process, stock maintenance, login, user, sales, stock maintenance, purchasing, pending orders etc. It describes, admin processis maintain branch stocks and user details. If branch users not have an account means first register it. And after accessing a

system such as purchase, sales and stock maintenance to an individual branch account

3.2. Load Distribution among branches

Overloaded or under loaded stocks at branches and in distribution centers may need to be transferred among them. This module involves operations such as message passing to branches, transferring goods among them, maintaining the details of goods transferred.

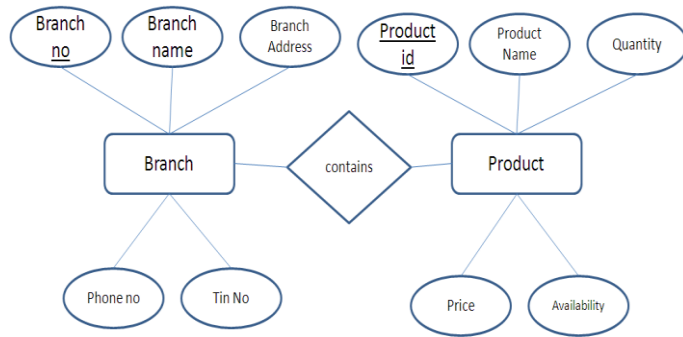


Figure 2: Load Distributions

3.3. Pattern discovery

The outcome of pattern discovery helps to predict the market trends. Market basket analysis and Apriori algorithms are used to identify the frequent itemsets, closed itemset sets and Association rules.

Many business enterprises accumulate large quantities of data from their day- to-day operations. For example, huge amounts of customer purchase data are collected daily at the checkout counters of grocery stores. The following table illustrates an example of such data, commonly known as market basket transactions. Each row in this table corresponds to a transaction, which contains a unique identifier labeled TID and a set of items bought by a given customer.

Retailers are interested in analyzing the data to learn about the purchasing behavior of their customers. Such valuable information can be used to support a variety of business-related applications such as marketing promotions, inventory management, and customer relationship management.

Table 1: Pattern Discovery

TID	Items
1	{Bread, Milk}
2	{Bread, Diapers, Beer, Eggs}
3	{Milk, Diapers, Beer, Cola}
4	{Bread, Milk, Diapers, Beer}
5	{Bread, Milk, Diapers, Cola}

A methodology is known as association analysis which is useful for discovering interesting relationships hidden in large data sets. The uncovered relationships can be represented in the form of association rules or sets of frequent items. For

example, the following rule can be extracted from the data set shown in Table:

{Bread}----> {Milk}

The rule suggests that a strong relationship exists between the sale of Bread and Milk because many customers who buy Bread also buy Milk. Retailers can use this type of rules to help them identify new opportunities for cross- selling their products to the customers.

IV. RESULTS AND DISCUSSION

After performing the validation testing, the next step is output asking the user about the format required testing of the proposed system, since no system could be useful if it does not produce the required output in the specific format. The output displayed or generated by the system under consideration. Here the output format is considered in two ways. One is screen and the other is printed format.

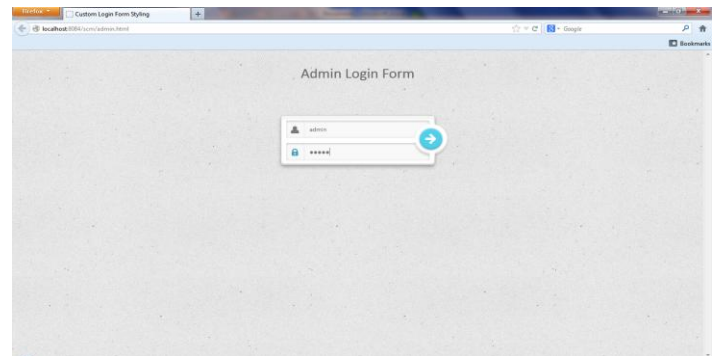


Figure 3: Administration Login Form

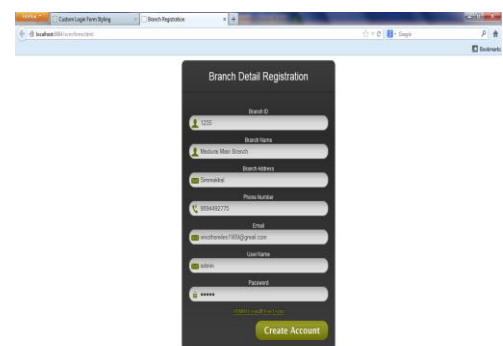


Figure 4: Branch Registration Form

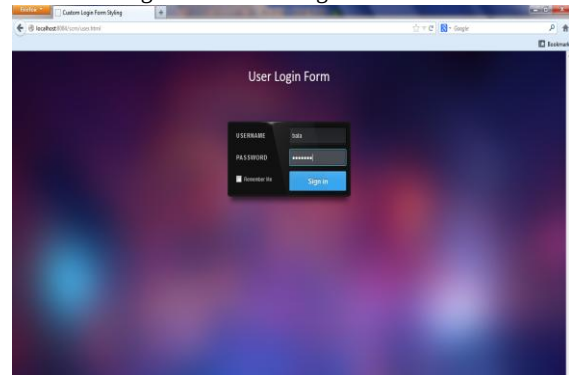


Figure 5: User Login Form

Product ID	Product Name	Quantity (per kg/price)
1	Rice	100
2	Wheat	100
3	Soya	100
4	Lentils	100
5	Beans	100

Figure 6: Stock Details Form

Figure 7: Purchase Details Form

V.CONCLUSION

The project “Modern System in Distributed Supply Chain Management” maintains a chain of network over multiple branches in a company. This project completed all inventory facilities including the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. The output of the project has achieved the constant level between both purchase and sales in multiple branches and the future demands for materials are predicted easily. This prediction helps in increasing the customer satisfaction and the profit of both distribution centre and manufacturing firms. In future, this system will implement all branch maintenance under unified framework through Mobile and the branch details uploaded both server and local database. This will help to reduce the data inconsistency in the network.

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