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General Framework of Chain Store Information System base on Supply Chain Management Theory

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Abstract

The purpose of this paper is to develop a chain store information system framework. This paper summarized information system requirements of chain store according to supply chain management theory firstly. It classified three types of information requirements. Then an information flow diagram was designed. This paper also projected concept structure, software structure and architecture of chain store information system. It proposed to use the distributing system and B/S computerizing module in system architecture.

Keywords: Chain store, Supply chain, Information system, System framework

1. Introduction

Now, because of the cruel competition, more and more retailers operate their business with the form of chain store. Following the company's development, some new problems emerge. These problems lead them to notice a full new management theory: the supply chain management theory. Different from other management theory, this theory emphasizes the cooperation and sharing information with your suppliers. So it is significant for building an efficient information system base on supply chain management theory.

2. System Requirements Analysis

The information system requirements of chain store include three aspects at least: basic information service for management, decision-making information and value-added service information.

2.1 Basic Information Service for Management

The information exchange between consumer and retailer: It includes business service information, the customer demand and complaint information.

The information exchange between retailers and corporate headquarters: It includes article of commerce information, adjust commodities information, advertisement and sale promotion activity information, marketing plan information, human resource management information, complementarity commodities information, branch vendition information, financial information, customer demand and complaint information.

The information exchange between corporate headquarters and distribute center: It includes distribution order, acceptive goods order, inventory information.

The information exchange between company headquarters and suppliers: It includes supply information and purchase information.

2.2 Decision-making Information

The information of upgrading service: Most of the information refers to customers such as popular commodities information, sale out information, the analysis results of customer complaint, suppliers' ability, amendatory product information and so on. The quality of service can be improved by analyzing the information.

The feedforward control information. The information includes enterprise internal management information, marketing information, competitor information, environment information and the forecast according the information above.

Expand information. The information belongs to investment and strategy information. There are four aspects should be considered: the population of new investment place, the culture, competition environment and the social political situation.

2.3 Value-added Service Information

The chain store provides paid information search and inquiry service for customers combining with manufacture factory and wholesale. By processing the basic management information and decision-making information, the information is benefit for profits increase and cost decrease. Indeed we can regard this as the enterprise resource mining.

3. Information Flow Diagram of Chain Store

Before designing a framework of information system, it is essential to comprehend information flow. Each function of management has to rely on logistic information flow, fanatical information flow, sales and purchase information flow.

3.1 Logistic Information Flow

Distribute centers accept supply order form headquarters and arrange transport then check and turn into warehouse. Distributes also take responsibility for putting them into different packages and distribute to different stores. At the same time, headquarters will transmit commodities' variety, serial number and price information using information system. According to the information, each store sales commodities to customer.

3.2 Purchase Information Flow

Headquarters must take sale and inventory situation into account to affirm the purchase commodities' variety, amount and price. According to headquarters' order and the negotiation between purchase department and suppliers. In the light of headquarters' order, distribute centers transport goods and turn them into warehouse.

3.3 Sale Information Flow

Each store transmits their sale report to headquarters by network. Headquarters counts up and analyses these reports to understand the sale situation which is essential for purchase inventory activity.

Headquarters also transmits commodities' variety, serial number, amounts and price information by network. After each store submits his makeup commodity report form, headquarters ask each distribute center to transport these commodities in time. Each store must report their sale situation including popular commodities and unmarketable commodities information by day. Headquarters analyses them then decides the market strategy and sale promotion event.

3.4 Financial Information Flow

The financial dynamic analysis is implemented by financial department. Chain store corporation carry on accounting management centering on headquarters. Headquarters uses financial measure to supervise and control the whole management process and analyses companies' profit to judge the cost rising factor and profit improvement factor.

To sum up, information flow diagram of chain store can be drew

4. System Structure Design

4.1 Concept Structure

Chain store information system should contain four parts at least: information fountain, information processor, information user and information manager.

It is easy to find that information witch come from information fountain, are processed and save d by information processor. At last it can be used by information users to make decision. The information manager's responsibilities are designing, running and harmony.

4.2 Function Structure

It is no doubt that every management information system can implement many functions. All of these functions connect each other for a given goal. So chain store information system is a integration system and its' function can be demonstrated below.

4.3 Software Structure

Information system has to depend on system software and application software to implement various functions. Because of the final goal of information system is sharing information, it is necessary to establish data warehouse management system witch supported by specifically operating system and can save abundance to complete multiform functions. In the structure of data warehouse, sharing database provides service for some public data which often required by every

subsystem. Of course, each subsystem is accredited to construct independent database which deposit special purpose data. Application software should support diversified management activities otherwise.

Chain store information system formed by six subsystems which is illustrated in figure 4

Headquarters management information system: it not only supervises departments, but also collects distribute center data and local store data.

Distribute center management information system: it implements static and dynamic management of inventory for example: commodities circulation, transportation and warehouse management.

Branch management information system: it contains POS system and security system.

Electronic order system (EOS): order data occur from wholesales and local store is transmited to headquarters, suppliers and manufacturers.

Customer relationship management system: it is a process to compile information that increases understanding of how to manage an enterprise's relationships with it customers. CRM is a strategy that uses information technology to provide a integrated view of its customers.

MAN network systems. MAN network system is a important bridge to connect headquarters, distribute centers, branches, suppliers and banks system that integrates the whole supply chain and reduces costs. With this connection, headquarters gains distribute centers' and branches' data and feedback to them betimes.

5. System Architecture

According to the hardware and software dispose, we can partition it into centralized system and distributing system.

5.1 The Characteristics of Centralized System:

Information facilities are concentrated in somewhere; it is safe and can be used efficiently; personal manager conveniently. But there are some disadvantages: it is weak for meeting an emergency and hard to maintain reliability. It is difficult for repairing, extending and upgrade.

5.2 The Characteristics of Decentralized System:

Information facilities are not disposed in a certain location. Information facilities are distributed in several location and they share information though network. The decentralized system not only can work together, but also can use local information to work independently. It has strong reliability and expansibility. Because the chain store information system has to Cross city, province, even states to operate, it is reasonable for undertake decentralized system. The prevalent B/S computerizing module is usually used in decentralized system. Without installing specify system software, customers can use ordinary browsers (IE etc.) to inquiry data servers though WEB format. B/S is a special three layers' C/S computerizing module and his data transmission format also very multiplex, for example: multimedia etc. Universal communication protocol is independent from platform, so the whole system is very easy to development and maintenance. Its structure is shown in figure 5

MAN network is the key of chain store information system project planning duo to the distributing in different areas of headquarters, distribution centers, and filiales. Each filiale and distributer center develops his LAN network, then these LAN networks connect each other though decentralized network. Figure 6 is a vision of the whole network architecture.

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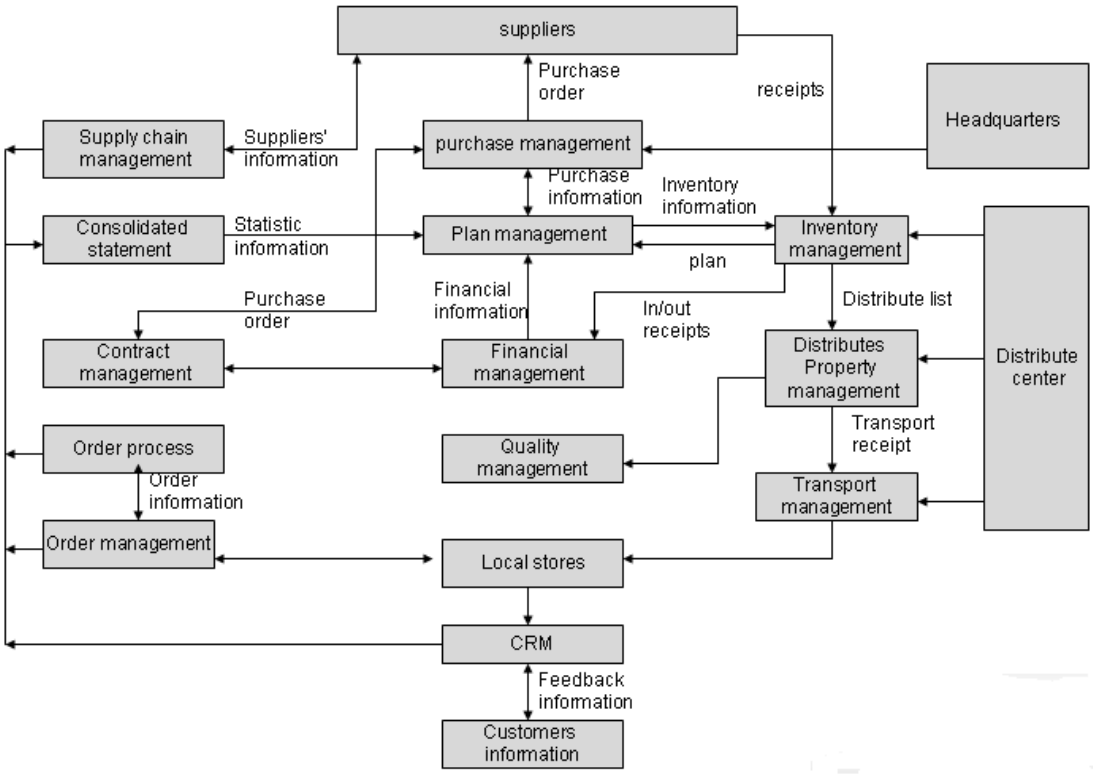

Figure 1. The information flow diagram

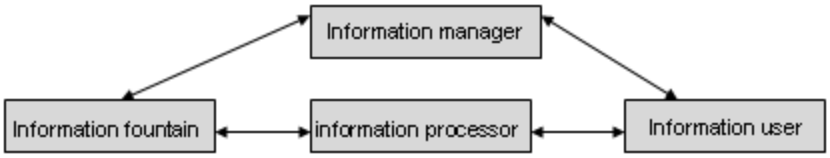

Figure 2. System concept structure

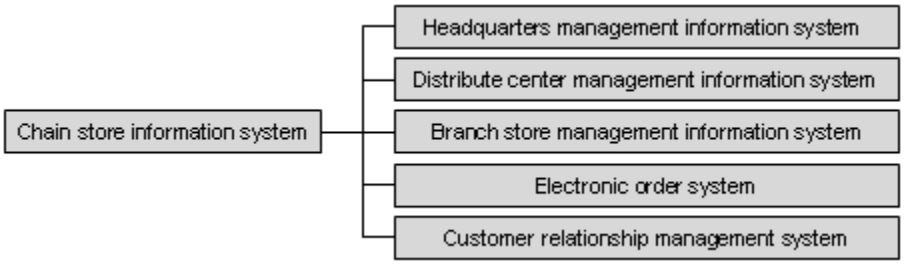

Figure 3. Function structure

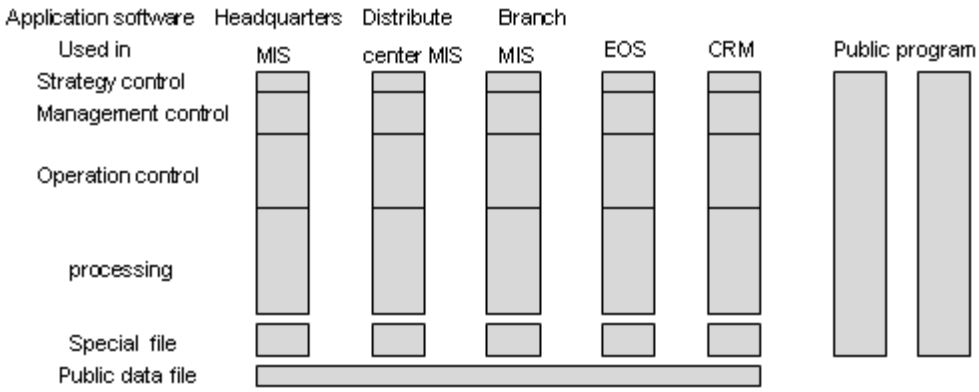

Figure 4. Software structure

Figure 5. B/S structure

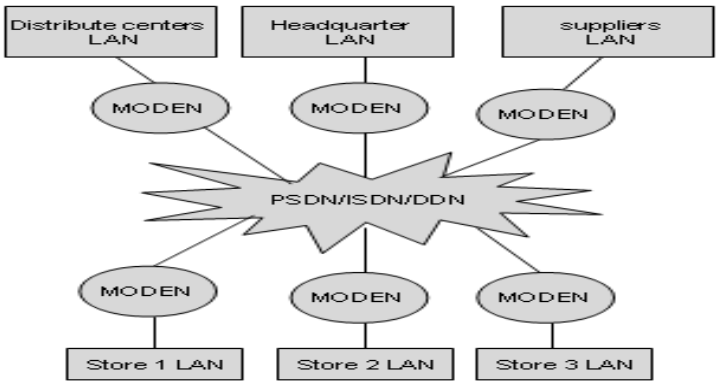

Figure 6. The architecture of whole network