Improvement of the Supermarket Management System based on Commercial Category

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Abstract—**Commercial supermarket management system is extended by the operating status of goods and commodities strategy on the basis of the existing supermarket management system in accordance with the actual needs of the supermarket, by weight results converting from result-oriented to process control, system control, link control, results assessment, to make the supermarket system automatically manage and optimize.**

Index Terms—**supermarket management, automatic ontrol, process control**

I. INTRODUCTION

With the continuous development and improvement of computer technology, communication technology, network technology, as well as large-scale database technology, the commercial large supermarket competition has become the information technology, the chain of low-cost competition. the level of the enterprise information construction has become an important indicator of the company's sustainable development.

Most of the domestic supermarket management focuses on the theoretical study of database management and network management as mentioned in [1], while in [2] we find that foreign advanced management software is not suitable for them. This article is based on common supermarket management system, analyzing the inadequacies of commodity category refinement and processes functioning as mentioned in [3], adding improvements to the data table, with the condition that not sacrifice efficiency, achieving the goal of category management designed in [4]. Computer controls all aspects of the implementation including research, purchase orders, receiving, inventory, sales to the back, achieving system automatically make decision and optimize mentioned in [5].

II. OPERATIONAL DESIGN

The basic operation design of the system is shown in

Fig. 1 According to the operating status of the commodity, the system operates based on the commodities' sales, purchase, return, promotion, new product's analysis and user prompts. We can found the commodity operating state transition items in Fig. 1 below, which with * symbol on item right above. With the running of the commodity circulation, the real-time operating status change subsequently, based on process-oriented operation, supermarket system achieves to automatically manage and optimize.
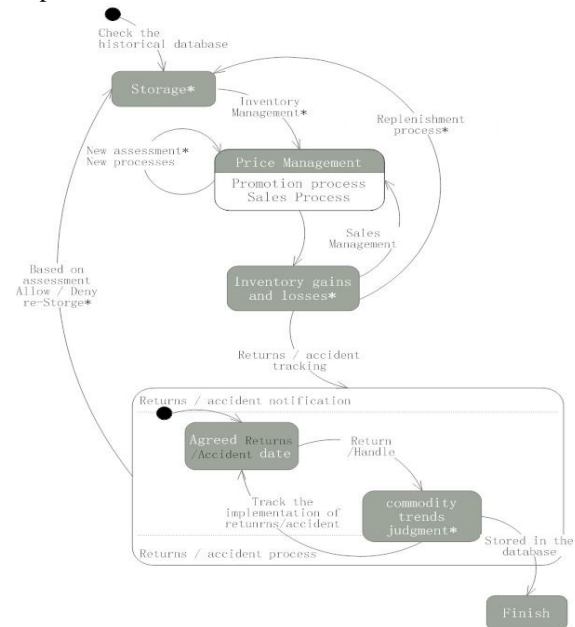

Figure 1.   System Architecture

The main process of supermarket management system operations includes the procurement of goods, inspection, warehousing, returns, replenishment, sales, promotion, price management and inventory gains and losses. Workflow designs to form a closed loop PDCA. After the procurement, it generates a notice to inform the inspection personnel into warehousing, while increasing inventory records and into the sales process. During sales process, based on inventory gains and losses and the demand custom promotions, the system goes through

replenishment and price management, and generates a notice of assessment into the process again. Mark return merchandise and replenishment goods into the return / replenishment process, storing the chargeback track record in the historical database, those which does not complete successfully will re-enter the returns or reported loss treatment and track workflow.

In order to reflecting the commodity's in or out properties, the system first creates a dictionary of the goods operating status, and provides the principle of transition for commodity operation status. After the admistrator inputs commodity basic information, system will operate different workflow mode according to the different operating status of the commodity.

In addition to the permissions of the user manually modify information, the system evaluates the input goods comprehensively, according to the historical database information, automatically modifies the status of commodity business, proposes results and guides the user's behavior.System marks past commodity which is already existing in the datebase as normal, according to the stock inventory, proceeds replenishment and price management, and sales; Marked as a new state for failing to inquire into commodity storage, and adds speicfic workflow for new products, for example: according to sales and parameters, evaluating the newly added products and deciding whether to mark the status of this product as normal or waiting for delete.

versatility, so we use common SED 3000, Branch INTIMELUX WIN3000 as the experimental POS machines. In order to be compatible with the existing supermarket management system, using Powerbuilder 9.0 as a software development platform and SQLServer2008, Sybase12.5 as database environment.

In original system, table SPXPMX is the basic information table, documenting commodities id, commodity producers, suppliers and other related information. In order to meet the needs for improvement, the table extends state information field and other related information field, defining new products, new assessment, normal, sealed into, deletion, full closure, sealed off, and a variety of goods status.

Each commodity status needs different workflow. The states of commodities based on the sale of goods and other circumstances can be transformed according to dictionary field as shown in Fig. 2. The newly added table Spstatusmx of commodity management state transition changes and records the basic status information. Extented product ID, product status information, converted status information, the conversion flag, conversion reasons, conversion time and other status information conversion table entry. In addition to the new products and the normal state by the system default, other state conversion requires management personnel audit and flag it. System will implement and track the process for position flaged time to time.

III. IMPLEMENT

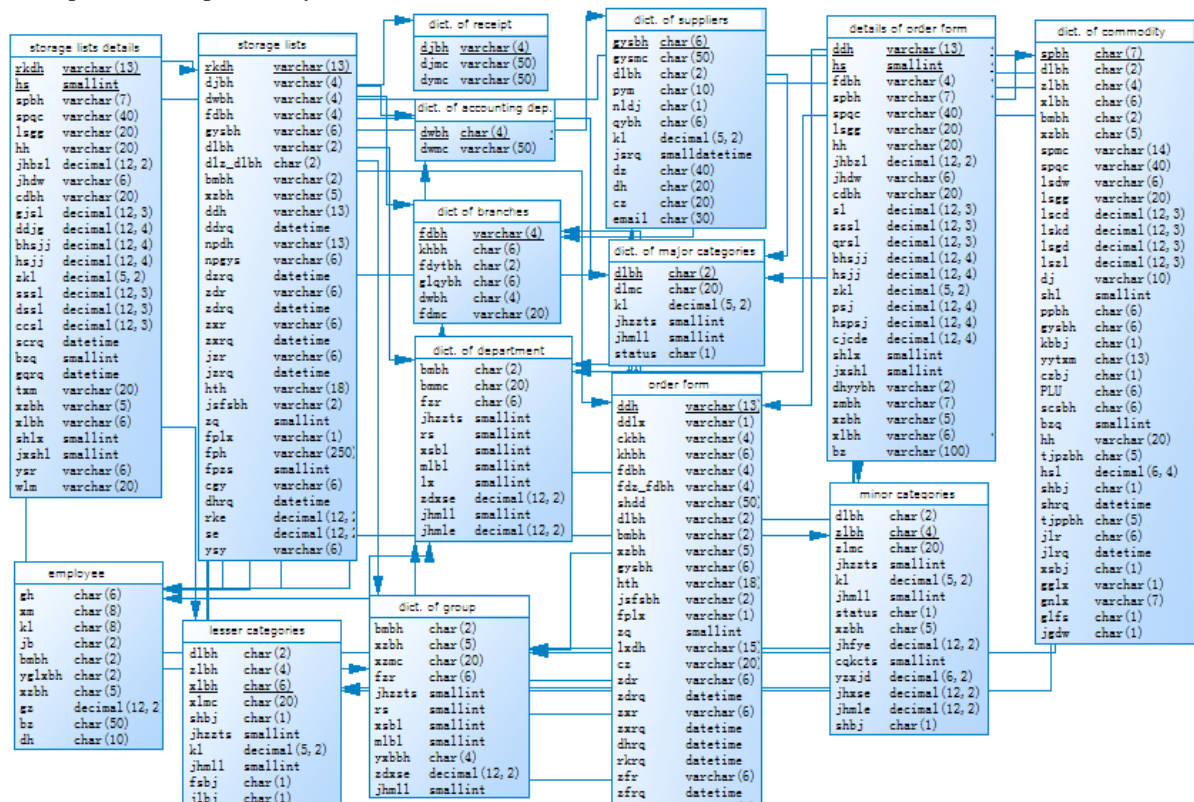The supermarket operator system should have some

Figure 2.   System Data Structure

Add new table spxpxp, set new coding, new full name, new specifications, new accesible date, the date of the movement pin, rate of movement pin, new turnover and days o f new products being accesible, new sales quantity, sales amount and other data information. During the new assessment, proceed the test marketing, imput new table information into commodity Information Table spxpmx.

According to the new process and the relations of states, supplemented the circulation strategy matching different commodity status information, including inventory management strategy, the new test marketing strategy, commodity sequestration strategies and returns management strategies, establishing their respective data tables, set the state duration, the state commodity assessment parameters and other workflow parameters.

Establishing user permit table, only the users who have the authority to operate can modify to the corresponding state of goods or strategy. Users with advanced privileges can check the circulation of commodities through the tracking process at any time and change commodity management flexibly.
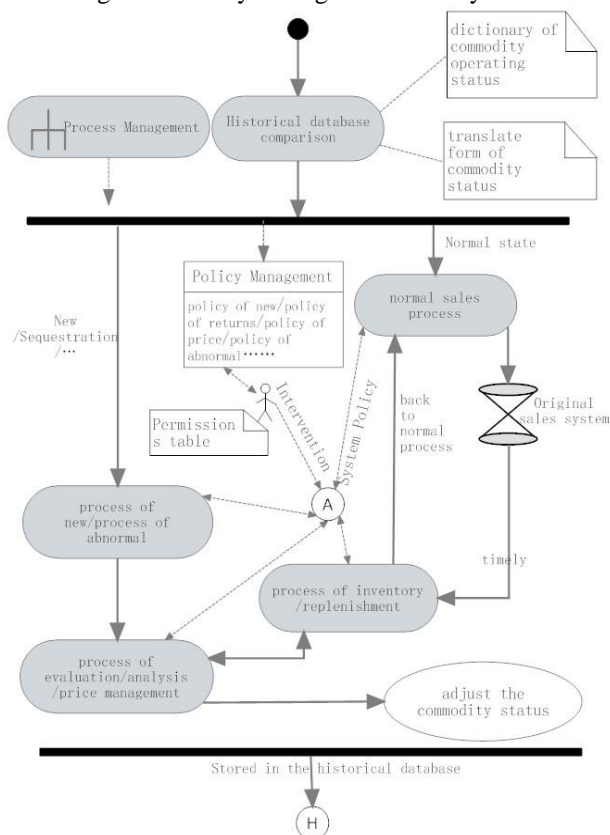

Figure 3. System Workflow Relation Diagram

Based on basic commodities information, system masters commodity status information, inventory information and the relations of processing information mentioned in [6], as shown in Fig 3. Create a historical database of goods, update this merchandise information at regular intervals, and imput to to a historical database of goods for furthur query; Compare the collected data with the data stored in the databases, based on the current sales status and user demand, proceed configuration of resources, including adjustments to commodity status and change the flow strategy; New coming commodity adopts a more flexible workflow, increase the new promotion workflow and tracking, analyzing comprehensively with information of inventory gains and losses to see if goods is unsalable phenomenon exists or have replenishment needs; Combined with the the state evaluation results of goods, such as overdue inventory of goods which reach threshold value, sending alarm message to the management personnel in a timely manner, and to change the the commodity status to the return workflow or manual intervention; To generate merchandise inventory lookup table, system automatically queries total amount by category, and inventory turnover days, according to the the inventory profit or loss, adjusted the commodity status information time to time, when merchandise reaches minimum inventory or inventory abnormal situation, converts them into the replenishment workflow or unsalable goods processing automaticly.

IV. CONCLUSION

This article improves the commercial supermarket management system according to original system, builds a operating system based on the commodity status, and gives a concrete design of this system. Putting into use for six months, the system basically meets the demand and verifies the improvements'feasibility. It gives the manager of company and authorized users an access to know a single product's purchase, sales, distribution and deposit condition. It also provides a detailed and convenient automatic management for the purchasing department and operations department.

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