ECONOMIC OPERATION STATISTICS AND ANALYSIS OF SUPPLY CHAIN MANAGEMENT SYSTEM FOR BAMBOO INDUSTRY

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ABSTRACT

The bamboo industry is facing good opportunities for development in China, but it faces enormous challenges, too. From the level of bamboo industrial development, mainly in the following aspects: the level of bamboo resources management is low, cultivate direction is not clear, operating methods are backward, production is not high, processing or utilization of bamboo products is small-scale and scattered, low cost-effectiveness. China's bamboo industry is still mainly need for in the domestic market, supplemented by foreign markets. The bamboo industry exigently needs the information managing tools to congregate the customer information, in order to improve their working power. Supply Chain Management (SCM) is effectively idea and tool which used to manage the information flowing in the enterprise. This paper based on the bamboo industry economic operation statistics and analysis of SCM which has been in use, analyzes the requirement, management flow and the idea of customer relationship management, designs and implements a SCM system for bamboo industry.

Keywords: *Bamboo Industry, Supply Chain Management, Economic Operation Statistics*

1. INTRODUCTION

Bamboo resources are widely distributed in China. The bamboo industry which is one of the most important traditional industries has developed rapidly. Circular economy construction of bamboo industry is a way of utilizing industrial waste and bamboo residual in the process of bamboo production, which improving the resource utilization ratio, extending the bamboo industrial chain and minimizing waste emissions. This study overviewed bamboo resources in China. On the basis of the status of bamboo industry, the achievement has been introduced from different aspects such as economical using of bamboo resources, increasing value-added of bamboo products and construction of bamboo industry chains. The problems including imbalance in regional development of bamboo industry, the low market orientation and imperfect industrial chain during the procedure of circular economy construction had been analyzed. Moreover, updating the conception, establishing brand products and relying the progress of technology had been proposed to solve these problems.

China's bamboo industry development trend: the implementation of the directed cultivation, improve the quality of bamboo resources; multi bamboo species simultaneously optimize the structure of bamboo industry;-scale operation, increase product add value; stronger trade, promote bamboo industry internationalization. Development of bamboo industry in China in the future to be "around a center (economic prosperity bamboo area, building a new socialist countryside center), the implementation of a strategic (bamboo industry brand strategy), to achieve the scientific, industrial, market-oriented development (promote independent innovation, industrial management, Market operation").

Although the Chinese bamboo industry development must set an example for the world, but it must be enterprising have to weigh the industrial chain; must target green industries and low-carbon economy, maintaining bamboo forest biodiversity,

and enhance the bamboo forest carbon sequestration and oxygen release.

2. ECONOMIC OPERATION STATISTICS AND CALCULATION METHODS

2.1 The Sample Mean $\overline{X}$

Mean refers to all the data, and then divided by the number of data in a set of data. It is a reflection of an indicator of central tendency.

$$\overline{X} = \frac{1}{n}\sum_{i=1}^{n} X_i \qquad (1)$$

Where X_i is the observation value, n is total number of samples.

2.2 The Median M

Median is a statistical term that refers to the value of each variable in the statistical population which is arranged in order of size, form a series in a variable number of columns middle position variable value is called the Median.

$$M = \begin{cases} X_{(n+1)/2} & n \text{ is odd} \\ \left(X_{n/2} + X_{(n+2)+1}\right)/2 & n \text{ is even} \end{cases} \qquad (2)$$

Where $X_{(n+1)/2}$ is sample observation of centrally positioned in the numerical, $(X_{n/2} + X_{(n+2)+1})/2$ is sample observation of centrally positioned two numerical.

2.3 The Range R

Range is used to indicate the amount of variation in the statistics, the gap between the maximum and minimum values; maximum value minus the minimum value after the data obtained.

$$R = X_{Max} - X_{Min} \qquad (3)$$

Where X_{Max} is Observation of maximum, X_{Min} is observations in minimum value.

2.4 The Variance S^2

Variance is the square of the difference between the average of the individual data and the average number of. In probability theory and mathematical statistics, the variance is used to measure the degree of deviation between the random variables and mathematical expectation.

$$S^2 = \sum_{i=1}^{n} \frac{\left(X_i - \overline{X}\right)^2}{n-1} = \frac{1}{n-1}\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2 \qquad (4)$$

Where $\overline{X}$ is the sample mean.

2.5 The Standard Deviation S

Standard deviation, also known as Mean Square Error (MSE), each of the data deviate from the average distance from the average, it is the closest to the square root of the squared difference and average. The standard deviation is the square root of the variance. The standard deviation of a data set to reflect the degree of dispersion.

$$S = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}\left(X_i - \overline{X}\right)^2} \qquad (5)$$

2.6 Standard Error $S_{\overline{X}}$

Standard error, the sample mean standard deviation is the description of the mean sampling distribution of the degree of dispersion and measure the mean sampling error size scale, reflect the variation between the sample mean. The standard error of the standard deviation, the standard deviation of the sample mean.

$$S_{\overline{X}} = \frac{S}{\sqrt{n}} \qquad (6)$$

2.7 Variation Coefficient Cv

The coefficient of variation is differential, standard deviation and variance as they also reflect the absolute value of the degree of dispersion of data, the size of the data is not only influenced by the degree of dispersion of the value of the variable, but also by the value of the variable average size. The coefficient of variation is the degree of variation measure data observations another statistic.

$$CV = \frac{S}{\overline{X}} \times 100\% \qquad (7)$$

2.8 Kurtosis Coefficient G_2

Kurtosis is characterized the probability density distribution curve at the average peak level of the number of features. Intuitively, kurtosis reflects the thickness of the tail.

$$g_2 = \frac{n(n+1)}{(n-1)(n-2)(n-3)}\sum_{i=1}^{n}\left(\frac{X_i - \overline{X}}{S}\right)^4 - \frac{3(n-1)^2}{(n-2)(n-3)} \qquad (8)$$

Where
$$\begin{cases} g_2 < 0 \text{ , Said peak curve is flat, platykurtosis} \\ g_2 = 0 \text{ , Said kurtosis is moderate, the normal peak} \\ g_2 > 0 \text{ , Said curve sharp peak and steep, sharp peak} \end{cases}$$

3. SUPPLY CHAIN MANAGEMENT SYSTEM

Bamboo industry supply chain management system is built around the core enterprise, through the control of information flow, logistics, capital flow, starting from the procurement of raw materials, made of intermediate products and final products, final products delivered to consumers by the sales network to suppliers, manufacturers, distributors, retailers, and until the end-users together into a whole functional chain structure mode.

The supply chain system to improve the efficiency of the production and management aspects, reduce costs, and can make the information through the supply chain, the smooth and efficient flow of supply, and the suppliers more closely combine between commercial enterprises for their communication provide an effective means, so that the information is accurate in all aspects of circulation, reduce the waste of resources to improve the efficiency of production and sales, and ultimately achieve the purpose of the production of bamboo in accordance with customer demand.

Supply chain management system is a part of the overall system of the bamboo industry solutions, supply chain management system in order to better understand the brief first overall systematic architecture. Application server, a database server, a browser-WEB server the main technical architecture: distributed applications, cross-platform applications, ease of deployment, easy maintenance and management. B / S structure, the client is no longer an application, they are fully focused on the server side, which means that users can perform application through the browser. Can use low-cost network to pass data through the browser, the application will be WAN based.

B/S structure, the entire system can be centralized management and maintenance, client-free installation and zero maintenance, user-level, reasonable distribution of Web servers, application servers, database servers and cluster technology. Using N-tier architecture can be data server and application server, multi-tier deployment, data server can be centrally deployed in the city of the company, the application server can be based on the actual application requirements and network environment flexibly deployed at the provincial or municipal. The system uses the Commonwealth of database technology, the entire data center is divided into TD (Trade Database) and HD (History Database). TD is mainly used for business processing, HD is mainly used for the storage of historical data, data analysis, data mining work statements, forecasting/warning.

4. THE REQUIREMENT ANALYSIS OF THE BAMBOO INDUSTRY

4.1 Changing Procurement Methods

The new supply chain system requires commercial enterprises to develop the next month procurement plan based on sales forecasts and inventory availability, procurement contracts to formulate next month procurement plan, procurement plan to select the contract to develop the purchase order, the industrial enterprises in accordance purchase order to generate sales orders, and arrange the shipment according to the inventory and production planning, and program information feedback to the business enterprise information systems.

4.2 Change The Planned Economy Under The Monopoly System Of Traditional Marketing Methods

From the past, the market is the production of what kind of bamboo products, the market will sell what bamboo products, without considering market demand, do not care about the views of consumers and change commercial enterprises under certain conditions, in accordance with the work program, the use of qualitative and quantitative forecasting techniques, speculations and judgments made by the demand for bamboo products in the coming period.

4.3 Fast Response To Customer Demand, Enterprises Should Have The Ability To Be Able To Respond Quickly To Customer Demand In The Market

This rapid response capability often determines the survival of an enterprise, and thus become the most important goals of the enterprise deployment of the supply chain management system a. From the point of view of information management, supply chain management system should have the ability to integrate and customer relationship management, and customer relationship management information seamlessly integrated.

4.4 Provide Real-Time Inventory Control, Early Warning Function

To effectively prevent shortages of stock situations at the same time, it can avoid the occupation of the backlog of inventory and stock funds, do the brand constantly file, inventory backlog, reasonable structure, regulation kept. The bamboo processing of the implementation the

whole bamboo utilization, improve resource utilization and value-added products, to achieve a reduction of resource consumption, cycle output increment target. Of great significance for the adjustment and optimization of the economic structure, building to an industrial system and consumption pattern with low carbon emissions.

4.5 Achieve The Bamboo Product Sales Agile Supply Chain Management

And distribution, Monopoly, call center system seamlessly connected, immediate impact, such as customer evaluation classified information can immediately be reflected in the distribution system. The bamboo industry cycle chain refers to the efficient cultivation by bamboo resources industry, deep processing of the secondary industry and the tertiary industry the bamboo products trading logistics Bamboo Culture and Tourism constitutes the comprehensive utilization of diversified products recycling economy industry chain system.

4.6 Accurate Analysis Of Market Activity Returns, Nurture Brand To Tap The Markets Selling Point

To cancel the slow-moving brands through real-time market data analysis and explore the potential brand truly brand survey, brand positioning, brand analysis, brand promotion, brand development brand monitoring a comprehensive range of brand management. Regulating climate, soil and water conservation, ecological service functions to optimize the environment to expand the field of utilization of bamboo resources; must enhance the value-added products, to achieve efficient use of resources, and take the road of the recycling economy and green industry; must be out of the path of development with Chinese characteristics.

4.7 Timely And Effective Monitoring Of The Market Dynamics, Competition In The Market To Make A Quick Reaction

To establish build enterprise-wide operational monitoring mechanism, the company leadership can get enterprise real-time operational data, as well as the comparative analysis with historical and operational data to help the leadership to keep abreast of the state of the many aspects of business operations process management, business, and found that the presence or potential problem, the data show, help to chart intuitive way to leadership in a timely manner to respond to truly play a supporting decision-making, and coordinating all aspects of the work role.

Fully understand customer needs based on the bamboo industry supply chain management system has been successfully tested in a number of provinces and cities on the line, the Practice has proved that the success of the system to meet the needs and technical requirements of the tobacco industry. But also should be noted that, due to code and design problems, in some places more serious downtime phenomenon. To solve the problem need to start from the following aspects: First, it is necessary to regulate the process of design and code; Second, affect system performance of key algorithms and code optimization; Finally, the research system and the database interface, take full advantage of the commercial database optimization method.

The model of economic operation statistics in supply chain management system for bamboo industry was shown as Figure 1. Where CV is Variation coefficient, g_2 is Kurtosis coefficient, $S_{\overline{X}}$ is Standard error.
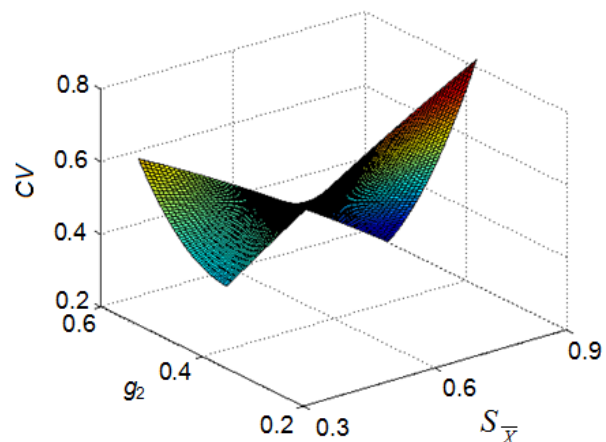

Figure 1: The Model Of Economic Operation Statistics In Supply Chain Management System For Bamboo Industry

5. CONCLUSIONS

To develop recycling economy, we must abandon the traditional mode of development of the bamboo industry, and no longer rely solely on the economic benefits to increase production. Government to step up publicity efforts to guide the healthy development of bamboo industry cycle; enterprises to integrate resources, vigorously develop new products, occupy a favorable position in the market; bamboo farmers to improve the management level of the bamboo forest and comprehensive benefits. Should establish a rational use of bamboo, economical use, comprehensive utilization of the overall concept, import of new technologies, the concept of new industries, new

economic mechanism, in order to achieve sustainable development, efficient use of bamboo and bamboo forest system; new technology, new product development to full the use of bamboo, the efficient use of the core. The development of three-dimensional bamboo industry, emphasis on bamboo resources development and utilization, established in line with the region's economic development, "resources - products - renewable resources" cycle of bamboo industry chain.

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