Optimal Inventory Policy in Dual Channel Supply Chain with Sales Return Subsequent Processing

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ABSTRACT

In a fiercely competitive environment, business enterprises must increase the efficiency of the supply chain system in order to get higher competitiveness. Through the integration of the manufacturer's warehouse, retailer and customers, dual-channel supply chain distribution system in the direct channel and the retail channel has become an important issue. Due to the development of the internet, the internet is affecting human living habits, direct channel becoming another business model platform to provide customers a new choice when shopping. Inventory control management has been used in various industries and almost involved all the business enterprises transactions of products or services. For this reason, inventory management is a very important part of the core business activities. In order to improve customer satisfaction, product returns strategy had adopted in many companies. Using product returns method is one of the sales trick to increase customer desire to buy more product. Furthermore, sales returns subsequent processing strategy is getting more concerned by business enterprises.

This research has product returns in dual channel supply chain of inventory control strategies and the subsequent processing of returned products. The decision variables of the research are the optimal base-stock level of direct channel and retailer channel. Applying stochastic model of Markov chain analysis of the continuous-time property and considering the infinite time range to build the model. The algorithm is designed from setting the parameters and inventory base-stock level of the upper bound range. Then, after finishing establishing the Markov chain model, the balance equations are obtained. Using LU factorization technique to obtain the steady state probability in order to calculate the performance measure. The objective function of operating cost are calculated by inventory holding cost, lost-sale cost and return product cost, in order to find the optimal base-stock level and maximize the expected value of the net profit. Next, applying sensitivity analysis to explore how the parameters affect the system to

observe the effects of trends and phenomena influence this system in order to provide decision-makers in different situations can make different adjustments and decisions. Finally, making the conclusions to give some advice and discuss the issue of research.

Keyword: Supply chain、Dual channel、Inventory control、Product returns