

Monitoring and incentives in a supply chain: an agency-theoretic perspective

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Abstract

Monitoring and incentives in a supply chain: a agency-theoretic perspective Abstract: A principal-agent relationship can be established up for a supply chain, in which the supplier acts as the principal while the manufacturer acts as the agent. This study uses the principal-agent model to explore the relationships between multiple suppliers and a single manufacturer. A mechanism of incentives is introduced in the model, which encourage the manufacturer to make more effort to reach the expectations of suppliers; thus, they maximize profits in the supply chain. Comparisons and analyses have been made on both united- and separate-designed compensation mechanisms of multiple suppliers (principals) to a single

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manufacturer (agent) and on both multi- and single-incentive policies in this study. Fruitful results were found that will be helpful for building the partnership between supplier and manufacturer.

Keywords : Supply chain, principal-agent model, multi-principal, multi-incentive mechanism, compensation plan, information asymmetric.

1. Introduction

In general, the supply chain is composed of many independent enterprises that have different goals and play different functions in the chain [12]. The management of any supply chain is a network that control and coordinates the functions of purchasing, producing and selling. This process will involve the supplier, producer, selling center depository and so on. Information sharing and collaboration among the members of supply chain will increase the whole supply chain's performance [20]. Any change by one of them will influence the efficiency of the supply chain [10].

The impossibility that each member of the supply chain has the same goal is implied, but it is possible for them to work together for cooperatively [13, 14]. So it does no harm to the supply chain if the chain is lightly disharmonious. Only when the efficiency of the supply chain is reduced significantly or the cost of incentive is greater than the profit incentive, would it be necessary to harmonize the members' behavior. The management of the supply chain means a method which integrates suppliers, producers, depositories and stores together effectively so as to make sure the quantity of products will be correct and the goods will be delivered at right time to the right place [3, 21]. Thus, effective management of the supply chain can meet the requirements of the service level, as well as reduce system costs and improve system performance.

As matter of fact, through information and resource integration in the supply chain, costs will be reduced and the service quality will be enhanced. However, the supply chain is a dynamic system; in addition, the members have different goals; therefore, it is hard to integrate the supply chain. The situation of competition and cooperation between members of the supply chain is similar to that found in game theory. Research on game