REVENUE SHARING CONTRACT MODEL FOR MULTI ECHELON SUPPLY CHAIN UNDER ASYMMETRIC COST INFORMATION

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ABSTRACT

Supply chain contract is one of the mechanisms to achieve a situation where the players in the supply chain act in the same direction to achieve global optimal solution in the decentralized supply chain. Revenue sharing contract is one of the models of the supply chain contract. In the revenue sharing contract, supplier offering a lower price of the wholesale price and buyer will give a portion of its revenue to the supplier in return. In the multi-echelon supply chain, there are two types of models of revenue sharing contract. The first type is when the contract made between a couple players in each echelon, for example: the contract between the manufacturer-distributors and contract between distributor-retailer. Then, this type is called the pairwise revenue sharing contract. The second type is where there is only a contract that is covering all players. For example is a contract made simultaneously by the manufacturer to distributor and retailer. Then, this type is called the spanning revenue sharing contract. In both types of revenue sharing contract models, the contract designers should know all the information about the costs incurred on other players in order to design the parameters of the contract that ensures the coordination and win-win solution. In fact, contract designers can’t easily obtain that costs information.

In this research, we will develop revenue sharing contracts model in multi echelon supply chain with the condition of asymmetric costs information. The revenue sharing contract models that we develop are the pairwise model and spanning revenue sharing contract model. Through numerical experiments, we compare the performance of both models. The performance parameter are expected profit of each player in the supply chain, and the ratio of profit of each player on the condition of the contract per the profit of each player on the condition of no contract (decentralization).

Key words: multi echelon supply chain, revenue sharing contract, asymmetric information