

ABSTRACT

Over the years, many companies have forced their attention to the effectiveness and efficiency of their business units. As a new way of doing business, these companies have begun to realize the strategic importance of planning and controlling their own supply chain system. Material ordering and inventory control in three configurations of the supply chain, which are “a single dyadic supply chain”, “a single manufacturer and multi-retailers’ chain” and “a single retailer and multi-manufacturers’ chain”, are studied so that the appropriate policy among members in the chain can be established. This is performed under three controlling policies: which are the decentralized, centralized and coordinating controlling policy with an incentive scheme.

The research also aims to find proper coordinating controlling mechanisms based on exchanging financial incentives that can improve the overall performance of the chain as well as each member in the chain. GA is used to determine the appropriate ordering and inventory level at each member. Using numerical means, the study shows that the coordinating policy with incentive schemes can improve the overall channel and all members’ profitability beyond other controlling policies. Additionally, the sensitivity analysis is conducted with respect to the bonus cost and suggestions are made for further study.