Abstract

This research work is totally focused on the problem of bullwhip effect with aiming of running the SCM activities effortlessly. The bullwhip effect is a well-known indication of coordination difficulty in conservative supply chain management system. It is being caused by major 4 reasons such as inaccurate demand forecasts, price frustrations, order batching and rationing & shortage gaming. The overstock and out of stock situations may be rise due to this problem which produce the worst effects on the outcome of the supply chain activities. These situations diminish the customer satisfactions and the availability of the preferred product to the customers at the moment.

The common focus of supply chain operations is delivering the precise product at the accurate place at the right time in spite of alteration in product supply and customer demand. For this purpose the Multi-agent system are being found more suitable for handling such situations. The proposed MAS based SCM system consists the multiple CBR-BDI intelligent agents in implementing the case-based reasoning capability for efficient decision-making capabilities.

With the approach of case-based reasoning, the multi-agent system becomes more powerful for managing the supply chain activities. With the help of the case-based reasoning, the SCM managers are capable of deriving the most efficient decisions instead of using rule-based reasoning approach. The existing MAS based SCM system has ignored the role of the supply chain orchestrator. With the help of the Orchestrator agent, the proposed MAS based SCM have implemented the roles and responsibility of the Supply Chain Orchestrator for managing and coordinating the SCM activities. The proposed system can reduce the bullwhip effect more efficient manner. The usage of the distributed case base enables the intelligent agent to access the cases stored at different locations. It makes the proposed system to work in distributed mode.