INTRODUCTION TO SUPPLY CHAIN ROLE PLAY GAME

Introduction on Supply Chain:

A supply chain contains geographically dispersed *facilities* where raw materials, intermediate products, or finished products are acquired, transformed, stored, or sold and *transportation links* that connect facilities along which products flow. That is, supply chain consists of various stages that are directly or indirectly involved in fulfilling a customer request. Downstream stage is the direction towards the end customer and upstream stage is the direction towards the end supplier. Information sharing among the entities/stages in a supply chain is essential for their better coordination and for minimizing the system wide cost.

Supply Chain Scenario:

In this role play game, the supply chain consists of four stages: Retailer – Wholesaler – Distributor – Factory, to meet the demand of a customer. The retailer is getting an item from another organization which we call as wholesaler. The wholesaler may be getting this from a distributor. The distributor gets this item from a factory with unlimited raw materials to make the item. The players take the role of each of these stages. Retailer faces the demand from customer, wholesaler faces demand from retailer, and so on.

Decisions in the Supply Chain Role Play Game:

It is a software package developed for evaluating the performance of a four-stage serial supply chain using no information sharing or information sharing. Four participants are required to conduct the experiment and each one acts as a stage in a supply chain. In each week, customer places an order to the retailer; the retailer to the wholesaler and so on. The role of the customer is played by the computer. Before the game starts, the instructor has to set the demand for the play duration. The retailer ships the quantity against the order placed by the customer. The shipment quantity depends on the inventory available. It can be same as the customer order quantity if sufficient inventory is available; otherwise whatever inventory available will be shipped. The demand which is not met may be backordered or considered as lost sales. Then the retailer places order to the next higher level, that is, the wholesaler. Similar operational decisions such as shipment quantity and order size are taken at every stage but, the factory issues the production orders. Order and shipment flows are shown in

Figure1. The main objective while taking the order decision at each stage is to maximize the fill rate and to minimize the supply chain cost.
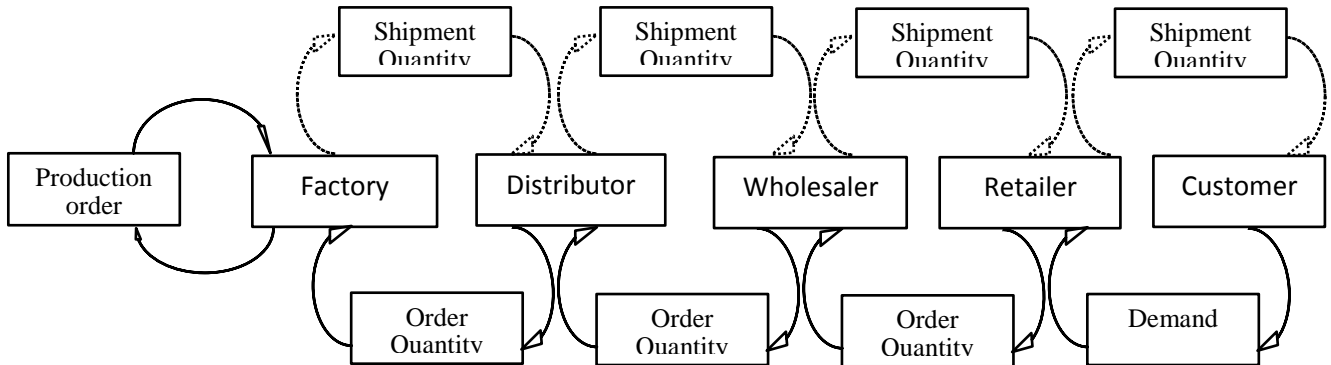

Fig.1. Order and shipment flows in supply chain

Assumptions:

➢ Each stage receives shipment (replenishment) at the beginning of a period, which is supplied by its supplier.

➢ Shipment for the demand arose is made after replenishment from the upstream stage and it reaches the downstream stage after a delay.

➢ Order is placed at the end of a period and it reaches the upstream stage at the beginning of a period after a delay.

➢ Review is made at each period.

➢ Demand from customer for each period is faced by the retailer.

➢ There is no storage capacity constraint at any stage of the supply chain.

➢ The factory has infinite production capacity and enough raw materials for production.