INTRODUCTION TO SUPPLY CHAIN ROLE PLAY GAME USING GOOGLE SPREADSHEET

Introduction on Supply Chain:

Supply chain consists of all stages that are directly or indirectly involved in fulfilling a customer order. A serial supply chain considered in this project consists of Retailer, Wholesaler, Distributor, and Factory. Objective of supply chain management is to maximize the overall value of the product generated which is the difference between the utility of final product to the customer and the effort the supply chains expends in filling the request of the customer.

A supply chain can be considered as one consists of two or more organizations linked together with the help of cloud services for the proper flow of related information for the material distribution & control and funds. Cloud computing is required in the supply chain industry as there are a number of organizations – suppliers, manufacturers, distributors and retailers that must collaborate to make products. The cloud based services used here is Google Spread sheet. Google Spreadsheets is one of the core components of Google cloud applications and is available to anyone with a Gmail account. Google spreadsheet is an online tool; the pieces of information are reflected in the respective users.

Scenario:

In this supply chain role play game using Google spreadsheet, the serial supply chain consists of four stages: Retailer – Wholesaler – Distributor– Factory, to meet the customer demand. The retailer gets the products that are to be served to the customer from another organization which we call as wholesaler. The wholesaler gets it from a distributor. The distributor gets the corresponding item from a factory, with unlimited supply of raw materials from the supplier for the production of the item. The players take the role of each of these four stages. Retailer faces the demand from customer, wholesaler faces demand from retailer, and so on.

Decisions to be taken:

This can be utilized for evaluating the performance of a four-stage serial supply chain. 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.
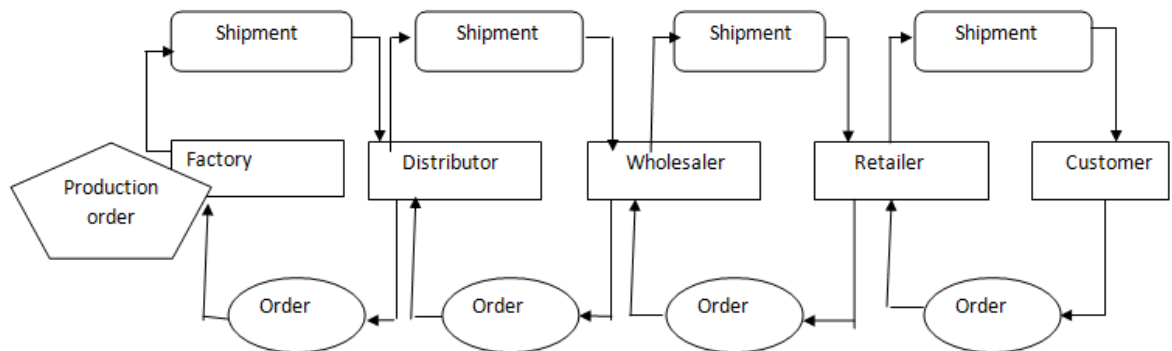

Fig.1. Order and shipment flows in supply chain

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.