Survey of Supply Chain Inventory Models

PRAVESH KUMAR SHARMA

MEWAR UNIVERSITY, RAJASTHAN

ABSTRACT

In the present model we present an up to date review of literature of supply chain inventory models. In this literature we analyzed all the aspects of supply chain.

KEYWORDS : Inventory, supply chain

INTRODUCTION:

One of the most important topics in the study of the management of contemporary manufacturing and distribution is supply chain management (SCM). Inventory management is an essential process for all parties engaged in supply chain activities, from the procurement of raw materials through to the delivery of finished goods. The effective execution of this process has a major influence on both the financial and operational performance of an organization. While many may argue that inventories are undesirable and should be eliminated from the supply chain, the fact remains that organizations require inventory in order to operate effective and to ensure the smooth operation of their day-to-day business. Notwithstanding the critical importance of inventories, companies have to keep in mind that inventories can also cause adverse effects and often disguise other underlying issues in the supply chain. Managing inventory can be both a complicated and critical process given the conflicting business objectives that can occur within an organization and across multiple enterprises. Supply chain management is the coordination of production, inventory, location and transportation among the participants in a supply chain to achieve the best mix of responsiveness and efficiency for the market being served. into widespread use in the 1990s. Prior to that time, business used terms. There is a difference between the concept of supply chain management and traditional concept of logistics. Logistics typically refers to activities that occur with the boundaries of a single organization and supply chains refer to networks of companies that work together and coordinate their actions to deliver a product to market. Also, traditional logistics focuses its attention on activities such as procurement, distribution and maintenance of inventory management. Supply chain management acknowledges all the traditional logistics and also includes activities such as marketing, new product development, finance and customer service. In the wider view of supply chain thinking, these additional activities are now seen as part of the work needed to fulfill customer requests. Supply chain management views the supply chain and the organizations in it as a single entity. It brings a systems approach to understanding and managing the different activities needed to coordinate the flow of products and services to best serve the ultimate customer. This systems approach provides the framework in which to best respond in business requirements that otherwise would seem to be in conflict with each other.Taken individually, different supply chain requirements often have conflicting needs. For instance, the requirement of maintaining high levels of customer service calls for maintaining high levels of inventory, but then the requirement to operate efficiently calls for reducing inventory levels. It is only when these requirements are seen together as part of a large picture that ways can be found to effectively balance their different demands. Effective supply chain management requires simultaneous improvements in both customer service levels and the internal operating efficiencies of the companies in the supply chain. Customer service at its most basic level means consistently high order fill rates, high on-time delivery rates and a very low rate of products returned by customers for whatever reason. Internal efficiency for organizations in a supply chain means that these organizations get an attractive rate of return on their investments in inventory and other assets. The effective management of supply channel inventories is perhaps the most fundamental objective of supply chain management. Manufacturers procure raw material and process them into finished goods, and sell the finished goods to distributors, then to retailer and/or customer. When an item moves through more than one stage before - A large amount of researches on multi-echelon inventory control has appeared in the literature during the last decades.

ANALYSIS:

Clark and **Scarf (1960)** were the first to study the two-echelon inventory model. They proved the optimality of a base stock policy for the pure serial inventory system and developed an efficient decomposing method to compute the optimal base stock ordering policy. **Sherbrooke (1968)** considered an ordering policy of two-echelon model for warehouse and retailer. It is assumed that stock-outs at the retailers are completely backlogged**. Van der Heijden et al. (1997)** presented stock allocation policies in general single-item and N-echelon distribution systems, where it is allowed to hold stock at all levels in the network.**Diks** and **De Kok (1998)** determined a cost optimal replenishment policy for a divergent multi-echelon inventory system. A joint replenishment policy for multi-echelon inventory control was proposed by **Axsater and Zhang (1999)**. A multi-echelon inventory model for a deteriorating item was developed by **Rau et al. (2003)**. An optimal joint total cost has been derived from an integrated perspective among the supplier, the producer and the buyer. A deteriorating item inventory model in a supply chain was proposed by **Wu** and **Wee (2005)**. Shortages in inventory were allowed and fully backlogged. Two-echelon inventory model with lost sales was proposed by **Hill et al. (2007)**. A two level supply chain in which production interruptions for restoring of the quality of the production process coordinated by **Ahmed** et al.(2008). **Wong et al. (2009)** proposed a two-echelon supply chain with a single supplier serving multiple retailers in vendor-managed inventory (VMI) partnership. **Cárdenas-Barrón(2011)**,discussed the derivation of EOQ/EPQ inventory models with two backorders costs using analytic geometry and algebra. **Banerjee** and **Yang(2011)** developed an integrated production-distribution model for a deteriorating inventory item. **Widyadana and Wee(2011)** formulated an economic production quantity model for deteriorating items with preventive maintenance policy and random machine breakdown. **Teng et al (2011)** discussed the economic lot size of the integrated vendor-buyer inventory system derived without derivatives a simple derivation. **Teng et al(2011)** formulated an optimal economic order quantity for buyer distributor-vendor supply chain with backlogging without derivatives**. Chung** and Cárdenas-**Barrón(2012)** derive the complete solution procedure for the EOQ and EPQ inventory models with linear and fixed backorder costs. **Sett et al. (2012)** discussed a two-warehouse inventory model with increasing demand and time varying deterioration. **Taleizadeh et al.(2013)** derive a meta-heuristic algorithms for supply chain management problems. **Sarkar** and **Majumder(2013)** derived an Integrated vendor buyer supply chain model with vendors setup cost reduction. **Cárdenas-Barrón, and Treviño-Garza(2014)** discussed an optimal solution to a three echelon supply chain network with multi-product and multi-period. **Chung et al.(2014)** developed an inventory model with non-instantaneous receipt and exponentially deteriorating items for an integrated three layer supply chain system under two levels of trade credit. **Sarkar et al.(2015-a)** discussed manufacturing setup cost reduction and quality improvement for the distribution free continuous-review inventory model with a service level constraint. **Sarkar et al.(2015-b)** derived a quality improvement and backorder price discount under controllable lead time in an inventory model.

CONCLUSION:

In this In the present model we present an up to date review of literature of supply chain inventory models. In this literature we analyzed all the aspects of supply chain. In the existing literature most of the models assumed the shortages case.

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