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Vendor Managed Inventory Mechanism: Emerging Dimensions of Cost Effective Supply Chain Management

Dr. Manoj Pillai
Assistant Professor
Department of Commerce
Mahatma Gandhi Government College
Mahe (Puducherry Administration)

Abstract

Managing inventory in a globalized competitive business environment is highly challenging as it involves selecting an overall strategy from various available alternatives. The more complex the circumstances, the more sophisticated inventory approaches are required. Cost effectiveness and quality customer services are the key factors which are assessed while selecting an appropriate approach to manage inventory. The important change that has taken place in the field of inventory accounting over the years is that contemporary organizations are emphasizing on minimizing the inventory with organizations adapting to zero inventory operations. Vendor Managed Inventory is a specially designed mechanism aimed at providing cost saving benefits to both retail customers and suppliers. It is a continuous replenishment program related with constant flow of information between the retailer and supplier to allow the supplier to manage and replenish merchandise at the store or warehouse level. This article delves into all the relevant aspects of Vendor Managed Inventory mechanism.

Key Words: Inventory, Supply chain, JIT, Zero Inventory, Vendor Managed Inventory

INTRODUCTION

The last two decades has witnessed the genesis of various innovative cost management practices. The focus and thrust of these cost accounting systems has been broadened to enable managers to better serve the needs of the customers and manage the firm's business processes that are used to create customer value. These innovative cost management tools help a firm to establish a competitive advantage by providing more customer value for less cost than its competitors. The three strategic areas that give a firm the extra competitive advantage over its rivals are Time Based Performance, Quality Management and Cost Control. Supply Chain Operations and management have taken the centre stage of modern day organizational planning. Supply Chain Management relates to the planning and management of all activities involved in sourcing and procurement, conversion, and logistics activities. It is also related with the coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. Ayers (2006) write that the concept of supply chain has various dimensions and paradigms. These include the functional aspects, procurement aspects, logistics aspects, informational system viewpoint, business process reengineering and operations aspects and strategic view point. The procurement aspect is associated with inventory management. Inventory management effectiveness can have a major influence on the enterprise profitability.

Inventory management capability directly determines the inventory levels required to achieve desired service levels. An effective inventory management can also result in increased sales revenue. Coryle (2003) highlights that inventory management involves two main questions: how much to reorder from vendor and/ or their plants and when to reorder. Managing inventory in a globalized competitive business environment is highly challenging as it involves selecting an overall strategy from various available alternatives. The more complex the circumstances, the more sophisticated are the inventory approach which is required. Cost effectiveness and quality customer service are the key factors which are assessed while selecting an appropriate approach to manage inventory.

OBJECTIVES OF THE STUDY

The study has been aimed to explain the change in inventory management system i.e. From traditional system to modern inventory management system.

RESEARCH METHODOLOGY

The study is of descriptive type and based on the literature review of text, journals and relevant web sites.

INVENTORY ACCOUNTING: FROM INVENTORY MANAGEMENT TO ZERO INVENTORY APPROACH

Inventory control aims at eliminating and minimizing all kinds of wastages and losses while the materials are being purchased, stored, handled, issued or consumed. There are a number of accounting techniques which are used at the planning, procuring and holding stages of materials. The important change that has taken place in the field of inventory accounting over the years is that contemporary organizations are emphasizing on minimizing the inventory by adopting zero inventory operations. The traditional inventory management accounting systems which emphasize on effective inventory control includes the following.

Level Setting and Economic Order Quantity - Accounting calculations can be made to set various level of materials procurement. The common levels include minimum, maximum, average, danger and reorder stock levels. Similarly economic order quantity can be calculated to minimize the ordering cost and inventory carrying cost.

Stock control through ABC Analysis - Many organizations, particularly operating in the manufacturing sector, divide materials on the basis of their importance or utility. An analysis of the material cost will show that a smaller percentage of items of materials may contribute to a large percentage of value of consumption and on the other hand, a large percentage of items may represent a smaller percentage of value of items consumed. In between these two extremes come those items which have an average value of consumption. Items falling in the first category are treated as 'A' items, the second category as 'B' and items of the third category are treated as 'C' ABC analysis measures the cost significance of each item of material. It concentrates on important items, so it is also known as "control by importance and exception".

VED analysis – This analysis is generally used for the control of spare parts. The spare parts can be divided in to three categories – vital, essential and desirable – keeping in view the criticality

to production. As VED analysis are items based on criticality, it can be used for those items of material which are difficult to procure.

Perpetual Inventory System - Perpetual Inventory system is a system of records maintained by the controlling department, which reflect the physical movements of stocks and their current balance. Store Ledger Accounts and Bin Card help the management in maintaining this system so they make a record of physical movement of the stock on the receipts and issue of the materials and also reflect the balance of the store.

FNSD Analysis: - This analysis divides the items of store in to four categories in the descending order of importance of their usage. 'F' stands for fast moving items that are consumed in a short span of time, 'N' stands for normal moving goods which are utilized over a period of a year or so. 'S' indicates slow moving items which are not issued at frequent intervals. 'D' means dead items and the consumption of such items is almost nil. The stock of fast moving items should be taken as a case of continuous replenishment and orders should be placed in time to avoid stock – out of such items.

Just in Time Inventory System- The beginning of the modern zero inventory approach - Just in Time (JIT) purchasing recognizes too much carrying cost associated with holding high inventory levels. Therefore it advocates developing good relations with suppliers and making timely purchases from proven suppliers who can make ready delivery of goods available, as and when need arises. The just – in – time concept is an American version of the "Kanban" system, which was developed by the Toyota Motor Company in Japan. Kanban refers to the informative signboards attached to carts delivering small amounts of needed components and other materials to locations within the plants. Each signboard precisely details the necessary replenishment quantities and the exact time when the resupply activity must take place. Four major elements underpin the just in time concept: Zero inventories, short lead times, small frequent replenishment quantities, and high quality with zero defects. The just in –time inventory system became very popular as it can improve quality and minimize waste and can change the way a firm performs its logistics activities.

Many new inventory management models were formulated which are based on the concept of just in time management. Vendor Managed Inventory is one among them.

DEMAND PULL APPROACH TO MANAGE INVENTORY AND VENDOR MANAGED INVENTORY

Traditional inventory techniques focused on pushing inventory in advance of demand. This approach also viewed customer service and logistical cost as trade – offs. During 1990s, various time based strategies were designed to deal with the demand pull replenishment in the globalized complex competitive business environment. The demand pull approach emphasizes on demand responsive fulfillment or replenishment. This approach primarily focuses on lowering cost and at the same time improving service to customers. Vendor Managed Inventory System is one of the popular demand pull approach designed specifically to meet the requirement of large retailers who work closely with their suppliers.

UNDERSTANDING THE CONCEPT OF VENDOR MANAGED INVENTORY

Vendor Managed Inventory, which is popularly known as VMI, is becoming a popular operational strategy in the contemporary business process. The cut throat competitive business environment is influencing the retailers to invent supply chain optimization process which can reduce their cost, reduce inventory levels and increase profits. Vendor Managed Inventory is a specially designed mechanism aimed at providing cost saving benefits to both retail customers and suppliers. It is a continuous replenishment program related with constant flow of information between the retailer and supplier to allow the supplier to manage and replenish merchandise at the store or warehouse level. Vendor Managed Inventory enables the supplier to project and anticipate the amount of product its needs to produce or supply. It is a centralized link between suppliers and customers that enable faster and less complex transactions. In a VMI partnership, the supplier, usually the manufacturer but sometimes a reseller or distributor, makes the main inventory replenishment decisions for the consuming organization.

Kuk (2004) defines VMI as a supply initiative where the supplier assumes responsibility of the tracking and replenishment of the customer's inventory. Waller et al., (1999) writes that the vendor monitors the buyer's inventory levels (physically or via electronic messaging) and makes periodic re supply decisions regarding order quantities, shipping, and timing. It is a strategy whereby the vendor or supplier is given the responsibility of managing the customer's stock. Lysons and Gillingham (2003) highlight that Vendor Managed Inventory is a Just in Time (JIT) technique in which the inventory replacement decisions are centralized with upstream manufacturers or distributors. To Nachiappan et al. (2005), VMI is a centralized link between suppliers and customers that enables faster, less complex transactions without creating individual lines of communication for every business relationship. Disney & Towill (2003) writes that VMI is a supply chain strategy where the vendor or supplier is given the responsibility of managing the customer's stock. VMI is a fundamental change in the approach for solving the problem of supply chain coordination. Instead of just putting more pressure on suppliers' performance by requiring ever faster and more accurate deliveries, VMI gives the supplier both responsibility and authority to manage the entire replenishment process.

Kaipia et al. (2002) describes that vendor managed inventory is a recent alternative for the order delivery process. Vendor Managed Inventory (VMI) is the process where the vendor assumes the task of generating purchase orders to replenish a customer's inventory. Well-configured VMI can successfully increase both service rates and inventory turns. Providing service means having the material there when it is needed—inventory. A turn is a measure of output versus on-hand inventory. While having inventory to support service levels should logically mean that turns has to suffer, this is not necessarily the case with Vendor Managed Inventory. The advantage of the application of a VMI policy with respect to the traditional retailer–managed inventory policies relies in a more efficient utilization of the resources: The supplier can reduce its level of inventories maintaining the same level of service or can increase the level of service and can reduce the transportation cost by a more uniform utilization of the transportation capacity. On the other hand, the retailers can devote fewer resources to monitor their inventories and to place orders, having thus the guarantee that no stock-out will occur.

Sarpola, Sami (2007), categorizes the fundamental elements of Vendor Managed Inventory into the following key points:

Inventory Location – The physical location of the inventory is a key element of VMI system. The location of inventory under the VMI mechanism can be in various forms. The inventory may be located at the customer's premises where it is distributed directly at the production line or at the retailer's shop. Similarly the vendor may also manage the customers inventory in a centralized manner by ensuring that inventory levels at the customer's central warehouse is maintained within set limits. Alternatively the vendor can manage inventories in his own or outsourced party locations.

Distribution of Inventory – The distribution model relates to the physical distribution of goods or raw materials by the vendor. The distribution process can be managed by the vendor himself or it can be outsourced to the third party.

Management of Inventory Information System – Flow of information is one of the most important components of VMI mechanism. An effective VMI information system depends on computer platforms, communication technology, product identification and tracking systems and Electronic Data Interchange. Uncertainty in the supply of inventories is a common challenge faced by the firms. The two important strategies to counter this challenge is either by building buffer stock or through developing sound information processing capabilities. Contemporary organizations prefer vendor managed inventory mechanism using sound information processing technology. An effective information system depends heavily on a sound inventory level monitoring and demand visibility components. Proper synchronization of inventory level monitoring and replenishment can only be done with the help of a sound information system.

Valuation Framework for VMI systems

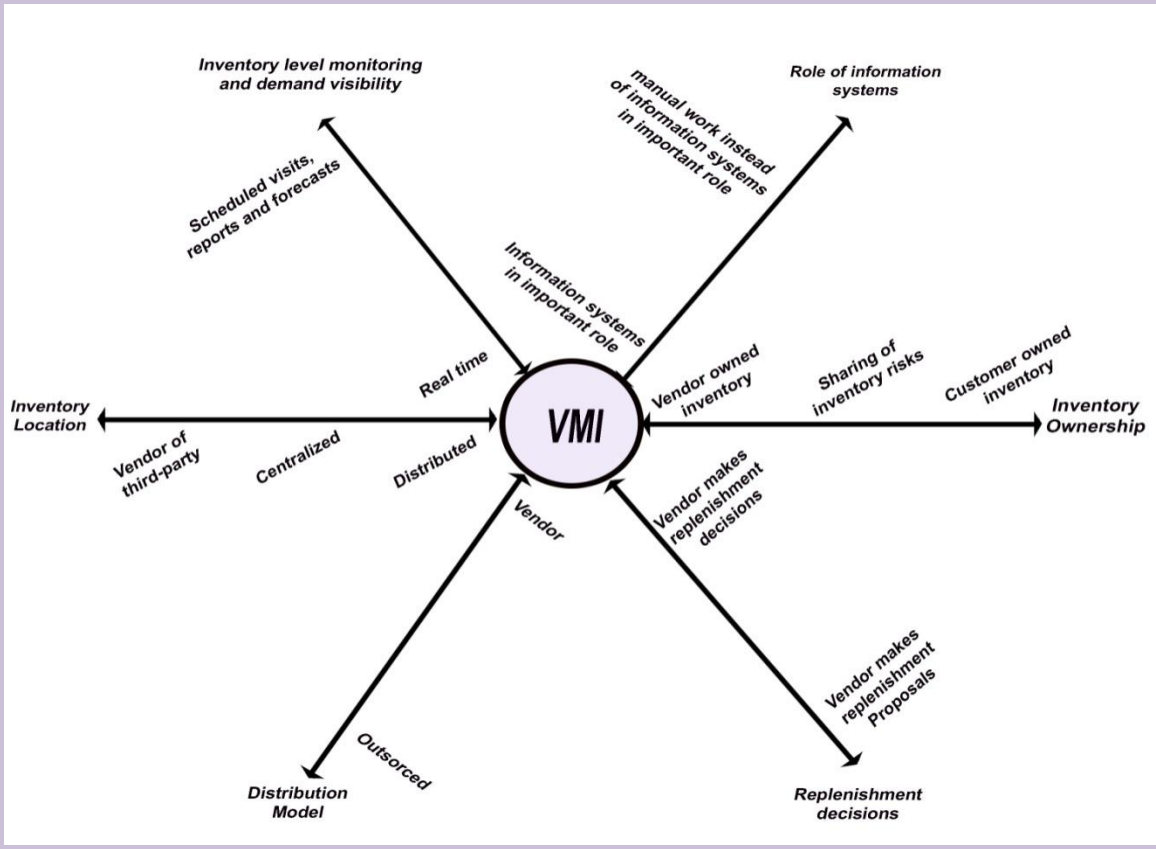

Figure 1 : Valuation framework for VMI systems. (Adapted from Sami Sarpola's article "evaluationframework of VMI Systems")

Figure 1 presents the valuation framework for the Vendor Managed Inventory system. The valuation framework can be analyzed from six broad concepts relating to inventory management. These are as follows:

Inventory level monitoring and demand visibility – Vendor managed inventory mechanism emphasizes on real time inventory mechanism with the help of information technology infrastructure. Vendor constantly monitors the movement of inventory and takes replenishment decisions based on the demand visibility and movement of inventory. The conventional inventory management system monitors inventory levels and demand visibility through scheduled visits reports and forecasts.

Role of Information System - Vendor managed inventory system works on a highly developed informational system. Vendor maintains an integrated information system network with the manufacturer or customer and tracks the real time movement of goods or products. The Electronic Data Interchange (EDI) is an integral component of the Vendor Managed Inventory process as it plays an important role in the process of data communication. The retailer sends sales and other information to the vendor via EDI or other Business to Business (B2B)

collaboration facilities. This is significantly different from the traditional methods of inventory management where manual work is the prime source of information.

Inventory Ownership – Under the vendor managed inventory system, the entire inventory is owned by the vendor himself where as in the traditional inventory management systems the inventory is owned by the customer or manufacturer. Inventory ownership has significant relevance in inventory management because the owner of inventory is responsible for the capital costs and the obsolescence cost associated with it. Under the Vendor Managed Inventory system where the inventory is owned by the vendor the risk is shared between the vendor and the dealer. This is generally done by guaranteed quotas agreed by the dealer or splitting the obsolescence cost incurred on the inventory.

Replenishment Decisions – Under the vendor managed inventory system, vendor himself makes the replenishment decisions. Allocation of authority of replenishment decision to the vendor is beneficial to the customer as it reduces the ordering and the inventory carrying cost. This mechanism is also beneficial to the vendor as it can lead to improved optimization of its manufacturing and distribution along with the minimization of out of stock expenses by prioritizing customer orders.

Distribution Model - The Vendor plays an important role in the distribution of goods under the Vendor Managed Inventory mechanism. Vendor remains fully aware of the inventory levels of the dealer/ customer as he is linked electronically with the dealer/ customer.

BENEFITS OF VENDOR MANAGED PROCESSES

The Vendor Managed Inventory is beneficial to both the retailers and the suppliers. The main benefits can be highlighted as follows:

BENEFITS TO RETAILER

Lowered inventory levels: Reduced inventory levels are the most notable benefit of Vendor Managed Inventory system. Using this process, the supplier controls the lead-time component of order point. Additionally, the supplier takes on a greater responsibility to have the product available when needed, thereby lowering the need for safety stock. The supplier also reviews the information on a more frequent basis, lowering the safety stock component. These factors contribute to significantly lower inventories. The supplier enjoys the advantage of replenishing those products which are fast moving goods as compared to the slow moving goods.

Reduced stock-outs: The supplier keeps track of inventory movement and takes over responsibility of product availability resulting in a reduction of stock outs, there-by increasing end-customer satisfaction.

Reduced forecasting and purchasing activities: As the supplier does the forecasting and creating orders based on the demand information sent by the retailer, the retailer can reduce the costs on forecasting and purchasing activities.

Increase in sales: Due to less stock out situations, customers will find the right product At right time. Customers will come to the store again and again, there-by reflecting an Increase in sales.

BENEFITS TO SUPPLIER

Effective forecasting through improved visibility: Without the VMI process, suppliers do not exactly know how their customers are going to place orders. To satisfy the demand, suppliers usually have to maintain large amounts of safety stocks. With the VMI process, the retailer sends the POS data directly to the vendor, which improves the visibility and results in better forecasting.

Effective service mechanism: Vendor can see the potential need for the item before it is actually ordered and right product is supplied to retailer at right time improving service level agreements between retailer and supplier.

Strengthen supply chain cooperation: Partnerships and collaborations are formed which smoothen the supply chain pipeline.

CONCLUSION

In this era of cut throat competitive business environment, which is symbolized by globalization, economic liberalization and technological advancements, innovative and strategic mechanisms have to be devised for the achievement of competitive advantage and generate a higher return on capital. Distinctive competence and sustainable competitive advantage are the new mantras practiced by modern day organizations. Continuing innovation, quality enhancements and strategic cost control have assumed tremendous significance for competing effectively. The fundamental strength of a supply chain operation depends on accurate transfer of information within the various components of the supply chain. VMI is an innovative mechanism which transfers information along with providing cost control to both vendors and retailers. VMI cut short the information across the partners of a supply chain resulting in tangible benefits like increase in buyers' profit, vendor's profit, and decrease in sales price. It also brings tangible benefits such as minimum inventory, replenishments, stock outs along with checkmating the Bull Whip Effect.

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