JOURNAL OF INFORMATION, KNOWLEDGE AND RESEARCH IN MECHANICAL ENGINEERING
ISSN 0975 – 668X| NOV 15 TO OCT 16 | VOLUME – 04, ISSUE - 01

SUPPLY CHAIN MANAGEMENT - A NEW APPROACH OF BUSINESS PROCESS.

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ABSTRACT *: "Supply chain management is the integration of key business processes from end user through original suppliers that provides products, services and information that add value for customer and other stakeholders"*
The rapid development of the Internet has dramatically changed the traditional definitions of manufacturer, suppliers and customers. Newer approaches to supply chain management attempt to organize the supply chain as a network of cooperating intelligent agents, each performing one or more supply chain functions and each coordinating actions with one another. This paper is aimed at creating a viable model of a single manufacturer-single-supplier collaborative supply chain system using a Vendor Managed Inventory (VMI) system. The project further uses known inventory performance parameters to performance benchmark the VMI system with traditional push-pull systems, develop a collaborative forecasting spreadsheet solution and a best alternative ordering policy amongst EOQ, Monthly, JIT and VMI policies under known lead time and a variety of demand distribution functions.

Key words: **Supply chain Management, Vendor Management Inventory, Flow within supply chain**

I. INTRODUCTION

Now it is time to rethink about the traditional supply chain management approach based on the present scenario of the market. i.e. Globalization and completion. In this world of the internet there is absolutely no need to go to the market and punches but only to perform the things with the help of internet with easy operations. Based on this there is realty a need at the company to remain and establish challenging environment. In order to do so companies must increasingly focus on there supply chain.

The e-business revolution is affecting supply chain management dramatically and is changing how companies integrate business processes, both inside and outside the enterprise. These developments introduce new business and technical challenges and spotlight existing business processes and supporting enterprise systems that revolve around the supply chain. Newer approaches to supply chain management attempt to organize the supply chain as a network of cooperating intelligent agents, each performing one or more supply chain functions and each coordinating action with one another [1]

The common characteristic among supply chain leaders in all the industry segments is the extent to which the various supply chain constituents engage in supply chain collaboration. Organizations need to break the traditional paradigm of looking at the supply chain as a set of inter-connected constituents [2]. There is an urgent need to employ systems thinking to supply chain management.

II. SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) is the term used to describe the management of the flow of materials, information, and funds across the entire supply chain, from suppliers to component producers to final assemblers to distribution (warehouses and retailers), and ultimately to the consumer.

A. In fact, it often includes after-sales service and returns or recycling. In contrast to multiechelon inventory management, which coordinates inventories at multiple locations, SCM typically involves coordination of information and materials among multiple firms. Supply chain management has generated much interest in recent years for a number of reasons. Many managers now realize that actions taken by one member of the chain can influence the profitability of all others in the chain.

B. Firms are increasingly thinking in terms of competing as part of a supply chain against other supply chains, rather than as a single firm against other individual firms. Also, as firms successfully streamline their own operations, the next opportunity for improvement is through better coordination with their suppliers and customers. The costs of poor coordination can be extremely high. In the Italian pasta industry, consumer demand is quite steady throughout the year. However, because of trade promotions, volume discounts, long lead

times, full-truckload discounts, and end-of-quarter sales incentives the orders seen at the manufacturers are highly variable [3]. In fact, the variability increases in moving up the supply chain from consumer to grocery store to distribution center to central warehouse to factory, a phenomenon that is often called the *bullwhip effect*. The bullwhip effect has been experienced by many students playing the "Beer Distribution Game." [4] [5] [6] [7]. The costs of this variability are high inefficient use of production and warehouse resources, high transportation costs, and high inventory costs. It seems that integration, long the dream of management gurus, has finally been sinking into the minds of western managers. Some would argue that managers have long been interested in integration, but the lack of information technology made it impossible to implement a more "systems-oriented" approach. Clearly industrial dynamics researchers dating back to the 1950's [8] [9] have maintained that supply chains should be viewed as an integrated system. With the recent explosion of inexpensive information technology, it seems only natural that business would become more supply chain focused. However, while technology is clearly an enabler of integration, it alone can not explain the radical organizational changes in both individual firms and whole industries. Changes in both technology and management theory set the stage for integrated supply chain management. One reason for the change in management theory is the power shift from manufacturers to retailers. Wal-Mart, for instance, has forced many manufacturers to improve their management of inventories, and even to manage inventories of their products at Wal-Mart.

While integration, information technology and retail power may be key catalysts in the surge of interest surrounding supply chains, e-Business is fueling even stronger excitement. e-Business facilitates the virtual supply chain, and as companies manage these virtual networks, the importance of integration is magnified. Firms like Amazon.com are superb at managing the flow of information and funds, via the Internet and electronic funds transfer. Now, the challenge is to efficiently manage the flow of products. Some would argue that the language and metaphors are wrong. "Chains" evoke images of linear, unchanging, and powerless. "Supply" feels pushy and reeks of mass production rather than mass
customization. Better names, like "demand networks" or "customer driven webs" have been proposed by many a potential book author hoping to invent a new trend. Yet, for now, the name "supply chain" seems to have stuck. And under any name, the future of supply chain management appears bright.

III. Flow Within Supply Chain

It is very generalized concept or the general customer is that the products are manufactured is the company and they get tit from the market. But the real question is from where the various materials comes and reach to the customer? It is quite essential to know about the movement of the produced through the supply chain management for the manufactured product. Figure 1 shows the movement or the products are the entire network. The fact begins with the presence of the several suppliers. These supplies either supply raw materials or the various parts of the products to the company where they get processed or get assembled to form the finished good. These products then send to the various distribution centers or the warehouses from where they will reach to the customers.

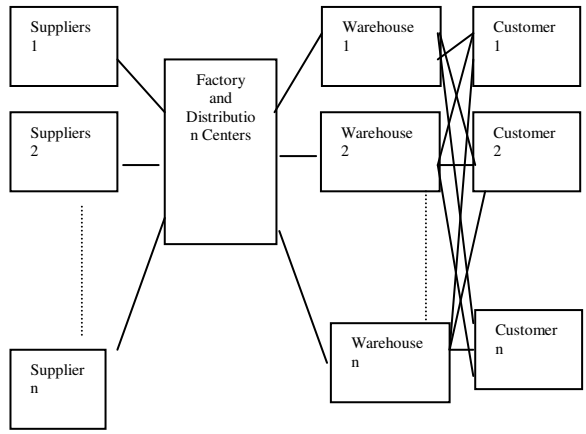

Figure.1: Flow within a supply chain

IV. Vendor Managed Inventory (VMI)

VMI as a process where the supplier generates orders for the customers based on demand information sent by the customer. [10] One of the most challenging issues for fulfilling customer needs is to manage the order delivery process between the various supply chain constituents [11]. One of the primary goals of effective supply chain management is to develop processes between all the supply chain members that minimize the

wastage of time and enable fast and reliable reactions to demand changes. A traditional order delivery process is based on the principle that the manufacturer/retailer defines the amount and timing of deliveries of each item needed from the supplier. The supplier's task is to fulfill this as closely as possible. Exactly how this is done varies, depending on the industry and the company. Retailing organizations place purchase orders for every delivery, whereas manufacturing industries use economic order quantity purchases [11]. Fast transfer of information between organizations has, since the introduction of electronic data interchanges (EDI), been considered a key issue in improving the performance of supply chains. Just-in-time and agile practices like smaller lot sizes and frequent deliveries have been applied to permit the suppliers to react faster to changes in the customer's demand.

However, there are several serious problems with the demand fulfillment solution using traditional approaches. The actual item level replenishment cycle is far slower than the order fulfillment cycle. A survey of manufacturers and retailers in United States [1]. Illustrates that frequently an order was placed when the product was already sold out or so late that the product would be out of stock before the delivery arrives. On the supplier side, there are high levels of inventory because of the short delivery time and high service level requirements. Typically, there exists accurate information neither about retail sales nor about out-of stocks along the chain. This means that the real trade-off between providing a good logistics service level and cost level remains hidden from the supplier. Illustrated the development of the bullwhip effect in both manufacturing and retail scenarios using this fact. [12]

V. VENDOR MANAGED INVENTORY PROCESS DESCRIPTION

The Voluntary Inter Industry Commerce Standards (VICS), an umbrella organization of industries across the United States, has defined some common technology standards for VMI programs. There are two EDI transactions at the heart of any VMI process.

A. Product Activity Report (852)

The data contained in this document are sales and inventory information. The inventory data are typically segmented into various groups such as on-hand, committed, back ordered, etc. This transaction report is the backbone of the VMI program and is sent by the customer on a prearranged schedule, typically, on a daily basis. The supplier reviews the information that has been sent by the manufacturer on the 852 to determine the necessity of an order. The following sequence of steps is recommended by the VICS standards. Verification of data to ensure accuracy. Most of this verification process is usually automated.

On a scheduled basis, the software calculates a reorder point for each item based on the movement data and any overrides contributed by the manufacturer. The software compares the quantity available at the manufacturer with the reorder point for each item at each location. This determines the necessity of a new order. Order generation is possible only at the manufacturer site.

Order quantities are calculated. Order quantities also take into account issues such as carton quantities and transaction costs.

B. Purchase Order Acknowledgement (855)

The second VMI transaction informs the customer what product to expect from the supplier. There are two transactions being used for this function. The most frequently used is the "*Purchase Order Acknowledgement*", referred to as 855. This document contains the product numbers and quantities ordered by the supplier on the manufacturer's behalf. There is a feature in the VMI software to use the 856, "*Advance Ship Notice*", to alert the manufacturer about the order and shipment. 856 differ from the 855 in both the timing and content. The 856 is sent after the shipment has been made instead of at the time of the order. The 856 contains only the part numbers shipped as well as additional information such as carrier and waybill information. The use of either the 855 or 856 is dictated by the operational rules defined in the VMI software.

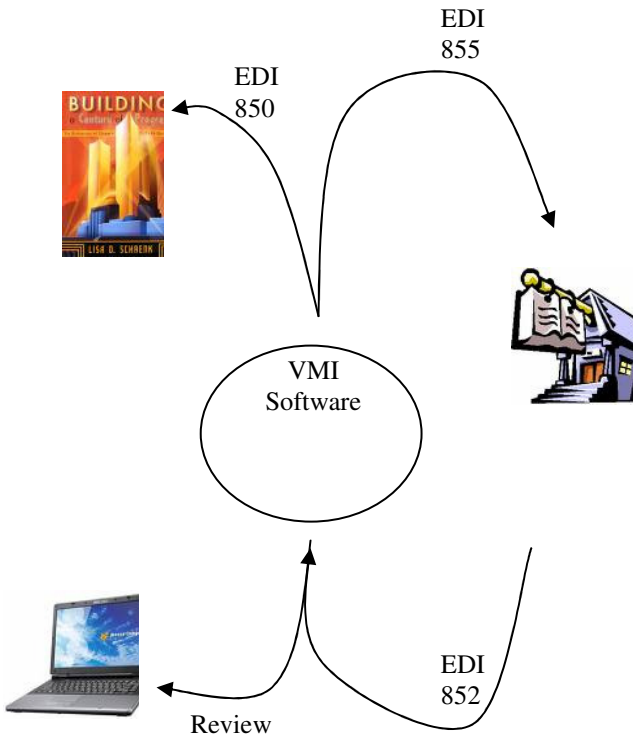

Figure.2: Typical VMI Setup Program

VI. VENDOR MANAGED INVENTORY (VMI) BENEFITS

The main benefits of VMI are given below.

A. Lower customer Inventories

Lower customer Inventories is the primary benefit of a VMI implementation program. Under VMI, the supplier is able to control the lead time component of the order point better than a manufacture/supplier with a host of suppliers can ever hope to. Additionally, with frequent inventory review, the need for safety stocks on the supplier side is dramatically reduced.

B. Better Forecasts

This occurs because of demand information sharing [13]. Better forecasts result from having a more stable demand distribution pattern. The demand is reflected in more frequent orders for the same parts and therefore lower variability of demand in business.

C. Reduced costs

This occurs because of the reduction in the demand volatility downstream of the supply chain [14]. VMI helps dampen the peaks and valleys of production, allowing smaller buffers of capacity and inventory. With VMI, greater channel coordination supports the supplier's need for smoother production without sacrificing the manufacturer/retailer's service and stock objectives [12]. Transportation costs are reduced with VMI because the approach helps to increase the percentage of full truckload shipments and eliminate the higher cost LTL shipments [12].

D. Improved Service.

From the manufacturer/retailer's perspective, service is usually assessed by measuring product availability. With VMI, coordination of replenishment orders and deliveries across multiple suppliers helps to improve service. [12] Illustrated that the adverse effects of price markdowns and "product rollovers" can be drastically reduced by using channel coordination programs like VMI. Finally, coordinated logistics decisions ensure more predictable delivery schedules in VMI systems.

VII. CONCLUSION

Based on the challenges and the competition in the market globalization is a need to have a hew approach to the supply chain management. It is identified that the use which is associated with the entire process of getting a good quality product to the customer (as the expectation is of the good quality product at lesser price and quick delivery) ultimately reflects to the customer. This issue is totally depends on the process of getting product form factory to customers or form venders to factory etc. Hence these are a need of the collaborative supply chain planning which reflects cost and profit objectives. The ordering and the replenishment policy is an important issue in the collaborative supply chain that has to be given a prime importance. If an organization is not following a proper method for this, there is a straightforward loss for the organization. One example of a Collaborative Supply Chain Planning (CSCP) system is Vendor Managed Inventory (VMI). Unlike a traditional business model which orders on the basis of an ordering amount decided by commonly known formulae like EOQ, in a VMI system, the supplier receives electronic data (usually through an Electronic Data Exchange or the Internet) that informs him about the Manufacturer's sales and stock levels. The supplier is responsible for creating and managing the inventory replenishment schedule.

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