IDENTIFICATION OF BARRIERS TO THE SUCCESSFUL IMPLEMENTATION OF VMI

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Abstract: Vendor Managed Inventory (VMI) is a business strategy in which two or more partners work together to increase the performance of an organisation. Vendor Managed Inventory is sometimes known as the Supplier Managed Inventory. Vendor managed inventory is a collaborative practice in which the supplier takes the full responsibility of managing of the inventory of the buyer at its site usually called as the stores. It is a continuous replenishment program in which the buyer shares the necessary information about the product he wants to buy, with the supplier. After getting the information the supplier take the responsibility to manage the required inventory level of that product at customer site. In spite of proven advantages of this inventory management system, its implementation is not easy because of certain barriers. This research paper is concentrated on the identification of the barriers to the VMI adoption and its effective implementation. These barriers are the negative things or the situations which acts as challenges to the implementation of the VMI.

Keywords: Vendor Managed Inventory, Implementation, Barriers, Identification.

1. Introduction

In the modern business world, the competition among the organisations is increasing day by day. To survive in this competition the organisation are adopting new technology and business practices to increase the reputation of their organisation in the market. They are adopting the new techniques to increase the performance of their organisation. Vendor Managed Inventory (VMI) is one among these techniques.

Vendor Managed Inventory (VMI) was firstly adopted by Walmart and Procter & Gambler. It was popularized in the late 1980s' (Yan Dong & Martin Dresner, 2014). Some other companies like Whitbread Beer Company, Johnson & Johnson, Kodak Canada Inc. and ACE hardware adopt this strategy to increase the supply chain efficiency and to enhance the customer and supplier relationships (Angulo et al, 2004). Vendor managed inventory (VMI) is a collaborative SCM technique in which the supplier takes the full responsibility of managing of the inventory of the buyer at its site usually called as the stores. This business practice involves the sharing of the inventory information and the demand by the retailer with the supplier. On the basis of these shared information the manufacturer (supplier) takes the decision about the order delivery and order quantity and the routing of the inventory. The fig. 1 shows the relationship between the various partners in VMI system.

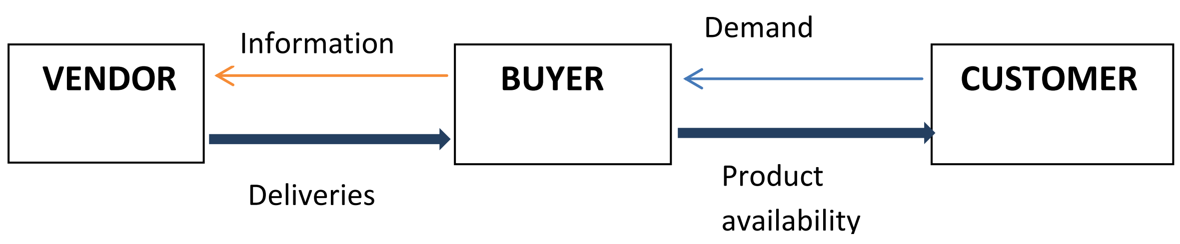

Fig. 1 Basic Model of VMI System

Vendor managed inventory is an inventory management strategy, in which the supplier manages the inventory of their customer. On the basis of the information shared and agreed strategy, supplier is responsible for managing the certain inventory levels of the product in the stores of their customer. Oil companies used the VMI strategy to manage the gasoline inventories at their service stations. Supermarkets and the retail markets also used this as a tool to increase their performances. Some of the benefits of the vendor managed inventory are such as:

- Inventory cost reduction for the retailer.
- Total cost reduced for the vendor due to the better utilization of the production and the transportation.
- Minimize the distribution cost in the long run.
- Inventory routing problems (IRP) seeks to be exact.
- Reduction in the lead time.
- A better control over the inventory level and the inventory stock out are minimized.
- Improvement of the information system capability.
- Better control over the “Bullwhip effect”.
  Bullwhip effect is defined as the distortion of the demand of the customer while it moves through the information system of the organization. It refers to the scenario where the orders to the supplier tend to have larger fluctuations than sales to the buyer.

Vendor managed inventory depends on the information sharing between the trading partners (between the supplier and the retailer). Information sharing between the vendor and the customer may include the following information:

- Level of the inventory and inventory position
- Forecasting data

- Sales data
- Status of the order
- Delivery schedule and production schedule
- Storing capacity

The purpose of this paper is to identify the factors which prove themselves as barrier in the effective implementation of vendor managed inventory (VMI) in the industries. The rest of this paper is structured as: The next section provides the supporting literature review to the identification of barriers. Section 3 lists the barriers, followed by discussion & conclusion in section 4.

2. Literature Review

Information sharing arises many problems like- different incentives and performance measures in the vendor organisation and the buyers' organisation (Angulo et al., 2004). This problem is also faced by vendor managed inventory practice in the industries. Technology investment and the expenses are one problem that arises in the information sharing (Angulo et al., 2004). Information sharing has a main role in VMI implementation and is can be done by the mean of Electronic Data Interchange (EDI) using traditional methods or internet(Yan Dong , Kefeng & Martin Dresner,2007).Information accuracy is one challenge that is faced by the vendors in the vendor managed inventory. Information delay is one problem which comes in the front of the effective implementation of any scalar chain technique (Angulo, 2004). The adoption of any new technology is not so easy for an organisation. Information delay is wait time to the use of the information in vendors' internal supply chain function. This may be occurs due to the inadequate communication structure between vendor and the buyer. Vendor may directly control the information delay.

Inventory management plays a key role in the SCM. It directly influences the customer satisfaction by making product available at the right time at right place (Yan Dong & Martin Dresner, 2014). Firms try to maintain a balance between carrying the too little inventory and the carrying of the too much level of the inventory. Thus by managing the inventories, firms try to maintain the balance cost of carrying larger inventory against resulting sales and profit (Yan Dong et. al, 2014**).** SCM has become a new weapon in the hand of modern industries to differentiate themselves form the others in the todays' market competition through the faster response to their customer and through increasing their efficiency. VMI always focused to a higher buyers' profit and profit of supplier varies from time to time. VMI leads to reduce the total cost of the supply chain systems. In long run program, it increases the suppliers' profit than that in short run (Yan Dong& Kefeng Xu, 2002). Popularity of the VMI has claimed that it will be the future wave of the distribution channel and decision support system (DSS) (Achabal et. al, 2000). A typical VMI program involves a supplier which takes care about the inventory levels at its customer site /warehouse through the use of electric data interchange about the product replenishment.

3. Key barriers to implementation of VMI

Based on the literature review and discussions with the experts from industry and academia, the following key barriers are identified to the effective implementation of VMI:

Sr. No.	Barriers	Ref. Source
1.	Quality of Information	Angulo, Nachtmann & A. Waller (2004)
2.	Flow of Inventory	Vincent Ochieng& Daniel Wanjihia (2014)
3.	Transport	Discussion with expert from industry
4.	Less responsibility bearing capacity	Discussion with expert from academia
5.	Information accuracy	Angulo, Nachtmann & A. Waller (2004)
6.	Information delay	Discussion with expert from academia
7.	More frequent deliveries	Achabal, Shelby& Kalyanam (2000)
8.	Lack of mutual trust	Vincent Ochieng& Daniel Wanjihia (2014)
9.	Good supplier absence	Discussion with expert from academia
10.	Goal sharing	Yan Dong& Kefeng (2002)
11.	Technology investment & expenses	Borade& Satish V. Bansod(2010)
12.	Employee willingness	Discussion with Top level management
13.	Operation variability	Yan Dong et al. (2006)

The brief description to the key barriers is discussed in following:

- **Quality of information:** Lack of quality in shared information is he bottle neck to the effective and successful implementation of VMI. If the information sharedZ with the vendor, have the low quality then how it can be possible that the vendor will take a good decision about the delivery schedule. But it is very necessary in the management of the inventory. Hence the low quality of the information is the barrier to the successful implementation of VMI.
- **Flow of inventory:** The flow of inventory means the transferring the goods through the supply chain. If the inventory flow is not smooth and streamlined then VMI implementation faces the challenges and it will prove as a barrier in the effective

implementation of VMI. If the inventory flow is not proper in supply chain then the supplier will not meet the requirements of the buyer.

- **Transport:** Availability of the transport is very necessary in the adoption of VMI. If the proper infrastructure is not available then delivery schedules will not be proper and the stock out may be occurred at customer site.
- **Less responsibility bearing capacity**: As we know that the supplier has the full responsibility for the decisions about the inventory of the buyer based on the information shared. If the supplier has the low capacity to bear the responsibility or he does not want to take the extra burden about the managing of inventory of their customer. Then is will play a negative role in adoption of the VMI.
- **Information accuracy:** Inaccuracies present in the shared information, is a negative factor for the successful implementation of the VMI. VMI team has a great challenge to ensure that the information provided by the customer is accurate. This may be caused due to the poor inventory integrity and inventory planning. Customer/buyer has the direct control over the accuracy.
- **Information delay:** Information delay is the wait time to use of the shared information in vendors' integral supply chain function. This may be caused due to the inadequate communication structure between the vendor and buyer. This may be due to the delay in transmission and system updating. Vendor may directly control over the information delay.
- **More frequent deliveries:** More frequent deliveries also becomes problem for the supplier for the implementation of VMI. If the customer wants to keep the product inventory level very low in his store then supplier have to give the more frequent deliveries in the small quantity and he requires the more delivery schedules to the customer. This can increase the cost for the supplier and he has fear to adopt the VMI.
- **Lack of Mutual trust and coordination between the supplier and buyer:** If there is lack of mutual trust and the coordination between the supplier and the buyer then it is very difficult to implement the VMI among such partners.
- **Good supplier absence:** If the no. of the supplier present nearby is less then implementation of the VMI become very difficult for the organisation. From the large distance supplier will be not able to control the inventory effectively.
- **Goal sharing:** If the goal of the both organisation is not shared with each other then they can't work as a team to achieve the objectives of the vendor managed inventory. They can't work effectively to achieve the higher profit margin.
- **Technology investment and expenses:** Sometimes the organisation is not able to bear the expenses for the new technology. It may be due the lack of the capital or may be due to the lack of interest.
- **Employee willingness:** If the employees of the organisation don't want to adopt the new strategy of inventory control. They don't want to give the ownership of the inventory to the supplier. They don't want to change their way of working. This creates a big problem for an organisation to adopt the VMI.

- **Operation variability:** If the high operational changes occur in the buyer's operational environment the supplier will hesitate to implement the VMI program because this may leads to the operational uncertainty in supplier internal supply chain.

4. Conclusion

VMI is an effective business practice if successfully implemented, for achieving the better performance of the organisation. The barriers should be minimized to take the benefits of the VMI. VMI is a collaborative strategy so the mutual relationship between the supplier and the buyer greatly affect the working of the vendor managed inventory system. Trust must be strong among the partners of VMI. Barriers must be taken care of for the effective working of the vendor managed inventory then this system can be prove to be a tool to compete in modern business markets.

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