

Vendor managed inventory



**ASSIGN
BUSTER**

Vendor Managed Inventory (VMI) is a planning and management system in which vendor is fully responsible for the replenishment of inventory based on timely point of sale information to the buyers (retailer) place. This concept helps increase the customer responsiveness by reducing the supply and demand gap thus giving the satisfaction to end customer by increasing availability of the desired product when customer wants it.

Supply chain partners must share their vision of demand, requirement and constraint to set the common objectives (Guillaume et al; 2008). Quality of buyer supplier trust and relationship, quality of ICT system and intensity of information sharing has positive impact on VMI implementation (Marloes et al; 2008). Information technology combined with VMI offers a clear view of inventory holding location giving supplier better information for replenishment planning (Malla et al; 2007). Before implementation of VMI, analysis of the level of uncertainty of customer demand is needed as high uncertainty in demand negatively influences the performance attained through VMI (Kazim Sari 2007). Upstream data transferred to supplier's i. e. current inventory level and accurate sales forecast is the most important factor for the successful implementation of VMI (Astrid Vigtil, 2007). Benefits of VMI implementation depend on circumstantial factors surrounding the implementation and dyadic intentions (Jongkyung et al; 2009). Implementing VMI is not solo effort it can be beneficial if company wide effort is involved (George kuk, 2004). VMI supply chain has improved dynamic response which causes reduction in manufacturing on cost and transportation demand (S. M. Disney et al; 2003). VMI gives benefits to retailer as manufacturer stock

more to reduce risk of stock out which in turn reduces retailer holding and shortage cost and increases its profit (Brendra k et al; 2004).

No previous studies have ever offered to measure the implementation of VMI in FMCG sector of Pakistan. This paper is an effort to resolve that gap existed in previous literature. Implementation of VMI in FMCG sector of Pakistan is a major challenge for the FMCG companies and the retailers both. Maintaining of high quality error-free service in the dynamic and uncertain environment of Pakistan with lack of ICT infrastructure (information and communication technology) is a huge pressure. Due to heterogeneous customer base complete VMI implementation in this scenario is not possible so FMCG companies need to carry out its operation in both the way i. e. for the both VMI and non VMI customers. For flexible and fast communication between FMCG producers and retail chains proper ICT infrastructure is mandatory. So companies need to invest web-based information transfer systems like EDI (electronic data interchange). Adoption of VMI is not an easy task for companies as it requires heavy investment and commitment of retailers that how much they are willing to share POS information. Before full and final implementation of VMI companies must need to find out the necessary factors as the clear and fault free implementation will have a great influence on future business performance outcomes.

Objective of this paper is to find out the suppliers/manufacture perceived objectives, drivers, obstacles, performance outcomes for implementing Vendor Managed Inventory (VMI) in FMCG sector of Pakistan.

Organizational objectives => Lead-time reduction, improvement in forecasting accuracy, improvement in customer service, improvement in profit margin, improvement in rate of return, increase sales, control of bullwhip effect.

Strategic drivers => Competition, shorter product life cycle, global supply chain, corporate restructuring.

Obstacles => Ineffective organizational structure, lack of suitable IT infrastructure, improper decision-support tool, lack of trust and mutual understanding between supply chain partners, internal/external integration.

Performance outcomes => Effective production planning, effective forecasting, effective replenishment, effective inventory control and management, efficient logistics and distribution management.

This paper is organized in sections. Section 1 offers the introduction; section 2 presents the literature review on previous research practices on VMI; section 3 is comprised of methodology; section 4 consists of data analysis and section 5 draws the conclusion and policy making regarding the findings.

LITERATURE REVIEW

Jan Holmstrom (1998) studied a single case study to analyze the benefits of implementation of SAP R/3 in VMI between vendor and its wholesaler. It is found that administrative cost for vendor product is reduced with reduced delivery cost which in turn gives benefit to end customer through low prices. It is also found that demand variability, inventory level and order per delivery lead time also greatly reduces which give competitive advantage to

both vendor and whole seller. It is suggested that full benefit can be attained if vendor extends its number of customers.

Sila cetinkaya et al (2000) studied the inventory replenishment and shipment decision in VMI through analytical model. Manufacturer with random demand patterns and retailers dispersed in different geographical areas are taken into account. Manufacturer has the freedom of holding small sized orders and dispatches it until the consolidation volume gathers. It is found that inventory costs are reduced if the inventory and shipments decision optimally coordinated.

Susan cohen kulp (2002) studied the impact of internal information (sales and inventory) accuracy and its reliability on supply chain profits in vendor managed inventory. Theoretical models of two system traditional and VMI are analyzed which indicates that the accurate information helps manufacturer to forecast the consumer demand accurately which increases manufacturer and retailer over all profits. Hypothesis was tested through survey of 53 divisions of manufacturers in the F&CPG industry. Result shows that use of VMI increases with the detail and reliability of retailer's internal information and wholesale prices are lowered with the extent of VMI use. It is suggested that VMI will lead to higher supply chain profits if retailer and manufacturer both are willing to share accurate information and use this information in taking inventory management decisions.

Terrance et al (2003) identified the distinction between supplier managed inventory (SMI) vendor managed inventory (VMI) through theoretical framework. Economic value analysis (EVA) is used to determine the non

financial benefits and burdens of VMI and SMI implementation and effect of VMI and SMI on enhancement of share holder value. it is suggested that EVA analysis will help manager to identify the opportunities to increase the share holder value across both firms.

S. M. Disney et al (2003) studied the effect of VMI strategies on transport operation and order batching activities. Three different scenarios traditional, internal consolidation and VMI are modeled through system dynamics methodology and tested through simulation. It was found that VMI supply chain has improved dynamic response which causes reduction in manufacturing on cost and transportation demand. Transportation cost saving in VMI is possible for long term and short term and this saving is not effected by escapable and inescapable cost. This paper may help in developing the policy regarding VMI and supply chain (distribution, production scheduling etc.).

S. M. Disney et al (2003) investigated the comparison between VMI and traditional seriously linked supply chain in producing bullwhip effect. Different equations are developed and simulation model testing was applied. Four variables as a source of bullwhip; price variations, rationing and gaming, demand signal processing, and order batching, were tested in traditional and VMI supply chain scenarios. It was found that through VMI supply chain all the variables can be avoided through well designed system. Demand signal processing and order batching can only be eliminated through inventory holding in traditional supply chain. For future it is suggested that VMI would be of greater benefit if the supplier uses inventory

and sales information in making production and inventory management decision process.

Johanna et al (2003) studied the greater demand visibility impacts on manufacturer production and inventory management and how it modifies the operational efficiency. Discrete event simulation is chosen as approach to study manufacturer of FMCG serving three distributors which serve several retail outlets. From result it is shown that greater demand visibility has positive impact on operational efficiency which greatly depends on product with shorter production planning cycle and low replenishment frequency. This research was limited to products with stable demand so it is suggested to do more research on products with variable demand.

Jonah tyan and hui-ming wee (2003) studied the retailer and manufacturer partnership in the implementation of vendor managed inventory (VMI) system in the Taiwanese grocery industry. Case study analysis between P&G a manufacturer of FMCG and Wellcome supermarket chains stores was selected. It was found that through VMI supply chain inventory level of retailer declined and service level of manufacturer distribution center improved. It is suggested that VMI would be effective to shorten the process of replenishment and give competitiveness and opportunity to grow to both supply chain partners. Integration of online e grocery in VMI business model will be increasing its benefits.

George kuk (2004) investigated the determinants and outcomes of VMI in electronic industry through survey of 94 employees of 25 companies who fully implemented VMI. Four hypotheses were created having 3 independent

variables: organization size, number of employees involved in VMI and type of logistic integration, 3 dependent variables: information quality enhancement, service quality improvement and cost reduction. Through ANOVA testing it is analyzed that large level of employee involvement, small size of organization and integrated logistics achieves more benefits of VMI. It is suggested that implementing VMI is not solo effort it can be beneficial if company wide effort is involved.

Brendra k et al (2004) investigated how the substitution brand competition gives benefit to retailer in VMI. Two level supply chain is taking having one retailer and 2 manufacturer of competing substitutable brand and through analysis of mathematical model it is found that VMI gives benefits to retailer as compare to non VMI as due to increase competition manufacturer stock more to reduce risk of stock out which in turn reduces retailer holding and shortage cost and increases its profit. For future research it is suggested to include inter retailer intra brand substitution competition.

Pamela danese (2006) identified the way to use extended vendor managed inventory (VMI) both upstream and downstream amongst various supply chain partners to organize the information and material flows. Case study analysis approach is used taking supply chain network of leading pharmaceutical company GlaxoSmithKline (GSK). Through collected data it is shown that Information flows among the supply network members, information systems and performance monitoring system are some of the requisite of extended VMI. In GSK Information flow is achieved by EDI system which enhanced the service level, production capacity, and the inventory management. Central information system helps in production planning and <https://assignbuster.com/vendor-managed-inventory/>

order cycle processes in up stream and downstream supply network.

Performance monitoring system motivates and improves the performance and allows supply chain members to overcome their reluctances to share information. It is suggested that collaborative planning, forecasting and replenishment (CPFR) should be taken into consideration for future research on extended VMI.

Yuliang Yao et al (2007) explored how supply chain parameters affect the cost saving in VMI and sharing of this benefit between buyer and supplier. Two level supply chain having single supplier and single buyer modeled. Through analysis of model it is found that inventory cost reduction greatly depends on ratio of order cost of supplier to buyer and ratio of carrying cost of supplier to buyer. Buyer takes all the benefits of inventory reduction whereas supplier inventory level may increase which may lead to high logistic cost to supplier side. So it's suggested to have side payment arrangement between buyer and supplier to get VMI worked in long run.

Malla et al (2007) investigated the impact of VMI model on organizations inventory associated cost. Case study of market leader of tyre manufacturer has been taken which has the largest distribution network across India, USA and UK. Through simulation of model it is found that integration of information technology provides a clear picture of inventory holding locations which helps supplier in planning and replenishment of inventory across supply chain, which reduces bullwhip effect, safety stock and W. I. P and improves customer service. Some of the limitations of this model are high initial investment cost and lack of integration of systems.

Astrid Vigtil (2007) investigated the required information exchange in VMI with the support of five buyer-supplier pair in Norwegian geographic. Semi-structured detailed interviews were conducted with the representative of different companies having logistic managerial position or similar. It was concluded through interviews that flow of upstream data is more critical rather than down-stream data. Visibility of current inventory status and sales forecast are most important factor for suppliers and there is different kind of information needed depends upon operational mode of buyer in make to stock and make to order. In future it is implicated that for the higher efficiency of VMI electronic integration and automatic data transfer should be priorities as it supports supplier in planning of replenishment.

Kim et al (2006) explored the major factors for success of vendor managed inventory (VMI) in oligopolistic New Zealand food industries. A thorough investigation of case studies and literature review concerning from other industries and countries revealed seven industry-level factors unified into a step-wise framework essential for successful VMI and strategic supply chain relationships. These factors are: identifying industry structure; evaluate rivalry within industry, determination of buyer's power, industry profitability, improved long-term relationships, investment in supply chain technology and adoption of supply chain best practices. It is suggested that these framework will help to supply chain partners who wish to increase profitability through VMI but these conclusions are needed to be revised before applying to other less concentrated industries.

. Kazim Sari (2007) examined the benefits of VMI in achieving the increased performance through different levels of outside supply capacity, demand

<https://assignbuster.com/vendor-managed-inventory/>

uncertainty, and lead time. Data were collected through simulation model; Crystal Ball, an MS Excel add-in. After retrieving data statistical test MANOVA is applied and it was concluded that high uncertainty in customer's demand has negative influence on the VMI performance. There is also a direct relationship between the manufacturing capacity of outside supplier and performance of VMI. As long as the ratio between retailer and supplier lead times remains constant the performance level of VMI remain unchanged. For future implication it is recommended that before taking any decision relating VMI implementation it is necessary to conduct cost-benefit analysis if upstream information sharing is poor or customer demand is highly uncertain.

Mikael Stahl Elvander et al (2007) proposed the structure for the numerous setups that could be arranged while establishing a VMI system. Semi-structured interviews were conducted from 15 company of Switzerland. Six framework were prepared and tested against the focus group consisted of representative of nine different companies including suppliers and customers who already had implemented VMI, in workshop. Through workshop it was deduce that there are a number of different ways in which VMI system can be configured, that will limit a supplier's likelihood to employ the information made accessible through VMI. It is suggested that the challenges related to operation and management may differ in different VMI system configuration. This should be taken into consideration in order to find best optimal VMI system configuration.

Atul B. Borade & Satish V. Bansod (2008) studied motives, drivers, obstacles and benefits of VMI practices in e-environment. Key variables were

<https://assignbuster.com/vendor-managed-inventory/>

compared between small and large Indian industry questionnaires were filled by 112 large companies and 86 small companies and hypothesis was tested through independent sample t-test. It was resulted that motives, drivers, obstacles and benefits are considerably different for small and large enterprises while adopting VMI. It was found that the major objective for SMEs is profit improvement and for large companies is improved customer service. Driver for SMEs is competition and for large companies it is global supply chain. Obstacle in implementing VMI for SMEs is lack of IT infrastructure and for large companies is lack of trust between supply chain partners. Objective for SMEs is profit improvement and for large companies is improved customer service. Benefits gain for SMEs is better forecasting and for large companies is improved logistic and distribution management. It is suggested that IT can gives companies advantages to maximize end consumer value and reduce operating expense as it gives the real time information of marketing conditions.

Guillaume Marques et al (2008) examined the integrated view of the VMI. Outside the short term pull system inventory replenishment, partners have to share their demand forecast, requirements and their limitations to fix middle/long term common objectives. In order to conduct the study 28 articles were review and it was concluded that there was no doubt about the real application of VMI in industry. What clearly is VMI and how can it be correctly implement in supply chain is not clear. It cannot be justify whether VMI is a model, a process, a strategy, a relationship, a link.

Juhwen et al (2008) studied the supplier performance enhancement in term of total relevant cost/unit. Three different models were proposed for single

supplier with heterogeneous retailers, one is uncooperative model with independent inventory management system, second model was VMI model in which supplier is responsible for inventory replenishment order cost and certain degree of holding cost and third model was VMI/CRE model, in which VMI is combined with CRE (common replenishment epochs) strategy. Data was analyzed through Algorithm and numerical experimental design and it was concluded that VMI and VMI/CRE results are significant for supplier performance as compared with uncooperative model. For the future implication it is suggested that the supplier are required to provide incentives such as price discounts to compensate the losses which are bear by retailers so that aligning ordering schedules with CRE.

Marloes J. T. Claassen et al (2008) studied the perspective of buyer in term of benefit gained through VMI. Research model was formulated having four key variables; quality of ICT system, quality of information, intensity of information sharing and relationship quality. Sample of 64 Dutch buyer responded through email and model was tested through Partial Least Square (PLS) technique. It was resulted that the quality of the buyer-supplier relation, quality of IT-system and intensity of service level has an impact on buyer-perceived VMI benefits and it is not impacted by actual quality of the information shared. Furthermore three outcomes of VMI performance are higher customer service level, efficient control over supply chain and cost reduction to some extent. It is proposed that the primary benefit of VMI implementation is not cost reduction; it is high customer service level and supply chain control which can be obtained through better relationship with supplier and efficient IT infrastructure.

Peter Southard and Scott Swensethy (2008) investigated the cost advantage gain from technology enabled vendor managed inventory. Actual data was taken from two Agricultural cooperative's farm fuel delivery systems of Nebraska due to its variable demand patterns and competitive environment. Inventory costs, delivery costs and stock outs were measured as performance outcome. It was resulted that technology enabled vendor managed inventory reduced costs and improved customer service levels. It is suggested that use of technology enabled vendor managed inventory can deals with many logistics problems.

Jouni Kauremaa et al (2009) found out the types of benefits of VMI program and its sharing at the five levels (supplier vs. buyer). An exploratory multiple case study research methodology was used. Quantitative and qualitative data were collected through semi-structured interview from five operational levels. It is concluded that for buyer and supplier, VMI can lead to strategic and operational benefit both which is depending on pair intentions and contextual factors surrounding the given application. It is suggested that with the help of contextual factors VMI system can be designed with more accurate and perfect implementation targets.

Kari Tanskanen et al (2009) investigated the challenges faced by the construction industry at corporate level to manage logistics and to evaluate VMI as a solution of logistics for small items. Three residential house construction companies were elected located in Helsinki, quantitative and qualitative data were collected through web cameras' observations and interviews. Percentage analysis was applied on quantitative data and on the bases of outcomes it was concluded that VMI is a suitable solution for small

item logistics for the construction companies. For future it is implicated to work on other industries located in different geographical location.

Jongkyung Park et al (2009) investigated a framework for integrative SRM (supplier relationship management) system by exploring broad approaches to overall SRM functions. Framework includes five stages: Setting up of purchasing strategies, Selection of a supplier, Cooperation, supplier valuation and enhancement and endowment of continuous improvement. For this past studies related to SRM were examined and a framework for an integrative SRM system was recommended through which a case study was performed constructed on the systematic hierarchy procedure with a field survey. Results shows that the benefits of SRM can be obtained through the suggested framework and it is applicable to real fields through application case. It is recommended that this framework will help purchasing manager to analyze strategic features of SRM before and during the SRM system operation.

Francesco Zammori et al (2009) identified the standard configuration of a vendor managed inventory (VMI) contract which will be a building block for the initial explanation of the agreement. For this study an Italian plant was selected as an ideal candidate because of complexity of its manufacturing process and the data in the form of the information flow and the technical specifics which are critical before any operational setup are recognized and discussed and formed as parameters for the explanation of the elementary frame of the agreement. It is revealed that VMI agreement should be organized into segments by having generic and legal sides and official aspects included in the annexes. This will increase the flexibility of

agreement As VMI relationship progresses with the time. it is proposed that this flexible structure of VMI agreement can be easily implemented by several industrial fields.

Atul et al (2010) studied the difference in the practices of VMI in small and large Indian industry. Key variables were objective, drivers, obstacles and impact of VMI in large and small Indian industries, questionnaires were filled by 98 large companies and 63 small companies and hypothesis was tested through independent sample t-test. It was resulted that objectives, strategic drivers, obstacles and affected operational areas are considerably different for small and large enterprises while adopting VMI. It was also found that the major objectives for adopting VMI are customer service and profit improvement. For future it is recommended that the research should be perform on more variables and for other geographical (culture) areas.

METHODOLOGY

Aim of this paper is to find out the suppliers/manufacture perceived objectives, drivers, obstacles, performance outcomes for implementing Vendor Managed Inventory (VMI) in FMCG sector of Pakistan. Data were collected through primary source and research approach is to be mixed of qualitative and quantitative as the aim of this paper is to explore the supplier perception and opinion about implementation of VMI in FMCG companies operating in Pakistan and this opinion is converted into quantitative terms through five point likert scales. Existing literature was used to design the structured survey questionnaire. The questionnaire was designed on a five-point interval scale.