Chapter 17

Value Creation in Electronic Supply Chains by Adoption of a Vendor Managed Inventory System

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ABSTRACT

Many strategies have been developed to manage supply chain operations effectively. Vendor Managed Inventory (VMI) system is one of the prevalent strategic tools of the supply side logistics based on the electronic data exchange and business process automation among the suppliers and customers to enhance the competitive advantage. VMI is widely used in different industries including automotive sector. The VMI concept is a continuous replenishment program where suppliers are given access to demand and inventory level of customers and they are fully responsible for managing and replenishing the customer’s stock. VMI’s extension on customer satisfaction cannot be perceived sufficiently by decision-makers who are responsible to develop and invest in the customer-supplier relationship. This paper presents a path model using the method of Partial Least Squares (PLS) regression to give insight to decision-makers to understand effect of the VMI adoption on customer satisfaction. This paper investigates both determinants of relative factors of successful VMI adoption and the relationship in the supply chain with an empirical automotive industry case. The results show that the collaboration and coordination between customer and supplier and infrastructure of the information-sharing are the important dimensions to add value to the supply chain and to enhance customer satisfaction.

INTRODUCTION

Vendor Managed Inventory (VMI) strategy is one of collaborative applications, in which the supplier manages the retailer’s inventory, allows suppliers and retailers to significantly improve supply chain performance. This concept has been around since the late 1980s in the retail industry then spread to other industries including automotive (Wittfeld et al., 2008), but now gradually progressing towards strategic-partnership based forms which is a way to achieve efficiencies across partners in the supply chain. The basic drivers of VMI are to minimize supply chain complexity, to
reduce inventory cost for supplier and buyer and to improve service level while sharing information among trading partners (Yao et al., 2007; Waller et al., 1999). Moreover, Internet and new Information and Communication Technologies (ICT) are considered the most important enabler for obtaining and executing VMI relation. VMI has been described as an alternative for the traditional order-based replenishment tool in which the vendors (supplier) has taken the responsibility for making decisions as to the timing and amounts of inventory replenishment while using customer’s inventory data (VendorManagedInventory.com, 2009; Southard & Swenseth, 2008). There are different sensitive and timely data that should be shared and agreed in a VMI partnership include inventory levels, sales data and forecasts, order status, promotional activities, production schedules and performance metrics (Angula et al., 2004). All sharing information enables the supplier to make a decision to replenish inventory at the right time and the proper cost level.

The concept of Supply Chain Management (SCM) has been largely fragmented by the trend of outsourcing. Even if outsourcing is obligated strongly for information-sharing, collaboration and transparency between trading partners, especially it can drive huge inventory write-offs in the short product life cycles and cause longer lead times (Kilgore et al., 2002). VMI may take the advantage of benefits to create a demand driven supply chain with easy applications while counterbalancing the drawbacks of outsourcing.

The lack of mutual trust between trading partners, expensive technology investment, personnel training and the uncertainty are difficult handicaps to understand the potential benefits of VMI (Jung et al., 2004; Kaipia et al., 2002). In such an environment, the success of VMI very much depends on how customers perceive and expect this adoption to be adding value to their enterprise.

In this paper, the impact of VMI adoption on end-customer satisfaction is analyzed by developing a path model with the method of Partial Least Squares (PLS) in which the relationship is presented between parameters in ICT infrastructure, customer orientation, cost, confidence, service quality, collaboration and coordination. Parameters for proposed research model were selected by using literature review and interviews. This work is based on an empirical study of both suppliers and their customers from European automotive industry. The rest of the paper is organized as follows: In the next section, a literature review is given. Then the model is described and in the following sections, its assumptions and the result of the experiment respectively are discussed, and the finally in the last section, the result summarizes implications of the study.

**REVIEW OF LITERATURE**

VMI is not a new collaborative strategy which is reviewed in the literature for both the customer and the supplier side and well documented in terms of its benefits and opportunities for supply chain performance improvements with analytical experiments, simulations and practical case studies in different industries (Southard & Swenseth, 2008; Wittfeld et al., 2008; Simchi-Levi et al., 2008; Yao et al., 2007; Van der Vlist et al., 2007, Dong et al., 2007, De Toni & Zamolo, 2005; Angula et al., 2004; Jung et al., 2004; Yonghui & Raiesh, 2004; Kaipia & Tanskanen, 2003; Disney & Towill, 2003; Zhao et al., 2002; Kaipia et al., 2002; Yu et al., 2001; Achabal et al., 2000; Waller et al., 1999). The majority of research conducted in the benefit of using VMI where mostly indicated on electronic information sharing, transparency and demand visibility in the supply chain. Moreover, it is also indicated that by implementing ICT supported VMI concepts, companies can achieve benefits in terms of reduced inventory levels, improved service levels, increased flexibility and reduced lead-times. Furthermore, the use of advanced information systems increases the level of data integration, level of data utilization and
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