Warehouse Management System Implementation in a Brazilian Distribution Center

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ABSTRACT

Information technology, when used appropriately, becomes an important factor for companies searching for logistics excellence. Among the information systems used to support logistics within the supply chain, Warehouse Management System (WMS) has been implemented by many companies that have complex warehousing operations. This article’s goal is to present a WMS implementation process project in a Distribution Center (DC) of a multinational corporation’s subsidiary located in Brazil that deals with home-care products within a high number of varieties. The introduction of the information system itself is not included in this article. Therefore, its current logistics operation is mapped and the main expected benefits with the WMS are analyzed. The article offers the main lessons learned with this new information system project.

Keywords: Information Technology, Logistics, Product Variety, Supply Chain Management, WMS

INTRODUCTION

Supply chains have traditionally been fragmented, resulting in a slow and sequential downstream flow of materials and similar movement of data back upstream. The disconnected flow of inventory and information has led to a lack of real-time information and a build-up of excess inventory to buffer uncertainties in supply and demand. Increased inventory carrying costs, longer order lead times, and difficulty in responding proactively to real-time changes have decreased profits and weakened customer goodwill (Mason et al., 2003). Of late, companies have been implementing new operations strategies and technologies in response to the growing challenges and demands of the twenty-first century. They need to be more responsive to customers’ unique and rapidly changing needs...
and are now seriously exploring the potential of the concept of Supply Chain Management (SCM) to improve their revenue growth (Gunasekaran et al., 2008).

Simchi-Levi et al. (2000) define SCM as a set of approaches utilized to efficiently integrate suppliers, manufactures, warehouses, and stores, so that merchandise is produced and distributed at the right quantities to the right locations at the right time, in order to minimize system-wide costs while satisfying service level requirements. The Global Supply Chain Forum defines SCM as the integration of key business processes from end user through original suppliers that provide products, services and information that add value for customers and other stakeholders (Lambert & Cooper, 2000).

The growing interest in SCM is evident in the academic literature and many researchers assert that integration is essential to SCM and that information integration in supply chains is beneficial to operations performance (Harland et al., 2007). This supply chain integration is profoundly dependent upon advanced information technology (Gunasekaran & Ngai, 2004; Fiala, 2005; Jiménez & Muñoz, 2006; Seggie et al., 2006; Reyes et al., 2009; Aas & Wallace, 2010). Sherer (2010) offers a framework for understanding enterprise applications that support the supply chain, organizing these applications, defining acronyms, and describing the various types of systems that make up an information infrastructure for SCM. SCM Systems are relied on logistics activities to manage warehouses, transportation, trade logistics and various other issues concerning the coordinated movement of products and services from suppliers to customers along the supply chain (Wang et al., 2009). Examples of such systems are Enterprise Resource Planning (ERP) and Warehouse Management System (WMS) (Kahl, 1999; Verwijmeren, 2004; Taylor, 2004). ERP systems are multifunctional in scope, tracking a range of activities such as financial results, procurement, sales, manufacturing, and human resources; are integrated in nature, meaning that when data are entered into one of the functions, information in all related functions is also changed immediately; and are modular in structure and usable in any combination of modules (Mabert et al., 2001). The capacity of ERP systems to integrate organizational business processes and share information across functional areas through a common database has prompted commentators to declare that they are a prerequisite for success in the twenty-first century (Davenport, 2000).

WMS seeks to expedite the information flow inside a warehousing facility, improving functionality and promoting process optimization. WMS should be integrated with ERP and then contribute to the integration of the automation of the company’s business processes (Guarnieri et al., 2006). Through the increased global visibility provided by an integrated supply chain management system for warehousing and transportation, suppliers and warehouses can achieve improved accuracy, reliability, and customer service, as well as reduced cost (Mason et al., 2003). Within this context, the goal of this article is to present the implementation process of a WMS in a Distribution Center (DC) in Brazil. The operation of this DC was considered the supply chain bottleneck of a Brazilian company that deals with home care products. This company has a high product variety and is part of a multinational enterprise, in this paper called Alpha Company. The high product variety has brought an increase in the volume of information exchanged between supply chain members, what, therefore, due to such increased information-processing load, implies for information technology and systems to tackle this problem (Forza & Salvador, 2002). At the moment, Alpha Company has implemented ERP and the next step towards integrating its operation is the WMS implementation. The scope of this article is delimited to the WMS implementation project study and does not cover the introduction of the system itself. This research can be considered exploratory and descriptive because it aims to provide more familiarity with this problem so as to make it explicit and descriptive because it aims to describe the characteristics of this specific phenomenon. It is also participative research because one...
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