Chapter 14
Investigating the Impact of ERPs on Job Shop Manufacturing Logistics Performance

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ABSTRACT

Job shop manufacturing processes have been reluctant to adopt enterprise resource planning systems (ERPs) for enhancing logistics performance. The cost of adopting and deploying ERPs is a high-entry barrier. Prior research has claimed that performance can be enhanced by improving logistics planning using technology such as ERPs. Most past research has examined the effect of ERPs on logistics performance in production processes other than job shops, which seems to suggest that in small-scale production processes the cost of ERPs makes it irrelevant. Are manufacturing job shop production processes the exception that proves the rule? Using both a t-test two sample for means and a Kolmogorov-Simonov (KS) test, this study tested whether or not ERPs can improve supply chain logistics performance in job shop manufacturing processes. The results might lead to a positive social change in the adoption or non-adoption of ERPs in job shop manufacturing.

DOI: 10.4018/978-1-5225-8157-4.ch014
INTRODUCTION

In today’s highly competitive environment, companies that have not mastered the logistics dimension of the operations and strategic management will disappear. This statement is proven by the fact that 230 of the 500 leading companies in the world have disappeared in the past ten years; therefore, when it comes to the need to adapt over the time, every organization is concerned and none is invincible; companies that do not control the logistic managerial dimension of their management will disappear.

High-stake operations require high-performing logistics systems to set them up for success. ERPs can be a powerful tool for enhancing performance (Sun, Ni, & Lam, 2015). However, supply chain management (SCM) tools are the last mover among various industries (Kim & Kwon, 2015). Kathleen et al. (2005) found that the cost of adopting and deploying enterprise resource planning systems (ERPs) is a high-entry barrier and, to some extent, a leading reason for whether or not to adopt ERPs in job shops. The average total cost of an ERP ownership is $15 million, the lowest $400,000, and the highest $300 million (Meta Group, 2011; Stevenson, 2018). In addition, several hidden costs exist such as training, integration, testing, data conversion, data analysis, consultant fees, and post-ERP depression (Deloitte Consulting, 2010). The slam-dunk, franchising (phased), and big bang approaches are commonly used for implementing ERP systems.

According to Aslan, Stevenson, and Hendry (2012), by providing real-time data availability, ERPs can be useful for make-to-order organizations’ manufacturing companies. It should be noted that job shops are among make-to-order organizations. However, several studies conducted by Kumar (2008, 2009), in consideration of potential benefits of packaging American hospitals’ supply chains, failed to identify any significant benefits. A very small hospital (clinic) logistics system is in some ways similar to that of a manufacturing job shop. A job shop system is a small type of production system in which a low volume of high-variety goods or services is produced. Processing is, therefore, intermittent (Stevenson, 2018). Kumar’s 2008 and 2009 studies reinforced the assumption that ERPs are not suitable or efficient for job shop manufacturing productions systems.

This article depicts a study conducted by the author and his research team. In this empirical study, direct observations and tests were conducted at a small US company that makes use of a job shop manufacturing process. The study’s purpose was to test the effectiveness of ERPs on a job shop manufacturing process. In fact, from the system approach, every business function is vital for the achievement of the company’s overall goals, which include leveraging resources in a cost-effective way to sustain the company’s growth and, thus, to increase stakeholders’ value.
Strategic Management of International Subcontracting: A Transaction Cost Perspective
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