Chapter 4.16
An Exploratory Study to Identify Complementary Resources to the Implementation of Web–Based Applications in a Paint Supply Chain

Yootaek Lee
Babson College, USA

Jay Kim
Boston University, USA

Jeffery G. Miller
Boston University, USA

ABSTRACT

This study focuses on identifying (a) the complementary resources that influence the successful implementation of Web-based applications for supply chain management, and (b) the degree to which certain types of complementary resources function to support the successful implementation of Web-based applications. An exploratory case study is employed to identify potential complementary resources that are required for the successful implementation of Web-based applications that support various portions of the supply chain management task. The utility of a potential complementary resource to each Web-based application for a supply chain task is evaluated to determine the relative value of the resource to the Web-based application. A matrix is then developed to show the degree to which a particular complementary resource is utilized to implement Web-based applications. The contribution of this study is to enhance our understanding of how Web-based applications and complementary resources can work together to create competitive advantages in supply chains.

INTRODUCTION

In recent years, supply chain research has recognized Web-based applications as an important medium for managing various processes in supply

chains in a more effective way. The successful implementation of Web-based applications in managing supply chains renders many intermediaries obsolete and radically revamps the structure of supply chains (Rahman, 2003).

With the widespread adoption of Web-based applications in supply chains, many studies report performance improvements in various areas such as cost reduction (e.g., Croom, 2000; Robinson, Sahin, & Gao, 2005), increased responsiveness (e.g., Auramo, Kauremaa, & Tanskanen, 2005; Frohlich & Westbrook, 2002), and financial performance (Dehning, Richardson, & Zmud, 2007). Some studies also report that firms have created a competitive advantage by implementing Web-based applications in supply chains (e.g., Alt et al., 2001).

Nevertheless, not all firms appear to be leveraging the capability of Web-based applications to the same extent. From a study of savings achieved by using Web-based applications in a specific case of buyer-designed machine parts, Emiliani and Stec (2002) report that the actual savings are less than expected. In addition, Lynagh, Murphy, Poist, and Grazer (2002) report that 40% of firms in the logistics service industry that implemented Web-based applications consider their Web practices to be either "very ineffective" or "somewhat ineffective."

These inconsistent reports raise an important question. Why, in some cases, does the effort of implementing Web-based applications seem to fail whereas in other cases it generates a competitive advantage? Resource-based theory provides a framework for augmenting our understanding of the effects of Web-based applications on supply chain competitiveness. Resource-based theory emphasizes the role of heterogeneous resources and the capabilities of firms in explaining competitive advantage (Barney, 1991; Peteraf, 1993), and has the potential to explain the different results that have been reported.

According to resource-based theory, Web-based applications per se are not a source of

competitive advantage because they are readily available to all firms in a competitive factor market. Resource-based theory suggests that firms need to utilize resources and capabilities unique to them, so-called complementary resources, in order to gain competitive advantage from implementing information technologies (Clemons & Michael, 1991; Wade & Hulland, 2004).

Several studies have explored the role of complementary resources in the implementation of information technologies prior to the introduction of Web-based applications (e.g., Hansen & Wernerfelt, 1989; Neo, 1988). However, little research has been done to provide insights into precisely how these resources are utilized to support the implementation of Web-based applications in supply chains.

The purpose of this study is to identify the complementary resources that influence the successful implementation of Web-based applications in a supply chain, and to gauge the degree to which certain types of complementary resources work to contribute to competitive advantage. An exploratory case study was conducted to observe the process of implementing Web-based applications. Seventy-one complementary resources were observed, and the extent to which each complementary resource was utilized to support the development of competitive advantage was estimated in a summary matrix. The contribution of this study is to enhance our understanding of how Web-based applications and complementary resources can work together to create competitive advantage in supply chains.

THEORETICAL BACKGROUND

Resource-Based Theory

According to resource-based theory, firms hold heterogeneous resource portfolios as a result of design, history, or luck, and this heterogeneity is responsible for explaining the differences in the financial returns of firms (Barney, 1991). However,

12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/exploratory-study-identify-complementary-resources/44132

Related Content

Business Process Management as a Critical Success Factor in EIS Implementation
Vladimír Modrák (2010). *Business Information Systems: Concepts, Methodologies, Tools and Applications (pp. 1884-1895).*
www.irma-international.org/chapter/business-process-management-critical-success/44174

The Role of Simulation in Business Process Reengineering
Firas M. Alkhaldi, Mohammad Olaimatand Abdullah Abdali Rashed (2010). *Business Information Systems: Concepts, Methodologies, Tools and Applications (pp. 649-674).*
www.irma-international.org/chapter/role-simulation-business-process-reengineering/44101

Clinical Decision Support Systems in Nursing
Dawn Dowding, Rebecca Randell, Natasha Mitchell, Rebecca Foster, Valerie Lattimerand Carl Thompson (2010). *Business Information Systems: Concepts, Methodologies, Tools and Applications (pp. 1056-1070).*
www.irma-international.org/chapter/clinical-decision-support-systems-nursing/44122

Decision Support Systems and their Application in Construction
Alaa Abdou, Moh'd Radaidehand John Lewis (2010). *Business Information Systems: Concepts, Methodologies, Tools and Applications (pp. 1024-1042).*
www.irma-international.org/chapter/decision-support-systems-their-application/44120

Feral Systems as Institutional Phenomena: A Framework for Analyzing Persistent Computer Workarounds
Nelson Kingand Bijan Azad (2014). *Feral Information Systems Development: Managerial Implications (pp. 43-67).*
www.irma-international.org/chapter/feral-systems-as-institutional-phenomena/94676