Achieving Flexibility via Contingency Planning Activities in the Supply Chain

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ABSTRACT

Supply chain disruptions significantly impact businesses worldwide. Many organizations work towards improving flexibility so as to prepare for such disruptions and maintain competitive advantage. This research effort examines four activities that are associated with the contingency planning process to determine which, if any, of these processes are ultimately supportive of organizational flexibility. These activities are: information sharing, external collaboration, internal collaboration, and information technology usage. A survey method is employed to examine the perceptions of 103 contingency planners to determine which of these potential determinants are positively related to organizational flexibility. The data are analyzed using partial least square regression, and reveal that information technology use and external collaboration are significant determinants of organizational flexibility. Implications of our findings are discussed and future research to support this burgeoning area of supply chain management is proposed.

Keywords: Flexibility, Contingency Planning, Information Technology, Collaboration, Information Sharing, Partial Least Squares, Supply Chain Disruptions

INTRODUCTION

Recent world events, such as the 2010 US Gulf Coast oil spill, the 2011 Japanese tsunami, and uprisings in the Middle-East, have highlighted the need for more research regarding how to reinstate and maintain the flow of goods and services following such disruptions. Supply chain disruptions affect not only local economies, but often interfere with international trade. For instance, in 2002, disputes between shippers and union dockworkers resulted in the closing of all ports on the western coast of the United States. This “West Coast lockout” resulted in a backlog
of shipping containers and led to a staggering $15 billion cost to the U.S. economy (Alden, Burton, Hijino, & Rahman, 2002). The lockout not only impacted the local and state economies by slowing production at manufacturers such as Boeing (Nyhan, 2002) and lowering state tax revenue receipts, but the international business community was negatively affected as well. As the strike continued, it was estimated that a one-week strike could cost Japan and China nearly 3% and 12% of their GDP, respectively (Alden et al., 2002; Farris, 2008). In addition, disruptions in information flow and process can yield similar consequences. Snyder and Shen (2008) report that one hour of downtime for the online auction site Ebay results in an estimated loss of $225,000 US. Severe weather events and natural disasters can also have a tremendous impact. Hurricane Katrina’s massive impact affected business beyond its initial landfall by temporarily closing the Port of New Orleans, a critical transportation hub servicing 28 US states and supporting nearly $37 billion in economic benefits (Skipper, Hanna, & Gibson, 2007, 2010).

Managing interconnected organizations is an ever-increasing challenge in today’s competitive business environment. Increased demand, shorter product life cycles, fierce competition in the marketplace, and globalization culminate to create complex and fast-paced international supply chains. As complexity increases and interdependency becomes more prevalent, increased levels of risk occur (Alamoudi & Cho, 2011; Christopher, 1992). Many studies have used a variety of approaches to attempt to investigate the techniques used to manage these complex issues. A wide range of topics, including risk management (Borgman & Ryan, 2009; Finch, 2004; Vanany, Zailani, & Pujawan, 2009), operational strategies (Croxton, Garcia-Dastugue, Lambert, & Rogers, 2001), trust (Laequeuddin, Sahay, Sahay, & Waheed, 2011; Zuo & Hu, 2009), proactive management (Sinha, Whitman, & Malzahn, 2004), and supply chain design (Lowson, 2002) have all contributed to the level of understanding of how to manage today’s complex and interdependent organizations.

Complex supply chains require a degree of interdependence among organizations, creating a situation where a single disruption can cause a ripple effect that dramatically impacts multiple processes and organizations (Peck, 2005). Christopher (1992) defined a supply chain as the network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services delivered to the ultimate consumer. One preemptive solution to a potential disruption in the supply chain is the establishment of contingency planning processes that enable an organization to be more effective in their prevention of, and response to, a disruption. Supply chain disruptions are unplanned events that might affect the normal, expected flow of materials, information, and components (Svensson, 2002), and are acknowledged as an inevitability. Recent studies have focused on such disruptions as transportation delays and port stoppages (P. Chapman, Christopher, Juttner, Peck, & Wilding, 2002; Wilson, 2007), accidents and natural disasters (Chang, Tseng, & Chen, 2007; Sheu, 2007), poor communication, operational issues (Chopra & Sodhi, 2004), labor disputes (Machalaba & Kim, 2002), and terrorism (Sheffi, 2001). These studies have documented the impacts of disruptions on supply chains across many industries and market segments. Several studies, including Fawcett, Calantine, and Smith (1996), Goldsby and Stank (2000), Fredricks (2005), and Swafford, Ghosh, and Murthy (2006) found that organizations characterized by higher levels of flexibility are more capable of successfully responding to such unexpected events when compared to their counterparts that are not as flexible.

The emergence of flexibility as an important strategic capability has created a need to gain a better understanding of the relationship between contingency planning and organizational flexibility (Fawcett et al., 1996). This need is even more important in today’s fast-paced business environment. As such, the goal of this
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