


Enhancing Supply Chain Efficiency and Effectiveness With Lean Six Sigma Approach

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ABSTRACT

Lean Six Sigma (LSS) enables supply chains to become more efficient and effective in sustaining continuous improvement. The speed, service quality, and the cost of operations impact the supply chain performance. One most popular approach for providing faster responses, improving quality and reducing cost in SCM, is LSS as it combines strengths of both Lean and Six Sigma. LSS is not just about doing things better, it is a way of doing better things. Research establishes complementary relationship of Lean and Six Sigma; summarizes benefits of LSS in SCM and develops various frameworks such as S-V framework and O-T-S framework to emphasize the role of LSS in enhancing efficiency and effectiveness of SCM processes. As a strategic management tool, LSS deployment in SCM is considered to be an important management philosophy, supporting organizations in their efforts to enhance efficiency and effectiveness of operations, satisfy customers and enhance competitive advantages.

KEYWORDS

Competitive Advantages, Effectiveness, Efficiency, Lean, Lean Six Sigma, SCM, Six Sigma, Supply Chain, Supply Chain Management

INTRODUCTION

There is a huge opportunity cost to any organization that continues to support inefficient and ineffective business processes in a highly competitive world. To combat these inefficiencies, organizations have begun to make investments in process improvement methodologies such as Total Quality Management (TQM), reengineering, benchmarking, Lean, Six Sigma and Lean Six Sigma etc., to enhance service quality. Competitive pressure forces companies to improve their core as well as support functions for better performances. Supply chain as an integrated function is the lifeline of an organization as a streamlined supply chain management (SCM) can enhance business performance by providing better value to customers. SCM helps increasing organizational effectiveness and profitability by promoting the integration between firms and their suppliers through the development of supplier partnerships and strategic alliances. In present day business environment, supply chains that compete with each other, not companies (Christopher & Towill, 2001), and the success or failure of supply chains is ultimately determined in the marketplace by the consumer.

An effective SCM is crucial to business continuity (Cabral et al., 2012) as well as survival in a market that is increasingly volatile, turbulent and competitive. SCM enhances competitiveness of a firm if appropriate supply chain strategy is chosen (Soni & Kodali, 2012). In a globally competitive

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market, organizations face challenges to improve customer service while simultaneously reducing costs and shortening product lifecycles. Dependable service leads to satisfied customers, which gives organizations more pricing power, higher revenues and enhanced enterprise value. In response to these challenges many organizations have adopted Lean Six Sigma (LSS) approach for efficient and effective SCM practices.

Lean and Six Sigma are developments in continuous improvement (CI) methodology. Lean Six Sigma (LSS) is an approach that combines Lean and Six Sigma tools and philosophies to focus on improving quality, reducing process variation, and eliminating non-value added (NVA) activities. Its goal is to improve quality by first identifying waste within the organization; systematically eliminate this waste, and then reduce process variation. A quality programme for the entire organization is created, by combining the two methodologies (i.e. Lean and Six Sigma), as each builds upon the other's strengths (Salah et al., 2010a). Deployment of LSS can help cut waste and make SCM processes more effective.

This research is unique in that it sheds lights on the both dimensions of supply chain performance i.e. efficiency and effectiveness of supply chain; focuses on LSS deployment in supply chain and provides various frameworks for synthesizing and determining value creation processes. Research also provides various successful illustrations of LSS implementation in SCM practices of various organizations to emphasize business value creation.

LITERATURE REVIEW

SCM comprises the flow of goods from supplier through manufacturing and distribution chains until the end user (Power, 2005). Logistics is a crucial part of the supply chain (Sachan & Datta, 2005). The cost, speed, and service quality of logistics operations directly impact the performance of the whole supply chain (Zhang et al., 2016). With customers simultaneously demanding shorter lead times, lower prices, and excellent service (Salleh et al., 2009), logistics must improve its operations to deliver superior customer value (Forslund, 2007). Thus, the delivery process within a supply chain is of critical concern to supply chain managers since delivery performance directly impacts customer satisfaction levels (Bushuev & Guiffrida, 2012). The focus of SCM practices must shift from functional and independent to general and integrative initiatives (Frazzon et al., 2015; Theagarajan & Manohar, 2015). In order to achieve the supply chain goal of fulfilling customer orders more quickly and efficiently than competitors, a supply chain needs to engage in continuous improvement (CI) processes and competitive strategies (Arif-Uz-Zaman & Nazmul Ahsan, 2014). The strategy of continuous improvement (CI) is focused on building ability to run operations at the lowest cost, with greater reliability and speed and a superior ability to change (Hayes & Pisano, 1996). An increasing number of companies are adopting the quality improvement programs originated in manufacturing, such as Total Quality Management (TQM), Six Sigma, reengineering, benchmarking etc., to enhance service quality (Hoerl & Snee, 2012). Business process reengineering (BPR), one of the improvement methods promises to achieve dramatic improvements in critical measures with fundamental rethinking and radical process redesign (Hammer & Champy, 1993).

Another, evolutionary approaches of process improvement focus on incremental improvements of existing business processes. They aim at more sustainable and continuous enhancements and thus have to be seen as long-term initiatives (Heckl et al., 2010). Process improvement is defined as an important aspect of organizational development, in which a series of activities are taken by a process owner to identify, analyze and improve existing business processes within an organization to meet the goals and objectives (Cook, 1996). Process improvements methodologies such as TQM, Lean, Six Sigma, and Lean Six Sigma (LSS) have benefited both manufacturing and service organizations. However, there are some limitations of TQM that, led to it not achieving the tangible results that management expected to see (Snee & Hoerl, 2005). According to Antony et al. (2017), the major limitations of TQM are:

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