

# Risks Related to Lean Six Sigma Deployment and Sustainment Risks: How Project Management Can Help

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## ABSTRACT

Lean Six Sigma is a set of tools utilized by organizations to reduce cost and waste. There are risks associated with deploying and sustaining Six Sigma. The risks are different at each stage of the process. To ensure success, these risks must be identified and mitigated. From an organizational standpoint, companies need to understand the differences between Lean Six Sigma deployment and sustainment. The risk factors discussed in this article are leadership, human resource, and project selection. Since Lean Six Sigma is a project-based approach, many tools offered by the Project Management Institute (PMI) can be utilized to complement DMAIC structure. Since risks in improper management are inherent, using project management and Lean Six Sigma tools together is beneficial. This research attempts to identify and analyze the different risks associated with deploying and sustaining Lean Six Sigma. This article presents recommendations based on an analysis of collected information.

## KEYWORDS

Continuous Improvement, Lean Six Sigma, Project Management, Quality, Risk

## 1. INTRODUCTION

In order to compete in today's global marketplace, companies are looking for a competitive advantage. For most, making more profit and increasing market share is the ultimate goal. To achieve these, organizations should make their processes more efficient and less variable. To make processes more efficient, companies implement Lean or Lean production. To reduce process variation, they implement Six Sigma. Some also combined the two tools, calling it Lean Six Sigma. Whether the efforts are Lean, Six Sigma, or Lean Six Sigma, they fall into the same category of process improvement. These tools are usually utilized in manufacturing companies. However, we also see the tools in administrative processes and the healthcare industry.

No matter how or where the tools are utilized, the intent is the same. These organizations attempt to achieve efficiency and consistency through using a standardized set of tools. These tools help collect meaningful data so decisions can be data-driven. Pulakanam (2012) performed a study on costs and benefits of deploying Six Sigma. The author found that, if deployed effectively, it is a good investment. For example, a \$100 million organization can expect to save \$4 to \$8 million over

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a four-year period (Pulakanam, 2012, p. 50; Galli, 2017). The study encompasses several industries, including manufacturing, healthcare, banking & finance, logistics management, construction and project management, and marketing and distribution.

According to Virginia and Vasile (2013), “Lean manufacturing, Lean production, or often simply Lean, is a production practice that considers the expenditure of resources for any goal other than the creation of value to be wasteful and thus a target for elimination” (p. 404). In other words, one goal of Lean is to eliminate process inefficiencies. In Lean terms, waste is anything the customer is not willing to pay for. On the contrary, value is anything the customer is willing to pay for. Henry Ford is often credited with the concept of Lean in America. Virginia and Vasile (2013) states, “The Lean concept is not a new one, originating from the end of 19<sup>th</sup> century and beginning of the 20<sup>th</sup> century, with the development of the production systems by Henry Ford and other producers” (p. 404). Virginia states the Japanese companies like Toyota, Nissan, Sony, and Honda adopted these Lean tools after Ford.

In the 1980s, consultants went to the Japanese companies to learn how they gained market share in the American companies. Virginia and Vasile (2013) state the results of these visits were published in *The Machine that Changed the World* by Womack, Jones, and Roos. These concepts were re-adopted by American companies to compete with the Japanese. Using Lean has been beneficial for American companies. According to Virginia and Vasile (2013), “Comparing the Japanese and the American contributions, we can conclude that the American contribution resulted in a spectacular productivity growth and decrease in price” (p. 409).

It has also been said that Lean is not meant for all industries. Eriksson et al. (2016) performed a study of three Swedish hospitals’ strategies for deploying Lean. Eriksson et al. (2016) states, “it has been argued that LP (Lean Production) does not fit health care, due to complex care processes and the existence of different rationalities” (p. 126). In other words, some organizations may not be successful deploying Lean because they don’t think it is the right approach for their industry.

Motorola is often credited with beginning usage of Six Sigma. According to Goh, “Six Sigma has been popularized and widely adopted by organizations world-wide and is about the longest-surviving modern approach to quality improvement” (p. 1389). After Motorola’s successful deployment, other companies such as General Electric (GE) and Allied Signal (now Honeywell) started to adopt Six Sigma.

The Six Sigma tools are utilized for both problem solving and process improvement. A formal Six Sigma project has five phases: Define, Measure, Analyze, Improve, and Control. At its core, Six Sigma has a primary purpose for process variation reduction. By reducing variation, the processes are easier to manage and the cost will ultimately decrease.

Unfortunately, Six Sigma isn’t always easy to implement. Doble (2005) wrote about the weaknesses of Six Sigma. The author believes that Six Sigma cannot lead to invention and is not beneficial for the discovery of new information (p. 82). Goh (2002) wrote about other weaknesses, including that it does not deal with the worth of knowledge, imagination, innovation, passion, or dedication (p. 409). Goh (2002) also adds, “Six Sigma is commonly applied to address what has gone wrong, but not what is beyond the current perception of what is CTQ” (p. 409). In other words, Six Sigma can be viewed as reactive instead of proactive. CTQ (Critical to Quality) are product characteristics that are important to the customer. Goh’s statement means that Six Sigma only addresses problems from the past, not the future. These weaknesses may prevent organizations from deploying Lean.

Some companies have been able to deploy Lean and Six Sigma but to a lesser level of success than that of Toyota or General Electric. Other companies fail to deploy Lean Six Sigma. The reality is that many companies are trying to adopt Lean and Six Sigma. Wang et al. (2014) state, “In the past two decades, an increasing number of companies in Taiwan have been embracing Six Sigma projects for improving their competitiveness. But the reality is that only a few companies have successfully deployed Six Sigma projects” (p. 2372). Van der Merwe (2014) states, “Although it is generally accepted that Lean manufacturing improves operational performance, many organisations are struggling to adapt to the Lean philosophy” (p. 131). It is,

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