

# Chapter 22

## Lean Thinking and the Innovation Process

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### ABSTRACT

*This chapter analyses the evolution of lean thinking and its widening applications from its origin of the manufacturing industry towards the other industries with the emphasis on how organizations could learn from lean thinking for achieving improved performance of innovation processes. Based on the degree of novelty, uncertainty and complexity associated with innovation processes, direct adoption of lean thinking for optimization is considered to be challenging. We discuss that organizations need to realize that there are opportunities for lateral learning from lean applications that have benefited systematic repetitive processes such as manufacturing by adapting to innovation processes through identification and shedding of non-value added activities. By identifying several lean innovation approaches in practice for optimizing innovation process, we stress the need and opportunity for the adaptation of lean thinking to cater the special characteristics of innovation processes.*

### INTRODUCTION

Lean concepts and their importance for optimum utilization of resources through the reduction of waste are not completely alien to contemporary managers. While the adoption of the lean concepts in standard production has been accepted without hesitation and practiced in organizations successfully, its application in innovation processes which inherit novelty, uncertainty and complexity is known to be challenging (Browning & Sanders, 2012). While enhanced efficiency is a universal need in process management, effects on the process effectiveness need to be managed not to lose the organizational competitiveness through innovation. Irrespective of the efforts in integrating lean principles with the innovation process there seems to be a lack of consensus due to the perceived hindering effects of process improvement and standardization approaches on creativity and flexibility that are essential for an effective innovation process.

DOI: 10.4018/978-1-5225-9615-8.ch022

Lean thinking principles are directed towards specifying value, identifying value stream, avoiding interruptions in value flow, letting customers pull value and starting pursuing perfection again. For a lean production process, steps that would not add value to the customer should be eliminated through problem-solving for a streamlined process. Lean Thinking has become a well-known shared language practiced in diverse industries and settings and resulted in increased learning (Stone, 2012). It covers “highly integrated elements and a wide variety of management practices” (Bhamu & Sangwan, 2014). It can become an effective learning process for organizations for promoting ‘thinkers’ (Alves, Dinis-Carvalho, & Sousa, 2012) and its links to the sustainability of organizations take the learning process to stakeholders. However, organizational culture and leadership remain as some key factors that will impact the success of implementation (Ingelsson & Martensson, 2014). In fact, lean thinking is itself a form of an innovation, a gradual one, resulting in operational integration (Gamme & Aschehoug, 2014).

This chapter focuses on how innovation process is influenced by lean thinking based on the existing literature. It analyzes the evolution of lean thinking from its initial application in manufacturing industries to other broader areas. It discusses the evolution of the innovation process modelling and the applicability of linear process models with non-linear approaches and specific attempts to improve the efficiency of the innovation process. It investigates the impact of lean thinking process on the innovation process and discusses several approaches in practice in the implementation of lean innovation processes in organizations.

## **EVOLUTION OF LEAN THINKING**

The meaning of lean thinking is more than understanding of the associated principles – it is rooted within the history of manufacturing industry; it is a journey and should not be considered as an end. It is focused on value creation, elimination of waste, low cost, high profitability, and increased market share. A positive relationship “between internal lean practices” with quality, delivery, flexibility, and the cost has been found (Chavez, Gimenez, Fynes, Wiengarten, & Yu, 2013). When Womack, Jones, and Roos (1990) published their book entitled “The Machine that changed the world”, their intention was to guide manufacturing organizations through difficulties of mass production, coping with challenges of differing customer requirements in a production setting configured for standardization, and to solve some of their related business problems by introducing some principles or procedures along with application of supporting tools and techniques. These principles, tools, and techniques have been in use widely in manufacturing organizations and resulted in relative success over time, despite some failures and mixed results. The adoption of lean principles has helped in the transformation of manufacturing organizations from being mass producers with no flexibility to streamlined value creators that are more flexible in responding differing customer needs. At the same time, its benefits extend to working efficiently and effectively as organizations manage waste and identify its causes effectively.

### **Lean Thinking in Manufacturing Industry: Origins and Developments**

The lean principles are now well regarded as a point of reference in understanding the concept of “being lean” in the global world however we need to go back into the history of manufacturing industry to capture the background issues which lead to developments of a significant time period called Lean Production. This would guide us in discussing the relationship and interactions between lean principles

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