Conceptual and Strategy Map for Lean Process Transformation

By Waleed Mirdad
Candidate for Master of Science in Industrial Engineering

Abstract

Since the introduction of lean manufacturing by Toyota and publication by Womack and Jones, organizations have realized sizeable gains through lean process improvement. The spread of lean practices across organizations and industries – from manufacturing to healthcare and construction – requires adjustments of the lean process and, in the case of construction engineering, modification of the traditional lean paradigm (stationary product versus the traditional mobile product). Consequently, success in lean manufacturing projects is closer to 20% and less than 2% of manufacturing jobs in the United States are truly lean. Previous studies show that this unsatisfactory result occurs because managers use inappropriate practices, and rely solely on financial measures and consequent performance measures. This leads to an overall lack of synchronization between lean goals and actual practices. Given the challenges associated with adopting lean and synchronizing strategy beyond financial measures, this study attempts to resolve the confusion surrounding lean implementation by providing a systematic, clear description of effective and efficient routes through which organizations in different industries (or sectors) can adopt appropriate lean strategies. The following steps are taken to resolve the confusion in lean implementation: (a) a Literature review of lean principal, lean practice, performance measures and performance measurement system; (b) an investigating of lean principle to integrate the literature with a survey of lean experts; (c) creation of a lean conceptual map that integrates lean principles with lean practices and performance measures; (d) incorporation of the lean balanced scorecard as a performance measurement system based on validated performance measures obtained through a survey of different manufacturing sectors in the United States; (e) identification of causal relationship between lean principles using Decision Making Trial Evaluation Laboratory method (DEMATEL), to construct an industry-specific strategy map with information from a survey of lean manufacturing companies in the United States; (f) an investigating of the difference between the strategy maps constructed for each sector, and the cause and the central factors for each lean sector; and (g) a suggestion of an effective lean strategy for each sector. This thesis identifies a path for management to better invest resources in the aspects of lean implementation that are acute need of improvement, by focusing on the most salient and central lean objectives. Such a stool could result in more effective and efficient lean implementation.

Thursday, March 20, 2014
11:00 AM, Rogers 226

Oregon State University
College of Engineering
School of Mechanical, Industrial, and Manufacturing Engineering