Some empirical results for the sustainable deployment of Lean Six Sigma for Australian organizations

Roger Hilton ++, Amrik S. Sohal *
* Department of Management, Monash University, Australia
++ Principal, Lean Sigma Institute, Australia

Short Abstract
This key objective of this paper is to understand the critical factors that influence the sustainable deployment of Lean Six Sigma (LSS). Sustainable deployment is measured by a combination of program maturity and project success and the explanatory variables under examination include the competence of the organization, the competence and influence level of the deployment facilitator (usually a Master Black Belt, MBB) and the competence of the project leaders (usually a Black Belt, BB). Program Maturity is a level of up-take of LSS by an organization.

Keywords: Lean Six Sigma Program Maturity, Personal Competencies, Organizational Competencies, Project Success

Topics: Sustainability, Quality and Performance, Lean and Agile

Methodology: Empirical work

Purpose
The research aims to define the key variables in a model for the sustainable deployment of LSS as an example of a continuous improvement program. The model should be also useful for Lean Six Sigma practitioners. This is the first survey of its kind to involve organizations that have deployed Lean Six Sigma in Australia.

Background to Research
It is well documented that Lean Six Sigma (LSS) contributes to less waste, improved capability, improved processes which will eventually result in financial benefits and a competitive advantage (Corbett, 2011; Hoerl and Gardner, 2010; Klefsjö, 2006; Leipold, 2007).

However, it is not clear in the literature as to the conditions for the deployment of LSS to be sustained as an improvement strategy for organizations (Huq, 2006). Many companies have been shown to have various levels of success of LSS. In some companies, using LSS as an improvement strategy has not been successful and as such the program has been disbanded or it has changed considerably because the measures of success of LSS vary considerably from operational level metrics like process efficiency and quality to
organizational metrics like competitive advantage and market share. This was demonstrated by Goh, Low, Tsui and Xie (2003) for Six Sigma.

Measuring all the benefits obtained from the ongoing and continuous implementation of projects should have a significant impact on the bottom-line of the business. However, LSS can only be successful if sustained over a long period of time and it depends on where the organization is at in terms of a maturity level of LSS deployment (Raje, 2009). To achieve sustainable practice businesses must have long-term objectives at the organizational level like higher market share and improved customer satisfaction and to achieve this, it is argued in this paper that these organizations must drive towards ongoing project success, measured at the operational level by for example reduction in rework and process efficiency and a mature deployment, measured by how mature the deployment is.

Conditions for the sustainability of LSS can be influenced by many factors. It can be argued that sustainability and success builds upon a number of quality management prerequisites, such as an existing quality culture and a certain level of quality management systems maturity (Dahlgaard and Dahlgaard-Park, 2006). An analogy is that LSS has been successful by serving as an action-oriented method for improving processes to yield better financial outcomes. Only through continual improvement, a principle of quality, will it remain a viable and lasting methodology (Parr, 2006).

**Presentation**

In this presentation, the model is explained and the key results are presented. The model shown in Figure 1 was are developed by Hilton and Sohal (2012) and describes the relationship between the sustainable deployment of LSS with a number of key explanatory variables that include the competence of the organization, the competence of the deployment facilitator and the competence of the project leaders. The key response variables for the sustainable deployment are Project Success and LSS Program Maturity.

**Key Findings**

- Program maturity level improves as organizations become more active (but it takes at least 5 years) but average Project Success does not improve over time
- Mostly, quality and simple statistical tools are used during the DMAIC project phases
- Lean is becoming more popular in focus because of its simplicity (or perceived complexity of Six Sigma)
- LSS is not easily implemented into a data-poor environment, like service.
- Program Maturity level is related to the ability of the MBB to train the BB’s in advanced statistics but this ability is lacking as a competency of a MBB
- Program Maturity level and/or average Project Success is impacted a number of soft tacit factors including:
  - Building skills across the organization
  - Consistency of training in DMAIC
  - Supporting a community spirit of improvement and emotional intelligence
  - Supporting cross-functional collaboration internally and externally.

The same model could apply to any continuous improvement deployment including Total Quality Management. This is consistent with research that indicated there are similar practices between Lean Six Sigma and TQM (Andersson, Eriksson and Torstensson, 2006; Bendell, 2006; Näslund, 2008; Zu, Robbins and Fredendall, 2010).
References

Figure 1: A Model of Sustainable Deployment of Lean Six Sigma