

Proceedings of the 2nd Annual World Conference
of the Society for Industrial And Systems Engineering
Las Vegas, NV, USA
November 5-7, 2013

A Benchmarking Approach to Curriculum Development: The Case of a Lean Six Sigma Black Belt Training Program

E Alikhani¹, DL Santos¹, N Nagarur¹, MT Khasawneh¹, SS Lu¹, C Monachino², and L Altma²

¹Department of Systems Science and Industrial Engineering

²Strategic Partnership for Industrial Resurgence (SPIR)

State University of New York at Binghamton, Binghamton, NY 13902

Corresponding author's Email: elialkha1@binghamton.edu

Abstract: Developing an effective and competitive syllabus for a professional training program has been the main concern of this effort. A four phase methodology, including Analysis, Design, Implementation and Feedback, as based on a benchmarking approach, was used to design a Lean Six Sigma Black Belt (LSSBB) program. At the analysis phase, curricular details from 42 LSSBB programs were obtained. In the analysis portion of the study, 240 separate topics from all programs were analyzed and categorized. Four efficiency factors are defined to represent: 1-importance of topics; 2- total coverage factor of the entire program; 3- reputation of benchmarked programs; and 4- total effectiveness of the program. Next, the matrix was transposed and, by measuring some statistical criteria for each candidate topic, they were classified into four major (MoSCoW) categories: Must, Should, Could and Won't. 'Must' includes very essential topics for any LSSBB program, 'Should' includes innovative topics, 'Could' includes optional topics and 'Won't' were topics felt by the team to be non-necessary. At the design phase, two contradictory limitations were apparent: 1) as we cover more topics, the coverage factor would be increased, but, 2) on the other hand, the effectiveness factor would be decreased since we have to cover topics with comparatively less importance. During the decision making meetings, instructors chose from the pool of topics by an MS Excel-based dashboard measuring efficiency criteria in real time. At the implementation phase, a shared online platform was developed so that instructors could develop their materials in a collaborative environment. The main contribution of this paper is the proposed methodology that is based on a benchmarking approach and extensive statistical analysis, which can be applicable for other curriculum development efforts.

Keywords: Curriculum Development, Benchmarking Approach, Lean Six Sigma