

# A Critical Assessment of Prevailing Models for Measuring Lean Manufacturing

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**Abstract** - Lean Manufacturing (LM) is a thought developed in Toyota, thus, there is lack of studies investigated whether the implementation of LM is appropriate for different enterprises' or not because of different organizational and social culture of enterprises and labor. This paper critically analyzes eleven prevailing models for LM in an attempt to find a unified model that can be applied inside enterprises. In the literature several models have a tendency to focus only on a few single components. However, different enterprises use diverse dimensions and models for measuring LM. It aims to review the various LM models prevailing in the contemporary research papers along with presentation of an in-depth analysis exploring the similar and dissimilar aspects. The dimensions of the LM models adopted by different enterprises are quite diverse as revealed through this investigation. The contribution of this review is twofold: various models for LM are critically analyzed followed by a comparative evaluation with a vision to propose a potential model for LM that is applicable for manufacturing enterprises. Results show that the unified model comprises of 11 components for LM initiated from the principles of Toyota Production System (TPS).

**Keywords-** *Lean; Toyota; Prevailing; Model; Assessment; Unified*

## 1. INTRODUCTION

In the past decades, several models have been presented as approaches to improve customer satisfaction, production and operations performance. In addition, based on a review of the literature it can be pointed out that various models for improving productivity have been developed through years [5]. Among these models, there is Total Quality Management (TQM) and, more recently, Six Sigma programs, Lean Production, Agile Manufacturing and World Class Manufacturing (WCM). These models are based on the concepts and techniques of improvement and change. However, literature did not show an attempt to review and compare different LM models to customize a prospective generalized model that can be suitable to be implemented by the different enterprises. Upon carrying out a critical evaluation of the contemporary models found in the literature, a general multidimensional approach for LM is to be introduced. The ultimate purpose of this paper is to review the different contemporary models for LM and to propose a generalized model for LM. This paper starts with introducing different 11 LM models, followed by an explanation of the similarities and dissimilates aspects and finally proposing a model with the significant concerns or dimensions.