

# Critical Success Factors for Soft TQM and Lean Manufacturing Linkage

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## Abstract

Implementation of Total Quality Management (TQM) and Lean Manufacturing (LM) is a common goal for manufacturers to be leaner. While many studies have investigated TQM and LM separately, the present paper explores the Critical Success Factors (CSF) for these practices together in one model focusing on the soft dimension of TQM. A structured closed questionnaire was distributed to operations managers in Malaysian industries. A 5-point Likert scale was used in designing the survey questionnaire. One hundred and two responses were collected in this preliminary study. Results obtained through Principal Component Analysis (PCA) showed that both latent constructs are reliable. Both KMO and Bartlett's test were measured to ensure the adequacy of the practices. Three CSF (3) were extracted for Soft TQM aspects while Seven (7) factors were extracted for LM practices. Results obtained from PCA indicated that Malaysian managers are involved with LM wastes, Kaizen, Just in Time, continuous flow, TPM, Workforce Management, standardized work practices, strategic planning and human aspects. The novelty of the present study stems from the realization of TQM and LM aspects that determine the priorities of Malaysian managers in manufacturing environment by providing guidelines about the most important factors to adopt.

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## 1. Introduction

Both LM and TQM have received much attention from practitioners and researchers in developing and developed countries. Researchers [16] argued that Operations Management (OM) practices such as supply chain, TQM, and LM are applied separately inside enterprises and there is possibility for the integration among these practices that can optimize processes. Although there are many studies conducted on these practices, still, there is a number of questions that remain unclear regarding the applicability of these initiatives [8].

TQM is a vital management tool in ensuring companies can be successful in the continuously growing competition in the global market [9]. Scholars [67] have integrated the Leadership practices in terms of TQM and LM based on the adaptation from several world class awards companies, models and system. Nowadays, Muda (waste) become an important concept for Toyota Production System (TPS). Thus, LM wastes are considered as the DNA for TPS. However, LM is aligned with TQM environment for continuous improvement. Furthermore, more scholars suggested TQM could be categorized into two distinct groups, namely soft TQM and hard TQM ([60]; [33]).

Hard TQM tends to use more practical, numeric, and systematic quality-control tools; soft TQM focuses on long-term natures and is more humanistic, it is the human side and people-related TQM [76].

Researchers [6], in their study, argued that there is too much Muda in USA manufacturing system which can be classified as: Muda of workers, Muda of over production, Muda of inventories and excess processing, Muda of defects, Muda of waiting, Muda of movements of materials around factory and Muda of facility. There is paucity in studies that address the impact of LM on the sustainable performance [74]. Both TQM and LM have various ideas and views, and scholars are questioning if they are the same or not? [7]. Different papers reported that TQM and LM can bring more benefits to a company but there is still a lack in case studies on companies that have implemented both initiatives [61].

Limited research has been conducted in the critical elements of LM. According to [56], TQM has been practiced in diverse industries from manufacturing to services. In addition, [10] concluded that issues and common points regarding TQM and LM are not clear. Others argued that TQM considered as tools and techniques of LM [39]. Both are covered in different divisions. For instance, the effect of TQM on employee satisfaction and loyalty in government [17], LM tools effectiveness in government [57], change management for adoption of lean principles in distribution

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