



اَبُو سَيِّدِي تَيْكُو لُو كِي مَارَا  
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Title :

**Design And Development Of  
Integrated Quality Management  
Model Based On Tqm, Lm And Ems  
In Malaysian Automotive Companies**

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Three specific manufacturing quality systems were found to be popularly adopted by the local manufacturers, namely; Total Quality Management (TQM), Lean Manufacturing (LM) and Environmental Management System (EMS). Application of the concepts independent of one another appears to be less effective and more often counterproductive toward achieving the desired quality output. This study was initiated towards identifying common parameters within the three systems with a view of formulating a valid Integrated Quality Management Model applicable to the automotive industry to enhance their quality management endeavours. The development of the integrated framework model was carried out in three phases of study. The first phase involved five prominent quality management parameters; Leadership, Information, Human Resource, Operational Control and Suppliers Organization and Customers Management. The parameters were used as the basis for assessing the current implementation standings among the automotive companies. A survey questionnaire was distributed to 30 active companies; MAJACO and the Non-MAJACO participants in Malaysia. The initial integrated framework model was developed based on the responses of the survey. In the second phase, the five common practices above were correlated to financial and non-financial performance measurement indicators (PMIs) using SPSS and Minitab. Based

on the results of this statistical analysis the model was further refined. Two companies were selected for case study assessment in the third phase where the model was finalised based on the outcome of the assessment. It was revealed that EMS, LM and TQM are practiced separately by the high revenue, 100% locally owned companies having Research and Development (R&D) capabilities with only 10% product design capability. Years of establishment do not indicate the companies' readiness for change, capability to design and increase export, despite possessing R&D capabilities and improvement initiatives. Statistical analyses were conducted to triangulate the relationship between Integrated Practices with financial PMIs and non-financial PMIs. Using Mann Whitney Test in the first statistical analysis demonstrates that there is no difference in implementation between MAJAICO and Non-MAJAICO companies as far as practices and performance measurements indicators are concerned except for non-financial PMIs. Using correlation and regression analysis, the statistical results suggest that some practices

have significant positive relationships with financial and non-financial performance indicators, while others are significantly negative. The practices with high mean values in the first phase do not necessarily have positive significant relationship in the second phase. With statistically small size sample, finding a relationship or the lack of it is treated with caution. Not finding any relationship does not necessarily mean no relationship due to multitude of reasons inherent in any survey-based study. In the third phase, based on the results from the questionnaire and the case studies, four existing criteria are enhanced demonstrating respective improvement with added values. The proposed integrated framework model was finalised and renamed as the **“Integrated Quality Management Model: Green Lean Total Quality Management: G-L-TQM”** to mark the merger of the three main quality system The model is therefore the main contribution of the work signifying the achievement of the thesis objectives.