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LEAN TQM LEADERSHIP MANAGEMENT PRACTICES IN MALAYSIAN AUTOMOTIVE COMPANIES

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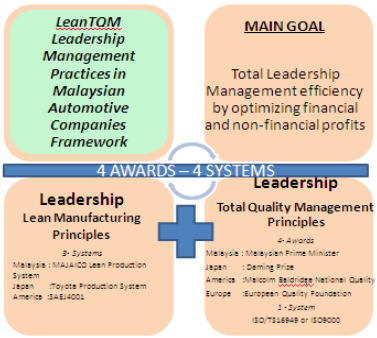
Graphical abstract



Abstract

Lean Total Quality (LTQ) Leadership Management System is a system whereby Leadership Management practices is integrated to Lean Manufacturing (LM) and TQMs' principles. The main goal is to achieve total Leadership Management efficiency by optimizing financial and non-financial profits. A survey questionnaire was developed and analyzed by SPSS. 30 highly active automotive companies in Malaysia had participated in the surveys. The results suggest that all the companies are highly implementing the leadership attributes in LM and TQM. It was also discovered that most companies agreed on the need for effective leadership in managing a systematic manufacturing operations. The proposed Lean TQM Leadership framework (a synergy from 4 awards practices and 4 systems) established in this study based on the results obtained, is believed to offer a preliminary insight on the level of Leadership Management. Companies may use the framework as the initial steps towards more improvement in managing a profitable performance. Future studies can be steered to access the status of Leadership Management practices in other companies and industries.

Keywords: Total quality management, lean manufacturing, environmental management system, automotive industry.

1.0 INTRODUCTION

Total Quality Management (TQM) and Lean Manufacturing (LM) [1,2] have been used globally by manufacturers to improve efficiency, productivity and at the same time sustaining the environment[3,4] Details history and evolution, critical success factors and benefits of the initiatives are available from the authors review study [5]. Leadership is the backbone of all organization and determines the rise or fall of any business[6]. TQM and LM Leadership Management has been included as one of the practices available in the Lean TQM Framework that has been established in 2011 [1]. In this study TQM and LM Leadership Management practices are integrated in the framework in order to establish a Lean TQM Company [2] that manages the organization resources; the 5M - material, man [7], machines, methods, money as well the suppliers [8]. The Lean TQM Leadership practices that is established in this study is specifically for Malaysian automotive industry based on adaptation of four awards and four systems. The awards are from Japan (Deming Prize), America (Malcolm Baldrige National Quality Award), Europe Countries (European Quality Foundation Award) and Malaysia (Malaysian Prime Minister Award Model) while ISO/TS 16949 or ISO 9000 for TQM and three system from LM (America - SAEJ4001, Japan - Toyota Production System and Malaysia - MAJAICO Lean Production System). All the TQM models (5 awards + ISO/TS16949) and three LM models have leadership as one of their criteria.

The objective of this study is to integrate TQM and LM Leadership practices in order to establish a Lean TQM Framework. The integrated framework may

guide companies in managing organization without neglecting the environment. The framework gives a preliminary guide on practices that have potentials in promoting and facilitating productivity by continuously improve the company performance. This paper begins with the research methodology (the design and development of the questionnaire survey) and continued with the findings of the TQM and LM.

2.0 METHODOLOGY

4 awards and 5 systems are used to develop the questionnaire in collecting descriptive data for 30 highly performing and active tier 1 automotive suppliers of Phase 1 MAJAICO Improvement and Vendors Improvement Program. The integrated awards used are from Japan (Deming Prize), America (Malcolm Baldrige National Quality Award), Europe Countries (European Quality Foundation Award) and Malaysia (Malaysian Prime Minister Award Model) while ISO/TS 16949 or ISO 9000 for TQM and three system from LM (America - SAEJ4001: Implementation of Lean Operation User Manual which has been issued in November 1999 by The Engineering Society for Advancing Mobility Land, Sea, Air and Space), Japan - Toyota Production System and Malaysia - MAJAICO Lean Production System. The questionnaire had been reviewed by six academicians and four practitioners. The respondents are Top Management Unit, Managers, Engineers and Executives personnel's from Quality, Production and Operations Department. In order to enhance the understanding of the questionnaire, all the participating companies were visited to attend any queries by the respondents as they went the questions. The reliability of the questionnaires was analyzed using Social Sciences Package Software (SPSS). The results showed a reliable Cronbach Alpha which is "0.909". The standard practices of Cronbach Alpha greater than "0.60" is considered to be suitable to signify the validity of the variables used in the questionnaires [9].

3.0 RESULTS AND DISCUSSION

3.1 Current Status of TQM and LM in Malaysian Automotive Companies.

The response rate percentage obtained from the surveys is 12.3% which is adequate, rational and common as previous studies conducted in Malaysia have response rate from 11.5 – 12. 6% [10,11]. In this study, it is found out that the most practiced systems are LM (66.7%) followed with EMS (53.3%) and TQM (43.3%). LM is the most practiced due to the significant of the system especially to the automotive industries as it is originated from Toyota Production System. LM also has been actively promoted by Malaysian government through Malaysia Automotive Institute from MAJAICO program. Eventhough TQM has started since 1996, LM since 2001 and EMS since 2002 in Malaysia but the popularity of TQM implementation is decreasing. This is because the companies are implementing TQM in the form of ISO9000 or ISO/TS16949 certification as it is recognized globally. The reasons for implementing TQM and LM for the companies participating in the survey are mostly voluntarily and due to the requirements from the parents company and customers.

3.2 Integrated TQM, LM and EMS in Malaysian Automotive Companies.

This study has integrated the Leadership practices in terms of TQM and LM based on the adaptation from several world class awards companies, models and system. There are 26 practices in Lean TQM Leadership Management practices. In order to come out with a framework model, this study has divided the practices into several categories: *Foundation, Level 1, 2 and 3*. Table 1 listed all analysis of results for Leadership Management Practices of Integrated TQM and LM and EMS.

The data in Tables 1,2,3 and 4 are from the highest implementation level to the lowest with average of 5.1927 for Lean TQM Leadership. In terms of implementation percentage, 15 practices are highly implemented by all the respondents with percentage from 90.5% - 96.5%. These companies really belief in the important of setting policies and objectives for quality *(LTQM-LSHIP1)* which is the highest practice among all the practices available in this study. This indicates that for highly active and high performance of automotive vendors, quality has been their no.1 based on the survey findings. These companies are really committed in meeting customer, statutory, regulatory and environment requirements *(LTQM-LSHIP2)*, establishing vision *(LTQM-LSHIP3)*and mission statement *(LTQM-LSHIP4)* that provide direction to the companies in surviving well in the industry and finally reviewing and monitoring the customer feedback *(LTQM-LSHIP5)*, cost of quality *(LTQM-LSHIP7)*, status of corrective and preventive actions *(LTQM-LSHIP8)* and audit result *(LTQM-LSHIP9)*. The data indicates that planning practices are essential in Lean TQM Leadership and thus similar to Deming PDCA Cycle.

Table 1 Leadership Management Practices of Integrated TQM and LM and EMS for foundation level framework .

LTQM Leadership Practices	Mean	% Implementation Level
LTQM-LSHIP(1) Setting policies and objectives for quality.	5.77	96.17(High)
LTQM-LSHIP(2) Committed in meeting customer ,statutory,regulatory and environment requirements.	5.67	94.50(High)
LTQM-LSHIP(3) Establishing vision.	5.63	93.83(High)
LTQM-LSHIP(4) Establishing mission statement.	5.63	93.83(High)
LTQM-LSHIP(5) Reviewing and monitoring the customer feedback.	5.50	91.67(High)
LTQM-LSHIP (6) Managing environment and safety .	5.43	90.50(High)
LTQM-LSHIP(7) Reviewing and monitoring cost of quality .	5.43	90.50(High)
LTQM-LSHIP(8) Reviewing and monitoring status of corrective and preventive actions.	5.40	90.00(High)
LTQM-LSHIP(9) Reviewing and monitoring audit result.	5.40	90.00(High)

Table 2 Leadership Management Practices of Integrated TQM and LM and EMS for level 1 framework .

LTQM Leadership Practices	Mean	% Implementation Level
LTQM-LSHIP(10) Safety, health and policy, objectives and issues are reviewed and monitored.	5.37	89.50 (High)
LTQM-LSHIP(11) Objectives that are established must be SMART or S=Specific, M=Measurable, A=Acheivable, R=Result Oriented and T=Timeline.	5.37	89.50(High)
LTQM-LSHIP(12) All items must be deployed, communicated, reviewed and monitored for improvement.	5.37	89.50(High)
LTQM-LSHIP(13) All issues are reviewed and monitored.	5.33	88.83(High)
LTQM-LSHIP(14) Availability of financial practices of managing effective financial cash flow and balance sheet management resources.	5.27	87.83(High)
LTQM-LSHIP(15) More opportunity to achieve the success from recommendation for improvement obtained through reviewing and monitoring phase.	5.23	87.17(High)
LTQM-LSHIP(16) Customer and management representative.	5.23	87.17(High)
LTQM-LSHIP(17) Financial strategies that must reflect total quality and shareholder.	5.20	86.67(High)

Table 3 Leadership Management Practices of Integrated TQM and LM and EMS for level 2 framework .

LTQM Leadership Practices	Mean	% Implementation Level
LTQM-LSHIP(18) Integrated system is for long term benefits	5.07	84.50 (Moderate)
LTQM-LSHIP(19) The company must have nonblaming, performance oriented and process driven environment in the organization.	5.00	83.30 (Moderate)
LTQM-LSHIP(20) Top management must also identify new technologies that can have impact on business.	4.93	82.20 (Moderate)
LTQM-LSHIP(21) Everyone must contribute in all programs conducted by the organization.	4.83	80.50 (Moderate)
LTQM-LSHIP(22) Reviewing and monitoring any need of additional resources.	4.80	80.00 (Moderate)
LTQM-LSHIP(23) Reviewing and monitoring any environemntal noncompliance.	4.80	80.00 (Moderate)

Table 4 Leadership Management Practices of Integrated TQM and LM and EMS for level 3 framework .

LTQM Leadership Practices	Mean	%Implementation Level
LTQM-LSHIP(24) Making costing based on value stream projects.	5.07	84.50 (Moderate)
LTQM-LSHIP(25) Reviewing and monitoring lean team progress.	5.00	83.30 (Moderate)
LTQM-LSHIP(26) Have lean policy and objectives.	4.93	82.20 (Moderate)

Notes: Mean Value Scale: 5.1 – 6 (High Implementation), 4.8 – 5.1 (Moderate Implementation), 4.2 - 4.8 (Low Implementation) and 0 – 4.2 (Very Low).Percentage Scale: 85 – 100: High Implementation, 80-84 : Moderate Implementation , 70-79: Low Implementation, 0 – 69: Very Low Implementation

The planning practices are in setting and managing Quality Policy and Objectives, Top Management Commitment in Customer, Statutory and Regulatory, Vision Statement Establishment and Mission Statement Establishment. All the 30 vendors agreed that all of these planning practices are essential in an organization. Having the quality policy and objectives are the driving force towards commitment to customer, statutory and regulatory. The data indicates that Quality Policy and Objectives are more implemented rather than Vision and Mission Statement. Having Vision and Mission Statement in this study seems to indicate that in an automotive companies, quality must be obtained first then comes everything else. This can be the reason why Vision and Mission statement comes later after Quality Policy and Objectives and after commitment to customers, statutory and regulatory. Malaysian and Indonesian's Automotive Suppliers [12] had also found out that top management commitment, quality planning, head office's environmental practices, clear role of management staff, high commitment and support as well as middle management involvement throughout managing the operations are the significant factors that determine motivation for ISO14000 certification. Managing environment and safety *(LTQM-LSHIP6)* are still in the foundation category eventhough for companies that have no ISO14001 or OHSAS18000 certified. This may signify that companies are not just starting to look for quality product and customer satisfaction but also managing environment and safety of the entire organization.

For Level 1, the overall average for LeanTQM is 86.7% to 89.4%. Availability of financial practices of managing effective financial cash flow and balance sheet management resources *(LTQM-LSHIP14)* and financial strategies that must reflect total quality and shareholder *(LTQM-LSHIP17)* in level 1 and not in foundations shows that Malaysian automotive companies are now focusing on quality and customer satisfaction. In Lean TQM Leadership, for Level 1, it clearly indicates that all items must be deployed, communicated, reviewed and monitored for improvement *(LTQM-LSHIP12)*. This indicates that the

foundation practices such as quality policy and objectives, commitment to customers, statutory and regulatory are considered and all items not only in foundation but at all level must be deployed communicated, reviewed and monitored for improvement. An alarming worry situation is observed when safety, health policy and objectives *(LTQM-LSHIP10)* and issues are reviewed and monitored *(LTQM-LSHIP13)* only in level 1 and not in Foundation level. This means companies can only look at the safety and health after quality and customer satisfaction. This is quite a worry because companies should put safety and health at the top practice. However, the condition is still acceptable since this practices fall under 85% to 89% category which is still considered as what a world class companies practiced.

Objectives that are established must be SMART or S=Specific, M=Measurable, A=Acheivable, R=Result Oriented and T=Timeline *(LTQM-LSHIP11)* for Lean TQM. For Green Leadership, all the environmental programs are specified to have a SMART objectives and targets *(EMS-LSHIP11)*. This will give a clear direction to the companies geared by customer and management representative *(LTQM-LSHIP16)* and thus have more opportunity to achieve the success from recommendation for improvement obtained through reviewing and monitoring phase (*LTQM-LSHIP15)* .

For Lean TQM, in order to motivate the companies, Level 2 focus on the specifying that the integrated system is for long term benefits *(LTQM-LSHIP18)*and the company must have nonblaming, performance oriented and process driven environment in the organization *(LTQM-LSHIP19)* and everyone must contribute in all programs conducted by the organization *(LTQM-LSHIP21)*. Top management must also identify new technologies that can have impact on business for more competition in the industry and survive *(LTQM-LSHIP20)* as well as reviewing and monitored any need of additional resources *(LTQM-LSHIP22)* and environemntal noncompliance *(LTQM-LSHIP23)*.

In Level 3, the least practice for Lean TQM Leadership that has percentage between 72.2% to 77.8%. are on the lean related activities which are making costing based on value stream projects *(LTQM-LSHIP24)* , reviewing and monitoring lean team progress *(LTQM-LSHIP25)* and having lean policy and objectives *(LTQM-LSHIP26)* . This point out that the companies are less focusing on the lean manufacturing system practices even though MAJAICO consultation programs are available from 2006. This indicates that some of the Malaysian automotive companies have been practicing Lean and TQM [1] and gained benefits [13] but the companies did not have lean policy and objectives. The Malaysian automotive companies have been strongly practice quality objectives but they seem to not practicing lean policy and objectives.

4.0 CONCLUSION

Strong leadership efficient practices will include the effective management of non-financial profit (managing manpower as well as the other assets) and will not only focusing purely just financial profit. This is consistent with the practices by other reputable world class companies whereby performance of an organization must be balanced with profits obtained in a productive, motivated, positive and harmonious working environment. In this study, it is indicated that the least popular practices by the Malaysian automotive companies leaders are in reviewing and monitoring the lean activities progress, lean policy, lean objectives and costing based on lean value stream activities. The Lean TQM Leadership framework proposed in this study is believed to present a preliminary insight especially to companies embarking on a suitable system that can improve their productivity through efficient leadership methods. This proposed Lean TQM Leadership model can be used to assess and gauge the status of Leadership Management practices in other companies as well as be extended to another industry.

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