

## COMPLETION REPORT

A Comparative Study on Effectiveness of Lean Production Program and Knowledge Transfer during Malaysia-Japan Automotive Industry Cooperation (MAJAICO) and Post-MAJAICO

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Malaysia Japan Automotive Industry Cooperation (MAJAICO) is an economic project initiated to enhance regional competitiveness of Malaysian firms. The objective of the MAJAICO project was to enhance productivity and competitiveness in automotive production via a six-month guidance on lean production system (LPS). This project was led by 15 Japanese automotive experts at SMECorp to also transfer LPS knowledge to local vendors of national car makers (e.g., Proton, Perodua) so as to develop human capital and capacity building.

The overall objective of this study is to compare the effectiveness of LPS programs and knowledge transfer during the MAJAICO (during JMEPA) and MAI (post-MAJAICO/JMEPA) period.

Prior to comparison of effectiveness, this study seeks to understand the differences between LPS programs by MAJAICO project and MAI. This is followed by investigating the nature of LPS adopted by vendors that have participated in the LPS program by the MAJAICO project and MAI. The study also seeks to understand how effective the LPS implementation is on production management (e.g., waste reduction, quality improvement, downtime, production efficiency) and knowledge transfer over the two separate periods.

There are vast differences between MAJAICO and MAI. In 2011, the MAJAICO concluded successfully with participation of 87 local vendors that are mostly in Tier 1 to learn LPS via four-day LPS seminar and six-month shopfloor training. Overseas study trip and leadership seminars were provided to top executive. Tier 1 vendors belonging to Proton and Perodua that were interested to participate were assessed by Japanese experts for approvals. A standardized LPS plan was introduced to vendors in each batch given that all vendors have similar problems. Vendors who were assessed as serious in learning were allowed to repeat the program for two times. Significant improvement in production management was highly visible. At the end of the six-month training, most of the local vendors were independent in initiating small-scale LPS at production line. Some improvements resulted in 150% waste reduction, 75% quality improvement, and 100% production efficiency. Organizational learning and human capital has greatly benefited from MAJAICO project.

In contrast, the new operating structure at MAI had only seven Japanese experts to support MAI when MAJAICO project was transferred. The role of the Japanese experts were largely minimized from a leading role to a role that supports specific improvement area that were identified by Proton and Perodua. An initial plan for Tier 1 vendors that had benefitted in MAJAICO project to volunteer in training Tier 2 vendors were cancelled because Tier 1 vendors refused to train Tier 2 vendors that are their competitors. With a lack of local LPS experts at MAI, the limited number of Japanese experts and unwillingness of Tier 1 vendors to train, it was eventual that MAI arranged Tier 1 vendors to train their own Tier 2 vendors, subject to the selection of Proton and Perodua. Owing to the limited manpower at MAI, the old model of having mass teaching via LPS seminars in every six months (during MAJAICO) were changed to many small classes in which each class cater to a few vendors, thereby giving vendors

more attention. LPS leaders of vendors that had benefitted from MAJAICO volunteered to conduct LPS seminars. In short, the role of Japanese experts, the selection of vendors, the participating Tier 2 vendors, the LPS seminars and training at MAI are different from those during the MAJAICO project.

Due to the vast differences of LPS programs between MAJAICO project and MAI approaches, the nature of LPS programs adopted at respective Tier 2 vendors at MAI varies according to the preference of Proton and Perodua. The lack of standardized approach is the nature of LPS program at MAI and this varying nature cannot be compared with the LPS adoption by Tier1 vendors that participated during MAJAICO period. Therefore, the researchers decided to compare the LPS adoption and performance of vendors in pre and post-MAJAICO project to answer the second research question.

When the local vendors were no longer attached to MAI for LPS learning, most of the vendors depended on their LPS leader and production manager that have learned in MAJAICO program to drive LPS. However, in the absence of the Japanese experts at the MAI to drive the sustainability of LPS adoption, there was generally a huge decrease in the nature of LPS adopted. Many LPS leaders do not see the need to continue LPS activities at the same scale as they have experienced during the MAJAICO program. They indicated that they lack the capabilities to independently perform similar scale of LPS activities. They expressed that the commitment during MAJAICO program was closely led by the Japanese experts and therefore it was possible to improve on waste, quality, productivity, down time, inventory. They attributed the relatively small scale of LPS activities they implemented at MAI to the six-month training period that is rather short for them to master skills. On top of the lack of capability, the lack of top management support demotivated them as top management were more concerned about sales. Incentives for the implementation of LPS activities were not provided. Moreover, the regular heavy work commitment at the shopfloor, and the commitment to enhancement projects mandated by clients (Proton, Perodua) have kept LPS leader and team members occupied.

Therefore, they tend to keep up the spirit of LPS by engaging in a much smaller scale of LPS activities. For instance, past LPS activities under MAJAICO program were run on two production lines for different car parts and components. Individual or company efforts at MAI level tend to limit the LPS activities to one production line. The scope of production-related LPS activities are reduced too. For instance, past improvements under MAJAICO program would cover from waste reduction, quality improvement, downtime, inventory management and production efficiency. However, most of the vendors in the current study tend to focus on defect rate and production efficiency. The scope of Kaizen and quality control related activities practiced during the MAJAICO period were mostly not sustained at MAI stage to further develop human capital and capacity building. The drastic scale-down of LPS activities and the different directions vendors adopted to continue LPS have hindered the current study to collect quantitative production-related data for quantitative study. Nevertheless, it can be concluded that the effectiveness of LPS program at MAI stage is less given the scale-down of LPS activities, the lack of independence and capability to sustain similar scale of LPS and varying roles by stakeholders in the automotive industry that lack integration to achieve national agenda.

Publication of the Results of Research Project:

Verbal Presentation (Date, Venue, Name of Conference, Title of Presentation, Presenter, etc.)

Date: 13 Mar 2015

Venue: Otaru University of Commerce, Japan

Title: Comparison between MAJAICO A1 and POST-MAJAICO A1: Multiple stakeholders perspectives  
(Japanese experts, local experts, vendors & MAI staff)

Presenter: Yin Teng Chew

A manuscript will be submitted to a top conference in the U.S. for a presentation in 2016. The submission window will open in Jan 2016.

Thesis (Name of Journal and its Date, Title and Author of Thesis, etc.)

A manuscript will be submitted to a top journal in the field of production management. for review purpose.

Book (Publisher and Date of the Book, Title and Author of the Book, etc.)