UNIVERSITI TEKNOLOGI MARA

INTEGRATION OF IATF 16949 AND TOYOTA PRODUCTION SYSTEM AUDIT REQUIREMENTS IN AN AUTOMOTIVE ASSEMBLY LINE

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ABSTRACT

This research presents a case study on the integration of International Automotive Task Force (IATF) 16949 and Toyota Production System (TPS) audit requirements in an automotive assembly line. Redundancy of documents used at production floor has caused the difficulty in analysing the actual data taken by people at production. This is due to similar record sheets being used for both IATF 16949 and TPS with the same function and objective of the documents. The separate Quality Management System (QMS) has led to inefficiency of Internal Quality Audit due to the missed match between parameters and audit requirements in IATF 16949 and TPS. With the main objective to develop a framework that can harmonize both systems, this research was executed based on five main stages which were Plan, Analyse, Design, Implement and Evaluate. This is a revolutionized version of the famous model and approach of Deming's Cycle or Plan-Do-Check-Act (PDCA) Cycle and Toyota's 8's steps process. Research was carried out to define the gaps and problems faced by this organization. A comparison and contrast for a QMS between IATF 16949 and TPS were plotted and it showed that the processes had similar elements, tools and process objectives which involved similar documents applied in the organization on daily tasks. Survey questionnaire was used and distributed to the people involved in the organization. This is to gauge the level of satisfaction, difficulties, and challenges faced by the people in the organization. Statistical software named Rasch model analysis was used to analyse the survey questionnaire. From the analysis, respondents agreed that operating in two separate systems has led to inefficiency of QMS in the organization. For the case study, Internal Quality Audit (IQA) process at Mass Production has been chosen as a tool to measure the effectiveness of this QMS integration. A 5M (Man, Machine, Method, Material, Measurement) methodology were used to study the audit requirements for both IATF 16949 and TPS which showed that both systems shared most of the audit items. Simulation software named Arena software was used for simulation modelling and analysis of this integration system implementation at Mass Production process. By integrating the QMS through internal audit process for both IATF 16949 and TPS, it has benefited in increasing the production capacity and flexibility while improving operational efficiency. Decreasing the number of documents in implementing the internal audit process proved that the "wastes" occurred during the execution of both audit systems were reduced. Through performance analysis, it was revealed that the cycle time used to complete the audit was reduced and implemented effectively to achieve both IATF 16949 and TPS objectives. Based on the findings, this case study proposed that the integration of QMS of the IATF 16949 and TPS will harmonize the systems and reduce the hassle faced by the people in the organization.

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