ABSTRACT

Lack of information and inaccuracy of information among supply chain channels will cause impediment of physical material flow from suppliers to manufacturer and physical product flow from manufacturer to customers. Inaccuracy of information among supply chain channels will cause demand uncertainty either in manufacturer level and also in supplier level.

Condition which is often happened at PT. Matsushita Lighting Indonesia is demand cancellation from customers, so PT. Matsushita Lighting Indonesia had to change material order to suppliers. Supplier disability to fulfill change of material order will cause excess material inventory at PT. Matsushita Lighting Indonesia.

This research is done as an effort for improving process of material inventory system, in more specific is to reduce material inventory level until reach its performance target. Material inventory days of supply is used to measure inventory performance that is determined by PT. Matsushita Lighting Indonesia for every class of material based on ABC classification. Concept of DMAIC in Six Sigma will be used for this improvement process. DMAIC is a closed-loop improvement phase that consists of define, measure, analyze, improve, and control. Define phase described material inventory system at PT. Matsushita Lighting Indonesia and assigned its standard performance. Measure phase calculated material inventory days of supply and identified factors that cause excess material inventory which used cause and effect diagram. Calculation in measure phase showed that material inventory is excessive, especially C class because during four months measurement, its material inventory days of supply always exceed the target and its sigma value is under 6σ. Using simulation and analysis of variance (ANOVA), analyze phase analyzed factors that cause excess material inventory level. Result of analysis indicate that lead time is the most affecting factor, next factor is fluctuation of material consumption and the last factor is minimal order quantity. Improve phase identified and prioritized improvement plans with failure mode and effect analysis (FMEA). To keep improvement process continuity, company need to determine standard procedure for each phase and audit periodically to ensure improvement phase will be done well.

Keywords: Supply Chain Management, Material Inventory Level, Material Inventory Days of Supply, Six Sigma, DMAIC, Simulation, ANOVA, FMEA