

## SUMMARY

**Samuel Kresna Susilo**, Department of Industrial Engineering, Faculty of Engineering, Universitas Brawijaya, Fakultas Teknik Universitas Brawijaya, November 2015, *Master Production Schedule System Design to Minimize Inventory (Case Study: CV Duta Java Tea Industri)*, Supervisor: Purnomo Budi Santoso and Ceria Farela Mada Tantrika.

CV Duta Java Tea Industry is a company which produce and store tea bag products with varied number of demand over time. Inventory control policy in the Tea Bag Division of CV Duta Java Tea Bags Tea Industry has resulted in finished good overstock at the warehouse. This leads to excessively high inventory costs. Therefore, a method to reduce inventory overstock by calculating daily production amount based on available informations is necessary.

Master Production Schedule (MPS) System Design was implemented by using Microsoft Excel VBA. Initially, production data were gathered to begin this method. Calculations were done manually later. This part began by defining forecast method using lowest Mean Square Error (MSE) and tracking signal. Demand forecasting was done for 11 types of tea bags products. Afterwards, the amount of safety stock was calculated. This was followed by aggregate planning and creating daily master production schedule. Subsequently, system design was done. This part began by analyzing old system by using Wetherbe's Performance, Input, Economics, Control, Efficiency, and Service (PIECES) analysis, creating System Requirement Checklist (SRC) for the new system, data modeling, process modeling, as well as determining development strategies. Microsoft Excel worksheet, user interface, and programming algorithm were designed later. It was followed by implementation of system. Then testing was done which includes verification test, validation test, and prototype test. After conducting all of the steps, evaluation of inventory level were done between existing system's inventory and new system's inventory proposed in this study.

Result of this study was a verified and validated master production schedule system prototype. This system has 13 section of user interface menu and the ability to calculate demand data into master production schedule by using Microsoft Excel VBA. Evaluation of inventory level showed that the average inventory for existing condition were 743,7 units which decreased to 646,9 units in the new system condition. Therefore the proposed master production schedule system was able to solve existing problems and achieve the designated objectives.

Keywords: Tea Bag, Inventory, Master Production Schedule, System Design, Microsoft Excel VBA.

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