ANALISIS PEMBOROSAN PADA PROSES PRODUKSI AIR MINERAL VARIAN *CUP* 220 ML DI PT MAKMUR BERSAMA SAHABAT

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Diajukan sebagai Salah Satu Syarat untuk Menyelesaikan Program Sarjana pada Departemen Teknik Industri Fakultas Teknik Universitas Andalas

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ABSTRAK

Pertumbuhan industri Air Minum Dalam Kemasan (AMDK) di Indonesia yang semakin pesat mendorong meningkatnya kebutuhan akan proses produksi yang efisien dan berkelanjutan. PT Makmur Bersama Sahabat sebagai salah satu produsen air mineral di Sumatera Barat menghadapi berbagai permasalahan pemborosan dalam proses produksinya, seperti defect, motion, waiting, transportation, overproduction, *dan* inventory. *Pemborosan tersebut menyebabkan penurunan efisiensi proses produksi. Kondisi ini menjadikan penerapan konsep* Lean Manufacturing *menjadi penting untuk mengurangi pemborosan. Melalui pendekatan ini, perusahaan diharapkan mampu mengurangi aktivitas tidak bernilai tambah.*

Penelitian ini menggunakan Waste Assessment Model *(WAM)*, Value Stream Mapping *(VSM), dan dikombinasikan dengan* Fishbone Diagram *untuk mengidentifikasi sumber pemborosan, menganalisis akar penyebabnya, serta memberikan usulan perbaikan proses. Tahapan penelitian meliputi studi pendahuluan melalui observasi lapangan dan wawancara, studi literatur, pengumpulan data primer dan sekunder, pengolahan data menggunakan pemetaan* Current *VSM untuk kondisi eksisting, analisis pemborosan, usulan perbaikan, serta perancangan* Future *VSM sebagai rancangan perbaikan. Pengukuran dilakukan terhadap waktu siklus proses,* value added time, *serta* non value added time *untuk menilai efektivitas perbaikan yang diusulkan. Hasil penelitian diharapkan dapat membantu PT Makmur Bersama Sahabat dalam mengurangi pemborosan produksi dan meningkatkan efisiensi produksi.*

Berdasarkan hasil pengolahan data, Current Value Stream Mapping *(CVSM) didapatkan nilai* Process Cycle Efficiency *(PCE) sebesar 61,18%. Berdasakan hasil dari identifikasi* waste *dengan WAM didpatkan tiga* waste *dominan yaitu* overproduction *(18,78%),* inventory *(17,12%), dan* defect *(16,70%). Berdasarkan* fishbone diagram *diketahui faktor penyebab tiga* waste *dominan, sehingga diberikan usulan perbaikan untuk mengurangi terjadinya* waste *tersebut. Usulan perbaikan yang diberikan berupa penerapan* pull system *dan* visual management tools *untuk mengatasi* overproduction, *memperbesar gudang produk jadi dan membuat SOP penyimpanan produk jadi untuk* inventory, *membuat SOP pengoperasian mesin* water treatment dan *mesin ACS serta SOP proses* packing, *membuat* checklist maintenance *dan* standard work process *untuk menekan* defect. *Berdasarkan usulan perbaikan terdapat pengurangan waktu kerja dan eliminasi aktivitas tidak bernilai tambah yang dibuktikan dengan perubahan persentase aktivitas* value added *dari 50% menjadi 60,71%,* necessary non value added *dari 32,35% menjadi 32,14%, dan* non value added *dari 17,65% menjadi 7,14%. Oleh karena itu didapatkan peningkatan efisiensi proses produksi yang ditandai dengan peningkatan nilai PCE pada* Future Value Stream Mapping *(FVSM) sebesar 82,48%.*

Kata Kunci: *Air Minum Dalam Kemasan*, Lean Manufacturing, *Pemborosan*, Value Stream Mapping, Waste Assessment Model.

ABSTRACT

The rapid growth of the Bottled Drinking Water (AMDK) industry in Indonesia has driven an increasing need for efficient and sustainable production processes. PT Makmur Bersama Sahabat, as one of the mineral water producers in West Sumatra, faces various types of waste in its production process, such as defects, motion, waiting, transportation, overproduction, and inventory. These wastes lead to a decline in production efficiency. This condition highlights the importance of implementing the Lean Manufacturing concept to reduce waste. Through this approach, the company is expected to minimize non-value-added activities.

This study employs the Waste Assessment Model (WAM) and Value Stream Mapping (VSM), combined with a Fishbone Diagram, to identify sources of waste, analyze their root causes, and propose process improvements. The research stages include a preliminary study through field observations and interviews, a literature review, primary and secondary data collection, data processing using Current VSM mapping to describe the existing condition, waste analysis, improvement proposals, and the design of a Future VSM as an improved process model. Measurements are conducted on process cycle time, value-added time, and non-value-added time to evaluate the effectiveness of the proposed improvements. The results of this study are expected to assist PT Makmur Bersama Sahabat in reducing production waste and improving overall production efficiency.

Based on the data processing results, the Current Value Stream Mapping (CVSM) shows a Process Cycle Efficiency (PCE) value of 61.18%. The waste identification results using the Waste Assessment Model (WAM) reveal three dominant types of waste: overproduction (18.78%), inventory (17.12%), and defects (16.70%). The Fishbone Diagram analysis identifies the root causes of these dominant wastes, leading to proposed improvements to reduce their occurrence. The proposed improvements include implementing a pull system and visual management tools to address overproduction; expanding the finished goods warehouse and establishing a Standard Operating Procedure (SOP) for finished goods storage to manage inventory; developing SOPs for operating the water treatment and ACS machines as well as the packing process; and creating maintenance checklists and standardized work processes to reduce defects. The proposed improvements result in reduced working time and the elimination of non-value-added activities, as evidenced by changes in activity percentages: value-added activities increase from 50% to 60,71%, necessary non-value-added activities slightly decrease from 32.35% to 32.14%, and non-value-added activities decrease significantly from 17.65% to 7.14%. Consequently, production process efficiency improves, as indicated by an increase in the PCE value in the Future Value Stream Mapping (FVSM) to 82.48%.

Keywords: Bottled Drinking Water, Lean Manufacturing, Value Stream Mapping, Waste, Waste Assessment Model.