

Adinda Yunita Rahma. NPM 220331100008. Penerapan metode *six sigma* dan *FMEA* pada *quality control* jamu Madura. Di Bawah Bimbingan **Dian Farida Asfan, S.T., M.T.,** dan **Dr. Banun Diyah Probowati, S.TP., M.Si.**

ABSTRAK

Pengendalian kualitas merupakan upaya untuk memastikan produk yang dihasilkan memenuhi standar mutu. PT. Firdaus Kurnia Indah sebagai produsen jamu Madura masih menghadapi permasalahan berupa cacat bentuk, cacat kemasan, dan cacat stiker yang menunjukkan bahwa proses pengendalian kualitas belum optimal. Penelitian ini bertujuan untuk mengidentifikasi jenis cacat, mengukur tingkat kapabilitas proses, menganalisis penyebab terjadinya cacat, serta menyusun usulan perbaikan untuk meminimalkan kecacatan produk. Metode yang digunakan adalah Six Sigma dengan tahapan *Define, Measure, Analyze, Improve, dan Control* (DMAIC) yang didukung dengan metode *Failure Mode and Effects Analysis* (FMEA) untuk menentukan prioritas perbaikan berdasarkan tingkat risiko. Hasil penelitian menunjukkan bahwa terdapat tiga jenis *Critical to Quality* (CTQ), yaitu cacat bentuk, cacat kemasan, dan cacat stiker. Berdasarkan analisis diagram Pareto, cacat bentuk merupakan jenis cacat yang paling dominan dengan persentase sebesar 43,0% dari total keseluruhan produk cacat. Hasil pengukuran kapabilitas proses menunjukkan rata-rata nilai *Defects per Million Opportunities* (DPMO) sebesar 3477,52 serta rata-rata level sigma sebesar 4,20. Hasil tersebut menunjukkan bahwa proses produksi berada pada tingkat kapabilitas yang cukup baik, namun masih memerlukan peningkatan kualitas untuk mengurangi variasi proses. Analisis diagram Sebab-Akibat menunjukkan bahwa kecacatan dipengaruhi oleh faktor *machine, material, dan man*. Berdasarkan analisis FMEA, penyebab dengan nilai RPN tertinggi berasal dari cacat bentuk. Usulan perbaikan difokuskan pada penerapan Standar Operasional Prosedur (SOP) sanitasi peralatan, standarisasi formulasi dan parameter pencampuran adonan, serta penerapan *in-process quality control*. Usulan tersebut diharapkan mampu mengurangi variasi proses, menekan jumlah produk cacat, dan meningkatkan kualitas produk secara berkelanjutan.

Kata kunci: Six Sigma, DMAIC, FMEA, DPMO, level sigma, pengendalian kualitas.

Adinda Yunita Rahma. NPM 220331100008. *Application of the Six Sigma and FMEA in the Quality Control of Madura Herbal Medicine. Under the supervision of Dian Farida Asfan, S.T., M.T. and Dr. Banun Diyah Probowati, S.TP., M.Si.*

ABSTRACT

Quality control is an effort to ensure that products meet established quality standards. PT. Firdaus Kurnia Indah, a producer of Madura herbal medicine, continues to experience quality issues in the form of shape defects, packaging defects, and label defects, indicating that its quality control process has not yet been fully optimized. This study aimed to identify the types of defects, measure the process capability, analyze the root causes of defects, and propose improvement recommendations to minimize product defects. The research employed the Six Sigma methodology using the Define, Measure, Analyze, Improve, and Control (DMAIC) framework, supported by the Failure Mode and Effects Analysis (FMEA) method to determine improvement priorities based on risk levels. The results identified three Critical to Quality (CTQ) characteristics, namely shape defects, packaging defects, and label defects. Based on the Pareto analysis, shape defects were the most dominant type, accounting for 43,0% of the total defects. The process capability analysis showed an average Defects per Million Opportunities (DPMO) value of 3477,52 and an average sigma level of 4,20. These findings indicate that the production process has achieved a relatively good level of process capability; however, further quality improvement is still required to reduce process variation. The fishbone analysis revealed that the defects were mainly influenced by machine, material, and man factors. Furthermore, the FMEA results indicated that the highest RPN was associated with shape defects. The proposed improvements focused on implementing Standard Operating Procedures (SOPs) for equipment sanitation, standardizing the formulation and dough-mixing parameters, and implementing in-process quality control. These recommendations are expected to reduce process variation, minimize product defects, and continuously improve product quality.

Keywords: *Six Sigma, DMAIC, FMEA, DPMO, sigma level, quality control.*