

ABSTRACT

KUB Mampu Jaya is a small and medium-sized enterprise (SME) engaged in the production of shoes and sandals, established as part of a community empowerment program following the closure of the dolly red-light district in Surabaya. The shoe production process in this SME faces various challenges, including a high defect rate and non-value-added activities. This study aims to identify and reduce defects and waste in the shoe production process through the implementation of the Lean Six Sigma method using the DMAIC approach (Define, Measure, Analyze, Improve, Control). The analysis utilized tools such as SIPOC, Critical to Quality (CTQ), P-Control Chart, DPMO, Process Activity Mapping (PAM), Value Stream Mapping (VSM), Fishbone Diagram, and Failure Mode and Effects Analysis (FMEA). The results show a sigma level of 3.1, equivalent to 55,910 defects per million opportunities, which is far from world-class standards. The primary causes of defects include the absence of standardized operating procedures, low operator skills, and suboptimal machine conditions. Improvements were proposed through the development of SOPs, technical training for workers, and the establishment of machine maintenance procedures. The control phase ensures the sustainability of improvements through supporting documents and a quality monitoring system. The implementation of Lean Six Sigma proved effective in reducing defects, improving process flow, and increasing production efficiency. This research provides practical contributions to enhancing the competitiveness of KUB Mampu Jaya and expands the application of Lean Six Sigma in the SME sector.

Keywords — Defect, DMAIC, lean six sigma, shoe production process