ABSTRACT

The high percentage of defects in banner products at the Kamoro PT Irian Bhakti Papua printing company in Timika has led to increased production costs and rework. This study aims to propose quality improvements using the six sigma method with a DMAIC (define, measure, analyze, improve, control) approach. During the define phase, the problem was identified using SIPOC to understand the production process flow at Kamoro Printing and the critical to quality (CTQ) factors. Based on the CTQ mapping, it was found that there are four types of defects: scratches, lines, tilted prints, and broken images. During the measure phase, the defect per million opportunities (DPMO) value and sigma level were calculated from production data. Based on these calculations, the DPMO value was 23,384 and the sigma level was 3.5. This value indicates that the production process is still classified as "fairly good" according to Indonesian standards, but the relatively high number of defects can still occur due to significant variations in the process. In the analyze phase, Pareto diagrams, fishbone diagrams, and FMEA were used to identify the main causes of defects, with line defects contributing the highest percentage (35%) due to the absence of SOPs for material inspection and machine maintenance schedules. The improve phase involved developing improvement proposals, including SOPs for material inspection, scheduling, and machine maintenance documentation. The control phase designs a control plan to ensure the sustainability of improvements. The research results show that the Six Sigma method is effective in identifying the root causes of defects and designing systematic solutions to improve production quality.

Keywords: *Banner, DMAIC, Production Defects, Quality Control, Six Sigma*