

Abstract

PT. XYZ is a company in Makassar which is engaged in convection. PT.XYZ produces jeans. PT.XYZ produces products based on pants size, fabric type, and fabric color. One of the most common types of fabric produced by PT. XYZ in the manufacture of jeans is Denim 13 oz in indigo blue. Based on production data for 2 years or 24 months, there are 21 months that have a percentage value of defective products that exceeds the tolerance limit set by the company, which is 10%. In the production of jeans at PT. XYZ, there are 6 stages of the process, namely, material preparation which includes inspection of fabrics, colors, and accessories, drawing patterns, cutting fabrics, sewing fabrics, inspections, and packaging. During the jeans production process, several defects occurred, including stains on the pants, incorrect size of the pants, misaligned cuts, shriveled stitches, jump stitches, bubble stitches, misaligned stitches, and jammed zippers.

In this study, the sixsigma method with the DMAIC approach (define, measure, analyze, improve, control) will be used for process improvement. DMAIC is often associated with six sigma activities, and almost all six sigma implementations use the DMAIC process for project management and completion. At the define stage, the identification process of product CTQ, process stages, process CTQ, and also problems contained in the production process will be carried out. Furthermore, in the measure stage, the process stability calculation is carried out and continued with the calculation of process capability. Next in the analyze stage, an analysis is carried out using the tools of a cause-and-effect diagram or a fishbone diagram and 5 whys to find the root of the problems that occur. After the root of the problem is known, potential solutions will be given to each root cause, and FMEA (Failure Mode and Effect Analysis) tools will be used to select the priority for improvement. The last stage, namely the improve stage. At this stage, the proposed improvements that have been selected in the previous stage will be designed. In this study, a design will be proposed, namely a visual display reminder to check the condition of equipment and sewing machines before starting the sewing process which is expected to minimize defective products that occur in the sewing process.

In designing a visual display reminder to check the condition of the equipment and sewing machine before starting the sewing process, several design stages will be carried out, namely designing the visual display design, calculating the font size, and determining the color of the visual display. The improvement plan will be verified to see its conformity to the specified specifications. After being verified, an evaluation of the improvement design will be carried out which is expected to minimize defects in the sewing process by 32% from the previous defects, reduce the overall defective product by 3296 to 2764, increase the sigma value of 3.56 to 3.63, and reduce the DPMO value of 19800 possible defects per one million times production opportunities to 16474 possible defects per one million times production opportunities.

Keywords — Quality, DMAI, Sewing, Visual Display, Ergonomic