

ABSTRACT

Mamawied Bakery is a business engaged in bread production. However, in the production process, there are still problems in the form of a high number of defective products, especially burnt bread, which has an impact on quality and the failure to achieve production targets. This study aims to identify the dominant causes of defects and propose improvements using the DMAIC method (Define, Measure, Analyze, Improve, Control). This method is used to systematically analyze the process, starting from problem identification, performance measurement, root cause analysis, to the design and control of improvement solutions. Based on observation results, burnt bread defects had the highest percentage at 2.69%. Analysis results indicated that the primary causes stemmed from unstable oven temperature, uncontrolled baking time, and raw materials that accelerated caramelization. Improvement proposals were implemented through operator training, SOP development, oven maintenance, and optimal temperature and time settings using the Design of Experiment (DoE) approach. The results of the Design of Experiments (DoE) showed that the combination of baking temperature and time at 150-160°C with a duration of 18 minutes significantly reduced the number of bread defects, making it a reliable reference for setting optimal process parameters. With the implementation of this strategy, it is expected that can imorove product quality to 0,33%

Keywords: Product quality, DMAIC, six sigma, burnt bread, design of experiment (DoE).