

PEANUT CAKE PRODUCT QUALITY CONTROL USING STATISTICAL PROCESS CONTROL METHOD IN MBAK SRI MICRO-ENTERPRISE JEMBER REGENCY

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ABSTRACT

This study was conducted to evaluate the quality control system of peanut cake production at Mbak Sri Micro-Enterprise in Jember Regency by applying the Statistical Process Control (SPC) method, while simultaneously identifying the underlying factors contributing to product defects. Attribute data covering two quality dimensions were collected, namely shape integrity and color uniformity of peanut cakes, observed across 25 consecutive production cycles. The analysis employed three primary tools: the np-chart control map, Pareto diagram, and cause-and-effect diagram (fishbone diagram). The findings revealed that the overall defect rate remained within statistical control limits, indicating that the production process was operating in a controlled state. Nevertheless, several observation points were detected approaching the Upper Control Limit (UCL), suggesting potential process deviations that require attention. The Pareto diagram analysis demonstrated that color uniformity defects constituted the most prevalent type of nonconformity, recording 6,443 occurrences or 66% of total defects, whereas shape integrity defects accounted for 3,376 cases representing 34%. The cause-and-effect diagram analysis revealed that the root causes of defects originated from three primary factors: human resources, work methods, and machine conditions. Recommended corrective measures include establishing a Quality Control (QC) team, conducting employee training and motivational programs, developing structured Standard Operating Procedures (SOPs), and optimizing supervision along with regular maintenance of production equipment, particularly the oven units. Through the consistent implementation of these improvements, it is anticipated that the quality standard of peanut cake products can be sustainably maintained and progressively enhanced.

Keywords: Statistical Process Control (SPC), quality control, peanut cake