

Analisis Risiko Kegagalan Kualitas Susu Pasteurisasi (Jabmilk)
Menggunakan Integrasi Metode *Fuzzy FMEA* Dan *Fuzzy AHP*
Failure Risk Analysis of Pasteurized Milk Quality (Jabmilk) Using an Integrated
Fuzzy FMEA and Fuzzy AHP Approach
Annisa'U Choirun S.TP., M.T. Selaku Dosen Pembimbing

Vania Irvia Putri
Program Studi Teknologi Rekayasa Pangan
Jurusan Teknologi Pertanian
Study Program of Food Engineering
Majoring of Agriculture Technology

ABSTRACT

Pasteurized milk is a food product susceptible to quality degradation due to potential failures at various stages of the production process; therefore, risk identification and mitigation are essential to maintain product quality and safety. This study aimed to identify quality failure risks in the JabMilk pasteurized milk production process, prioritize these risks using the Fuzzy Failure Mode and Effects Analysis (Fuzzy FMEA) method, and establish mitigation strategy priorities using the Fuzzy Analytical Hierarchy Process (FAHP). The research was conducted at the Processed Milk Business Unit of the Jabung Syariah Agro-Commerce Producer Cooperative in Malang Regency from February to April 2026, utilizing observation, interviews, documentation, literature review, questionnaires, and assessments by three experts. The study identified 21 potential quality failure risks. Fuzzy FMEA analysis revealed that the highest-priority risk was temperature rise due to shear during the mixing process, causing nutrient and probiotic degradation (FRPN 11.43), followed by PLC system failure or power failure (11.29), imperfect packaging seals (10.44), temperature sensor reading errors (10.02), and packaging damage during storage (9.93). FAHP analysis indicated that priority mitigation strategies included controlling mixing process parameters, equipment maintenance and calibration, enhancing operator competence, implementing real-time monitoring, controlling packaging hygiene, ensuring raw milk quality meets SNI standards, and maintaining the cold chain during distribution. These strategies are expected to reduce quality failure risks and improve the quality and safety of JabMilk pasteurized milk.

Keywords: risk analysis, FAHP, Fuzzy FMEA, risk mitigation, pasteurized milk