

APPLICATION OF FMEA AND AHP METHODS IN DETERMINING RISK MITIGATION PRIORITIES FOR FRUIT PUDDING PRODUCTION AT SALAD BUAH RAHMA(SBR) MSME

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ABSTRACT

Salad Buah Rahma (SBR) is a MSME dessert business which produces fruit puddings made from fresh ingredients therefore carries potential production risks that may affect product quality, consistency, and lifespan. This research aims to analyze the implementation of production risk management, identify and determine risk priority through the use of the Failure Mode and Effect Analysis (FMEA) method, and determine the priority of risk mitigation strategies using the Analytical Hierarchy Process (AHP) method. The study was conducted at the Ngagel branch of SBR MSME in Surabaya from December 2025 to June 2026 using a descriptive method with an exploratory sequential mixed-methods approach. Data were collected through observation, interviews, and documentation. FMEA used Severity, Occurrence, and Detection parameters to obtain Risk Priority Numbers (RPN). The results identified five production risks: production SOPs not documented in detail (RPN 512), storage facility damage (441), ingredient measurement errors (392), inconsistent product texture (288), and insufficiently fresh raw materials (252). These risks were used as AHP criteria, while mitigation alternatives were developed based on the existing current controls. The global priority results showed that developing and implementing detailed SOPs was the main mitigation priority with a weight of 0.2922 (29.22%), followed by production process improvement (22.24%), raw material selection improvement (17.83%), employee training (16.88%), and storage facility improvement (13.84%). The integration of FMEA and AHP helps determine production risks and mitigation priorities according to the actual conditions of SBR MSME.

Keywords: *Risk management, Failure Mode and Effect Analysis (FMEA), Analytical Hierarchy Process (AHP), Risk mitigation, Fruit puddings*