

**Analisis Risiko Rantai Pasok Yoghurt Dari Hulu Ke Hilir Menggunakan
Fuzzy FMEA Dan FAHP**
*Risk Analysis of the Yoghurt Supply Chain from Upstream to Downstream Using
Fuzzy FMEA and FAHP*
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ABSTRAK

Koperasi Produsen Agro Niaga Jabung Syariah (KAN Jabung) merupakan industri pengolahan susu yang memproduksi yoghurt sebagai produk fermentasi. Karakteristik yoghurt yang mudah rusak menyebabkan setiap tahapan rantai pasok memiliki potensi risiko yang dapat memengaruhi mutu, keamanan, dan kontinuitas produk. Penelitian ini bertujuan mengidentifikasi risiko pada rantai pasok yoghurt, menentukan prioritas risiko menggunakan metode *Fuzzy Failure Mode and Effects Analysis* (Fuzzy FMEA), serta menentukan prioritas strategi mitigasi menggunakan *Fuzzy Analytical Hierarchy Process* (FAHP). Data diperoleh melalui observasi, wawancara, dokumentasi, dan kuesioner yang melibatkan tiga orang pakar. Hasil penelitian mengidentifikasi 24 agen risiko pada seluruh tahapan rantai pasok yoghurt. Analisis *Fuzzy FMEA* menunjukkan bahwa risiko dengan nilai *Fuzzy Risk Priority Number* (FRPN) tertinggi adalah waktu fermentasi yang kurang sehingga pH yoghurt belum mencapai standar (R17) dengan nilai FRPN sebesar 9,662. Risiko prioritas lainnya meliputi kontaminasi silang selama fermentasi, kontaminasi pada proses pengemasan, kegagalan penyegelan kemasan, dan ketidaksesuaian rasa akibat penambahan perisa. Hasil FAHP menunjukkan bahwa strategi mitigasi prioritas meliputi pengendalian waktu fermentasi dan pH, pengujian mikrobiologi bahan baku, penerapan sanitasi dan sterilisasi pada proses pengemasan, serta pengendalian suhu distribusi melalui sistem *cold chain*. Penerapan strategi tersebut diharapkan mampu menurunkan tingkat risiko serta meningkatkan mutu dan keamanan produk yoghurt.

Kata kunci: rantai pasok, yoghurt, *Fuzzy FMEA*, FAHP, mitigasi risiko.

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ABSTRACT

Koperasi Produsen Agro Niaga Jabung Syariah (KAN Jabung) is a dairy processing cooperative that produces yoghurt as a fermented dairy product. Due to its perishable nature, each stage of the yoghurt supply chain has potential risks that may affect product quality, safety, and continuity. This study aimed to identify risks in the yoghurt supply chain, determine risk priorities using the Fuzzy Failure Mode and Effects Analysis (Fuzzy FMEA) method, and prioritize mitigation strategies using the Fuzzy Analytical Hierarchy Process (FAHP). Data were collected through observations, interviews, documentation, and questionnaires involving three experts. The results identified 24 risk agents throughout the yoghurt supply chain. The Fuzzy FMEA analysis showed that the highest Fuzzy Risk Priority Number (FRPN) was insufficient fermentation time resulting in yoghurt pH failing to meet the required standard (R17), with an FRPN value of 9.662. Other priority risks included cross-contamination during fermentation, contamination during packaging, packaging seal failure, and flavor inconsistency caused by improper flavor addition. The FAHP analysis indicated that the priority mitigation strategies include monitoring fermentation time and pH, conducting microbiological testing of raw materials, implementing sanitation and sterilization during packaging, and maintaining distribution temperature through a cold chain system. These strategies are expected to reduce supply chain risks while improving the quality and safety of yoghurt products.

Keywords: *supply chain, yoghurt, Fuzzy FMEA, FAHP, risk mitigation.*