ABSTRACT

UMKM PK Roni Kayu Kusen Bandung *is a small-to-medium enterprise (SME) engaged in manufacturing, specifically in the production of door and window frames. Based on workplace accident records, there were six incidents in 2022 and 2023, with an increase to seven cases in 2024. The production process involves various types of machinery that pose occupational health and safety (OHS) risks. These risks include potential accidents such as scratches, cuts, electric shocks, punctures, exposure to sawdust, and other hazards. This study aims to comprehensively identify and mitigate these risks to prevent workplace accidents and support the sustainability of UMKM PK Roni's operations.*

The Failure Mode and Effect Analysis (FMEA) method was used to identify and assess risks based on the Risk Priority Number (RPN). Out of 32 identified risks, the highest RPN recorded was 156. Using the 30/70 Pareto diagram, five priority risks were selected and analyzed for their root causes using a fishbone diagram. A total of ten mitigation proposals were developed based on the hierarchy of risk control, and the best alternatives were selected using the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) method. The TOPSIS results produced the three highest preference values: 0.78, 0.77, and 0.65. This design is expected to be implemented at UMKM PK Roni to enhance workplace safety, reduce the potential for accidents, and promote the long-term sustainability and productivity of the business.

Keywords — Occupational Safety and Health, FMEA, TOPSIS, Risk Mitigation