DEVELOPMENT FOR THE DETERMINATION OF PRIORITIES AND RECOMMENDATIONS OF IMPROVEMENT MODEL TO COMPONENTS OF FAILURE MODE BY FMEA METHODOLOGY, FUZZY AND INTEGRATED TOPSIS

By: Mochammad Basjir
Student Identity Number: 2507201002
Supervisor: Ir. Hari Supriyanto, MSIE.
Ir. Mokh. Suef, M.Sc(Eng)

ABSTRACT

Some weaknesses exist when determination of priorities and recommendation of improvement against failure by FMEA such as assessing risk factors in classical language, three risk factors namely severity, occurrence and detection were assumed to have the same importance, ignored the risks among the same rank and ignored the importance of assessors level of interest.

The fuzzy method for FMEA was developed during this research where three risk factors were going to be evaluated in linguistic forms with fuzzy rating. The importance level of team member will be considered. In order to rank or priority level in corrective action based on given criteria, TOPSIS method was used.

Fuzzy method which was development and TOPSIS in FMEA from this research were going to be tested in production floor of furniture factory where twenty one identified failure modes exist. The results of the research show that priority ranking by fuzzy-FMEA method was able to revise priority ranking result from FMEA method. The ranking priority by TOPSIS method revise priority ranking result from FMEA and fuzzy-FMEA method. The results of the ranking of priorities and recommendations given by TOPSIS in accordance with the real conditions of companies.

Keyword: the ranking priority, improvement recommendation, failure mode effect and analysis (FMEA), fuzzy theory, TOPSIS