

# Utility Priority Number Evaluation for FMEA

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## Abstract

Abstract Traditionally, decisions on how to improve an operation are based on risk priority number (RPN) in the failure mode and effects analysis (FMEA). Many scholars questioned the RPN method and proposed some new methods to improve the decision process, but these methods are only measuring from the risks viewpoint while ignoring the importance of corrective actions. The corrective actions may be interdependent; hence, if the implementation of corrective actions is in proper order, selection may maximize the improvement effect, bring favorable results in the shortest times, and provide the lowest cost. This study aims to evaluate the structure of hierarchy and interdependence of corrective action by interpretive structural model (ISM), then to calculate the weight of a corrective action through the analytic network process (ANP), then to combine the utility of corrective actions and make a decision on improvement priority order of FMEA by utility priority number (UPN). Finally, it verifies the feasibility and effectiveness of this method by application to a case study.

Keyword : Keywords RPN FMEA ISM ANP