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# Simplified Approach to Analyse the Fuzzy Reliability of a Repairable System

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Chapter | [First Online: 09 April 2023](#)

**273** Accesses

Part of the [Industrial and Applied Mathematics](#) book series (INAMA)

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## Abstract

This chapter presents a simplified approach to analysing the fuzzy reliability of a repairable system by utilising uncertain data collected from different sources. This technique uses fault tree to model the system, triangular fuzzy numbers to quantify uncertain information, and the Lambda-Tau (LT) method to discover functional equations for six distinct system reliability indices, whilst simplified arithmetic operations are using for calculation. The proposed strategy is utilised to estimate the efficiency of a paper producing plant's washing system by determining its fuzzy reliability for various levels of uncertainty. Results are compared with two existing techniques, namely conventional LT and fuzzy Lambda-Tau (FLT). To determine how different operating conditions affect system performance, sensitivity analysis and long-term reliability evaluation are conducted. The significant system components are ranked using the V-index. The results indicate that, in comparison with the current FLT technique, the proposed approach is straightforward to implement for assessing the fuzzy reliability of any substantial and intricate repairable industrial system. The presented approach might be very useful to maintenance professionals in designing an effective maintenance strategy for enhancing system performance in a very easy manner.