

Research on Production Innovation Problem Identification Process Based on FRT

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Abstract. The design and development of modern products is a process of ongoing improvement. At the same time, voice of customers (VOC) for products or services tends to be diversified. In order to avoid the problem that a single development form is difficult to grasp the current mainstream trend and meet the individual needs of customers, the study we report in this article addresses an innovative method combining user needs and current product research status. Through the study of Theory of Constraints (TOC) and innovative methods, the two classic tools of TOC, Current Reality Tree (CRT) and Future Reality Tree (FRT), are mainly used to establish the process of problem discovery and solution with LT dimensional representation. It mainly includes the establishment of CRT, the determination of "injection" according to product status and the transformation from CRT to FRT. The approach provides design ideas for developing and improving new products. The target product can meet the diversified needs of customers. According to VOC and product status, the approach combines the two basic tools of TOC, CRT and FRT, with technical problems as well as expands the application scope of TOC from management to engineering. What's more, it puts forward a new systematic innovative idea. The program used in this article was partially corrected using ChatGPT3.

Keywords: CRT, FRT, LT table, Requirement Mining, TOC, Systematic Innovation.