

Comparative study of two techniques (FTA –Bow tie) using AHP in accident analysis

Efat Lali Dastjerdi, Hadi Sanjari

Sarir Sanat Amir Company, No.17,1st St.,Jey Industrial park, Isfahan, Iran
E_lalidastjerdi@yahoo.com

Abstract: The purpose of this paper is to compare the two techniques of fault tree analysis (FTA) and Bow tie using AHP for determine superior technique in the analysis of complex accidents in Iran steel-manufacturing company.

This research has been performed in three main phases. In the first phase two complex accidents are sketched as the case studies to illustrate the strengths and weaknesses of the techniques, using the capabilities of the two techniques the reasons for occurring the accidents were recognized. In the second phase seven plausible criteria are proposed for comparing the two techniques. Finally using Analytical Hierarchy Process (AHP) the techniques were prioritized in terms of the criteria to chose the superior one.

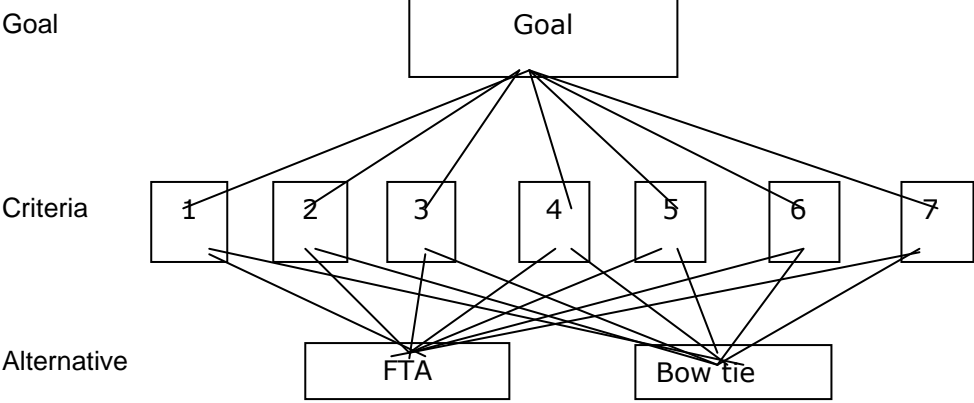
The results of this research indicated that the criterion for the Number of the Number of causes of identified with priority of 0.435 has the highest priority and after that respectively capability to produce quantitative results with priority of 0.23, technical experts required with priority of 0.118, training need with priority of 0.07, and cost of analysis with priority of 0.059, time required for analysis with priority 0.038 and software requirements whit priority of 0.036.

The results have been demonstrated that FTA with 0.412 priority is superior than Bow tie with 0.30 priority in terms of the chosen criteria.

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Figures



AHP hierarchy for choosing a technique. There is one goal, two techniques and seven criteria