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Applying social network analysis to evaluate preparedness through coordination and trust in emergency management

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Abstract

The purpose of this paper is to examine the status of the preparedness within emergency response team (ERT) in a refinery. Preparedness was investigated through trust and coordination relationships. Social network analysis as a quantitative approach was utilized in this research. To do this, social network analysis (SNA) indicators including density, degree, reciprocity and transitivity were utilized as a whole network. These indicators were calculated at the levels of first-line, supportive and whole teams. The required data were collected through structured interviews and were analyzed using UCINET 6.0 social network analysis program. The results of this study indicate that first-line teams can play a critical role in ERT, which is related to a higher level of SNA indicators and consequently the preparedness between team members can be easily achieved. In addition, the findings for the supportive teams revealed that they had relatively a low level of cohesion. However, the results of whole networks among all of teams had low level of cohesion that is a key challenge for performance of ERT. According to statistical results, there is a high correlation (82%) between trust and coordination networks. The finding of SNA provides a main opportunity for managers and planners to detect preparedness challenges based on coordination and trust ties among response teams of emergency management. This research suggests that fundamental efforts along with evaluation of the effectiveness of programs are needed to improve the presented situations and in order to optimize preparedness between response teams.

Keywords: preparedness, coordination, trust, social network analysis, emergency response team.