

A model to identify factors affecting occupational accidents and injuries is based on a qualitative approach and Fuzzy DEMATEL in the automotive industry

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Introduction: Various factors and causes, including organizational and human factors, are involved in the occurrence of an accident and occupational injury. In this regard, much research has been done to identify the human and organizational factors that play a role in accidents. The automotive industry includes various processes that will cause occupational accidents and injuries and affect the health of personnel. This study aims to provide a qualitative model to identify the root factors in occupational accidents and occupational injuries and determine the relationship of how these factors interact based on a combination of DEMATEL and fuzzy logic theory in the automotive industry.

Methods: In the qualitative part of the current research, semi-structured interviews were conducted with 23 industry experts to identify factors affecting occupational accidents and injuries deeply using MAXQDA software. The DEMATEL method was then used to better understand the cause-and-effect relationships between a model's criteria. Finally, solutions were presented to control influential and critical factors in occupational accidents and injuries.

Results: Among the factors identified at the extra-organizational level, the factors of extra-organizational laws and standards and government policies have a cause-and-effect nature that affects the other three sub-criteria. At the organizational level, the factors of organizational policies have the most influence and importance. At the level of unsafe supervision, the inadequate instruction factor was the most influential criterion.

Conclusion: Finally, it is suggested that, given the importance of identifying factors at the extra-organizational level, organizational and unsafe supervision, which have the most impact, should be the priorities of the organization and safety management to control or reduce their impact on other factors. In this way, it is possible to prevent future accidents and occupational injuries in the workplace.

Keyword: occupational accidents, injuries, DEMATEL method