A contributing factor classification framework to support systemic accident investigation in construction

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THE WORK IN CONTEXT

Previous researchers have attempted to develop accident analysis models and methods for the construction sector. However, a key limitation of current methods is that they are limited to describing contributing factors only as far as the organisational levels of analysis. The present study has the aims of developing a contributing factor classification framework to support systemic accident investigation in the construction sector. A list of contributing factors from literature review and accident reports was generated. In total 26 articles were reviewed, and 532 accident reports were analysed. Contributing factors were elicited from each. Accimap was selected as a framework as well as a set of contributing factors by five experts with more than ten years' experience with accident investigations in the construction domain as federal inspectors. Then each of them was located by the experts into each six levels of the classification framework (government, regulatory body, organisations, technical and operational management, physical process, and equipment, surround and physical environment). It has 51 contributing factors distributed across the six levels.

KEYWORDS

Accident, classification framework, construction

A brief outline of the work carried out

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Findings/solutions (the outcome)

Accident analysis methods for the construction sector are limited to capture contributing factors up to the organisational level. For example, the influence of government and regulatory level factors on accident causation is barely considered. Moreover, there has been no detailed evaluation on the validity and reliability of these methods. This study overcomes these gaps in the literature. In order to do this, a contributing factor classification framework was developed to include contributing factors beyond the organisational ceiling.

Impact

With the classification framework, contributory factors, actors, required controls and feedback loops that form the system as whole may be identified in construction sector. Specifically, the understanding of how decisions and actions by government and regulatory actors influence behaviour and play a role in accident causation. This is important for risk management in the construction sector, because changes made at the company level may be used to improve safety in construction as whole. Additionally, the opportunity to respond to and reform ineffective laws and regulations becomes more likely and critical risks may be overcome.