Development of an Empirical Model for Selecting Accident Prevention Measures for Construction Managers

Ivan W. H. FUNG¹ and Vivian W. Y. TAM²

¹Department of Civil and Architectural Engineering, City University of Hong Kong, Hong Kong.
²Corresponding author, School of Computing, Engineering and Mathematics, University of Western Sydney, Locked Bag 1797, Penrith, NSW 2751, Australia.
Email: vivianwytam@gmail.com

Abstract
This paper investigates the association between the mindsets of construction managers on the acceptance of accident causation theories and the vigour of implementing safety measures on accident prevention in the Hong Kong construction industry. A questionnaire survey is conducted. The vigour of implementing each accident prevention measure is predicted by a combination of accident causation theories. Each measure is associated with a unique set of predictors revealing management mindsets in pursuit of accident prevention. A new model for decision making of implementing accident prevention measures is then developed and its application is also demonstrated in this paper. This paper found that Hong Kong construction managers have exhibited their commitment to safety by implementing all the accident prevention measures with above average vigour levels. Referring to the results of the correlation and linear regression between the accident causation theories and the accident prevention measures, the extent of construction managers’ acceptance of the accident causation theories do not reflect any linear correlation on their vigour of implementing the accident prevention measures for Safety pre-task planning (M₃), Employee pre-qualification (M₆), Safety training (M₉), Smoking, alcohol and drug ban program (M₁₀), and Safety meetings (M₁₃). The systematic and logical based approach in mapping out the specific accident prevention measures can be adopted by the construction managers so that they can implement appropriate measures for safety performance improvement.

Keywords
Construction managers, accident prevention measures, accident causation theories, Hong Kong

INTRODUCTION
The main difficulty commonly faced by construction contractors is how to effectively improve safety performance on construction sites. In this respect, construction managers are trying to find their ways in the quest for effective accident prevention measures. Significant linkages were found between causes for falls and other accident events (Chi et al., 2005). It was suggested that primary prevention measures would include fixed barriers, such as handrails, guardrails, surface opening protections, crawling boards/planks, and strong roofing materials. Secondary protection measures