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A research framework for investigating the relationship between safety climate and safety performance in the construction of multi-storey buildings in Pakistan

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Abstract

Construction industry is contributing 2.39% to the GDP of Pakistan and is employing over four million people; however it is the second most injury prone industry, where employees often have to work under extreme weather conditions without taking precautionary measures. Construction of multi-storey buildings is at increase in the major cities where large and medium sized companies are working as main and sub-contractors; however these projects are suffering from fatal accidents, as safety measures are not rigorously enforced. This paper therefore presents a research framework to identify the safety climate factors which can significantly enhance the safety performance in the construction of multi-storey buildings. The quantitative data, split into calibration and validation sample, are being analyzed using exploratory and confirmatory factor analysis by examining the causal relationship between the safety climate and safety performance. Structured interviews and Delphi survey are being conducted to identify and prioritize; the causes of accidents, the impediments in the safety implementation, and the strategies to enhance the safety performance. The qualitative findings about neglected safety aspects are also discussed. Proposed safety climate measurement model would be useful to measure, monitor and improve the safety performance of construction companies in the developing countries.

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1. Introduction

The growth in the construction industry evidently reflects the level of economic development but its higher injury and fatality rate is quite alarming. The construction industry of Pakistan is employing 7.4% of total labour force but its accident rate is 15.2% (Fig. 1). Percentage of injuries in the construction industry is exceptionally higher than percentage of its employed persons, once compared with other industries (Fig. 1). Moreover, percentage of injuries has accelerated from 14.55% in 2006 to 15.2% in 2012 (Fig. 2). Thus, the construction industry has turned out to be the second most injury prone industry after agriculture, whereas its employment rate is fifth among other industries. Majority of accidents are caused by *fall from height*, and causes of these accidents include; inadequate availability and training of fall protection system, and non-availability of suitable anchorage system [1].

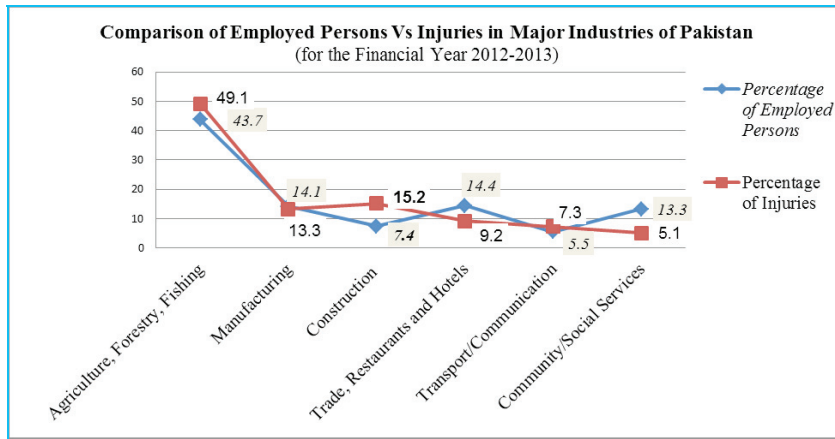


Fig. 1. Employed persons Vs injuries in major industries of Pakistan [2]

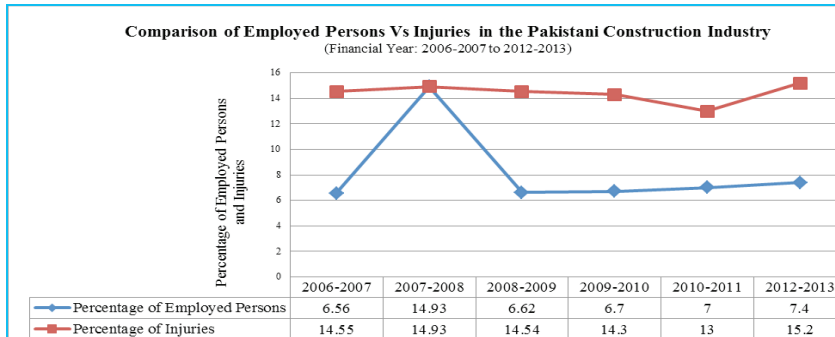


Fig. 2. Percentage of employed persons Vs injuries in the Pakistani construction industry (Source: Pakistan Bureau of Statistics - Labour Force Statistics [2, 3])

1.1. Safety compliance

Construction safety has not been given much attention in Pakistan resulting in a higher accident rate. Stakeholders' emphasis is inclined only towards improving the quality, and reducing the cost and time [4]. Most of the small and medium sized constructors consider safety as a liability [5]. Workers also consider health and safety as

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