Concept of Safety Management in Construction Industry

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ABSTRACT

In Construction many accidents takes place which causes human tragedies and disorganize the construction process. Construction injuries will always have broad and adverse impact, which includes the personal suffering of the injured workers, construction delays and productivity losses incurred by the construction contractor, higher insurance premiums that result from costly injuries and possible liability suits for all parties involved in the project. Their prevention and even marginal reduction in their cost will have significant human and financial impact. The number of injuries and fatalities can be reduced by encouraging and reinforcing behavioral change. Human error is complex topic and is directly linked to the cognitive process and one's ability to judge responsibility. Occupational Safety and Health Act (OSHA) with its regulations has had a profound impact on the construction industry. Prevention of construction accidents requires predicting future accidents and their nature in given circumstances. Making such predictions must be based on knowledge about past accidents and can be estimated using about various decision support tools. The objective of this thesis is to investigate the feasibility in knowledge acquisition about construction accidents and their prevention. In construction projects, the management team needs to conceptualize the management of safety in order to foster a strong culture. The aim of this research is to investigate what constitutes project management personal's conceptual skill and how this skill can be developed and applied in the context of construction safety. Theoretically, this research advances the existing body of knowledge on conceptual skill by providing empirical evidence of its contribution to improve construction safety. Practically, this research suggests that construction organization recognize the importance of project management personal's conceptual skill for managing construction safety and provide relevant training opportunities for them to improve the skill and develop the system for realistic implementation to reduce accidents.

INTRODUCTION

Accidents in the construction industry are costly in terms of human life and money and accidents prevention methods are not explicitly defined in the industry. The accident prevention approach to construction safety leads to the use and development of modern technology [1]. The case base system is employed in this thesis to represent the expertise used to prevent the accidents. This approach provides an accurate, efficient and reliable mechanism to prevent the accidents related to the construction accident [2]. Expert system and neural network were used in the construction industry to protect the possible accidents.

However, these reasoning processes are concealed from the users, operation like a black box. Thus conclusion derive from the neural network are not convincing to the users. To overcome this difficulties, CBR method is used to provide an accurate solution to the problem, has been employed in this thesis. This reasoning process accepts all the input data the users and performs its computation according to the user defined commands. This feature makes CBR method a more user friendly. More over the method is more user intractable. Hence, the solution can be modified and adopt according to the need of the case. In this case study, I represent the working of the CBR process is demonstrated and suitable measure are suggested for accident prevention in the construction industry **(Table 1)**.

Table 1. Working of the CBR process and for accident prevention in the construction industry.

Name of the Project	Inde	DUR	CoC	UL	SL	GC	GS	Accident occurred	Preventive Measures Taken
Aditiya Trade Centre, Hyderabad, India	ATC	18	5.0	300	100	20	Fe415	Worker slipped during plastering of the lift pits. Head injured during fixing of the glass sheets.	Safety belts provided. Temporary walls constructed at the entrance of the lift pits to prevent accidental slipping.

DUR-Duration of the project in months, Coc-Cost of the construction in Rupees (crore), UL- Unskilled Labor; SL-Skilled labor, GC- Grade of Cement, GS- Grade of steel.

METHOD

Case Based Reasoning (CBR) method is used. It is a sub-branch of artificial intelligence, which solves the current problem by analogizing the solution tp previous similar problems. It is based on psychological theories of human reasoning, using the fact that humans often solve new problems by comparing them with similar problem. This reasoning process is more interact able to the user [3]. In CBR cases are declared as objects on the attributes, which are considered as classes. A CBR system works on the following modules;

- Case Base

- Similarity Measuring Module

- Case Match and Retrieval Module

- Case Adaptation

- Case Indexing Module.

CONCLUSION

The major conclusions drawn from this thesis are as follows:

- CBR approach reduces the drop out rate of construction accidents.

- Accidents in the construction industry are costly in terms of human life.

- Reduction in accidents and associated costs are direct benefits to the construction industry.

- The accidents cab be prevented by providing additional training to part-time safety managers, providing better indoctrination to new foreman related to company policies and guidelines.

- Increasing the number of meetings to discuss safety performance with field supervisors.

- Provides quantitative guidelines to help companies establish effective safety programs to achieve their goals in the most efficient manner.

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