

**AN EXPOLARATORY STUDY PROBING INTO THE FACTORS CAUSING
SAFETY NON-PERFORMANCE IN THE PAKISTANI CONSTRUCTION
INDUSTRY**

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ABSTRACT

Safety in the construction industry has always remained an issue. Although many improvements have been made in this regard but still, wherever reliable data is available, the construction industry is on the top of the list of most fatal fields. Same goes with our country, where safety practices are either not implemented or where implemented are not sufficient enough to provide a safe and risk free environment for the workers. Weak legitimate structure also contributes to the lack of safety management in our country which makes the safety related issues more prominent in our country particularly in the construction industry of Pakistan. In order to bring about a significant improvement in the safety management scenario of the local construction sector, the major recommendations of the study are as follows: At the industry level, safety rules and regulations need to be defined, documented and enforced. Hence the need for an administrative body for occupational safety and health implementation is evident; however, the integrity and effectiveness of such an organization is a major concern in relation to the existing adversarial business environment in the construction industry of Pakistan, which also need to be addressed. A major need of the industry is to develop the attitude of project owners towards an active safety management implementation; for the same, awareness programs need to be developed and implemented. It would also be appropriate to arrange formal and informal education and training in safety in the form of graduate education and career development programs.

Keywords: Safety, safety management, informal education and training, career development programs

1. INTRODUCTION

The construction industry has a great strategic importance in the economics of the developed as well as the developing countries. Employing more than 10% of the Europe's total work force, this industry is the largest industry in the continent Proverbs et. al. (1999). The same industry also accounts for about 14% of the gross national product and 8% of total employment in United States (Thieblot, 2002). Construction industry is both economically and socially important. However, the construction industry, at the same time, is also recognized to be the most hazardous (Suazo and Jaselskis, 1993). The success of construction projects becomes critical when we talk about the safety practices and the preferences being adopted on the construction projects. The foremost causes of accidents are allied with the nature of the industry, human psychology, site conditions and other such reasons that results in the unsafe work methods and which in turn is the main reason for the dangers the statistics show for this field. Research shows that the major causes of accidents are related to the unique nature of the industry, human behavior, difficult work site conditions, and poor safety management, which result in unsafe work methods, equipment and procedures (Abdelhamid and Everett, 2000). Labour safety remains an issue of concern for all the developing as well as the developed countries because work hazards that exist at the construction sites are either not alleged or are alleged to be less dangerous than the severity they have.

Evidently, construction accidents and the associated damage caused to the employees, property, equipment and morale have generated negative effects on the industry profitability and, to some extent, the industry productivity. Responding to this increased safety requirement generated by technology advancement, the industry control environment in developed countries has incorporated safety as an integral part in the regulatory framework. In the U.S.A., for instance, the workers compensation rates are a function of the loss experience of a contractor, and each labor hour is affected through the reflection of those losses in the experience modification rating (EMR). On one hand, a safe contractor can create a substantial competitive advantage through superior safe experience while, on the other hand, an unsafe contractor can be liable to pay huge penalties in terms of insurance. Safety, therefore, and the effects of its absence – accidents – is now a key cost driver for construction firms in such countries. Safe work experience is also becoming a business survival issue for them, as more and more owners are hesitant to permit contractors to bid work without acceptable EMRs. Thus, the most important step in controlling costs for contractors in these countries is to run safe construction projects. Hence the contractors are compelled to implement safety as their business strategy, which has led to recent improvements in global construction safety records Farooqui et al. (2008).

2. CONSTRUCTION SAFETY PERFORMANCE SCENARIO IN PAKISTAN

In contrast, developing countries like Pakistan have yet to respond to improvements. Construction in developing countries, such as Pakistan and India, is more labor intensive than that in the developed areas of the globe, involving 2.5-10 times as many workers per activity Koehn and Regmi, (1995).

Communication problems related to differences in language, religion and culture tend to inhibit safety on the work site. In Pakistan, there is a significant difference between large and small contractors. Most large firms do have a safety policy, on paper, but employees in general are not aware of its existence. Nevertheless, a number of major constructors exhibit a concern for safety and have established various safety procedures. They also provide training for workers and maintain safety personnel on the jobsite. For the majority of contractors, however, maximizing profit is the prime concern. Unsafe conditions exist on many sites, both large and small, and laborers are subjected to numerous hazards Farooqui et al. (2008).

On many sites, no training programs for the staff and workers exist; therefore, no orientation for new staff or workers is conducted, hazards are not pointed out, and no safety meetings are held. Employees are required to learn from their own mistakes or experience. In addition, lack of medical facilities, shanty housing, and substandard sanitation tend to exist on remote projects. Workers undertake a risk while at work and the following problem areas are common:

1. While excavating in deep trenches (with no proper shoring or bracing), accidents due to cave-ins often occur.
2. Concreting is done mainly by laborers, and cements burns due to the unavailability of protective gloves and boots are common.
3. Workers fall from heights due to weak scaffolding and the unavailability of safety belts.
4. Workers sustain injuries on the head, fingers, eyes, feet, and face due to absence of personal protection equipment.
5. There is improper housekeeping.

Lack of understanding of the job and poor equipment maintenance are also major causes of accidents. Injuries generally are unreported; however, if necessary, a laborer might receive first aid or preliminary medical care. In most cases, specialized medical treatment or compensation is unavailable. Workers themselves consider accidents as due to their own negligence, and accept that construction is a dangerous occupation. Nevertheless, major accidents involving the death of a worker may be reported due to the financial expenses and litigation that could be involved Farooqui et al. (2008).

Maintenance and inspection schedules often are not followed, and only after a breakdown is equipment repaired. This approach leads to loss of time, idle workers, and project delays. It may also cause damage to property. Breakdown of concrete mixers, vibrators, water pumps, and tractors are common. Electrocution is also a major hazard, due to use of substandard electrical

equipment and underground cables. Workers, especially young ones, take chances, and often do not follow safety norms or use personal protective equipment. Also laborers and staff are sometimes are under the influence of alcohol and drugs. Unfortunately, crew members are not checked for drugs and alcohol before the start of and during work. Owners and consultants do stress safety before work commences, but as the work progresses their concerns for deadlines becomes a priority and they tend to pay less attention to safety. On large projects, the owners may provide medical facilities at the site, but ultimately safety is the contractors' responsibility. According to the survey conducted by Farooqui et al. (2007), identified a few major reasons for safety non-performance which included: lack of development of construction sector in the shape of mechanization and industrialization; lack of professional construction management practices, inadequate safety provisions laid by the existing regulatory environment which has failed to establish safety as a major industry objective, insufficient and incentive-less insurance mechanisms which have failed to establish safety as a business survival issue, and unfavorable business environment which has led to adversarial business relationships among stakeholders resulting in controversies, conflicts, claims and litigation and hence diverting the focus away from issues like safety.

3. SCOPE AND OBJECTIVE

This study endeavors to investigate the basic factors that prevent the adaptation of safety measures on construction sites in Pakistan. The core idea behind this study is to find out the facts that indicate why safety practices are not being adopted in Pakistan.

4. METHODOLOGY

The methodology is outlined as under:

Phase 1 includes the background research that significantly focuses on the review of literature and making of a proposal to work upon.

Phase 2 deals with collection of data and personnel interviews at different offices and construction sites to investigate the factors that prevent the adaptation of safety measures on construction sites in Pakistan.

In *Phase 3* of the study, the collected data was arranged and then processed to reach to some results.

Phase 4 was the final phase where conclusions were made from the results obtained. Further, some recommendations were made.

5. DATA COLLECTION

The sample of this study was the contractors from different public and private sectors that are involved in construction activities. These included fields of power generation, industrial plants,

manufacturing, residential and infrastructure developing companies. Around 60 survey forms (questionnaires) were distributed and 28 responses were received and used for data analysis. Most of the respondents were medium to large size contractors with individual experiences greater than 10 years.

The questionnaire consisted of 8 questions as follows (Table 1) on a Likert scale (1=Least agreement, 5=Most agreement):

6. ANALYSIS

The analysis of the study is presented in the following sub-sections.

6.1. Level of Safety Awareness

Figure 1 indicates the percentage of respondents to each rating points. It can be seen that almost 70 % of the respondents agree that the people related to construction industry are unfortunately not aware of the safety rules.

6.2. Concern of Labour about Their Own Safety

Figure 2 indicates a high percentage of respondents that disagree to the idea of labour concern about their own safety. They think that the labour does not take personal care and feels relax doing work without safety precautions rather they resist and get annoyed by the usage of basic safety precautions.

6.3. Impact of Adoption of Safety Measures

Figure 3 shows a high percentage of people believe that the adoption of safety measures will affect the overall progress of the project. Few of these think that the safety measures have a positive effect on the pace of the project while others deem it to be a hurdle in fast and efficient execution of the project.

6.4. Provision of Sufficient Budget to the Contractor by the Client

Figure 4 shows that it is more towards the low ratings. This is because of the fact that most of the local clients do not give importance to adoption of safety measures and hence they are not supportive in financing such endeavors whereas their main concern is timely completion of project with lowest possible budget.

6.5. Interventions by Regulatory Bodies in Implementing Safety

The responses of the survey that are summarized in Figure 5, the government and local bodies are either do not willing to make proper safety standards for the construction industry or are under pressure of unforeseen factors that present difficulties for these agencies not to do so.

6.6. Impact of Safety Training Institutes in Improving Construction Safety

A general survey was conducted on different sites during which it was noted that most of the workers on construction sites have not attended any safety session before entering the site. Few of these were given a half day training class while only around 1 to 2 % was given full day

training. It was also noted that few site supervisors and construction managers had 20 + years of experience and did not had more than 4 hours training during their carrier; although Figure 6 shows that people warrant these trainings to be a part of construction project execution. Such trainings may make the worker visualize the importance of safety for his and his fellow's lives.

6.7. Role of Media in implementing Safety

In a country where media is free and reachable in almost any part of the country, the best way to indicate importance of anything is through media. With most of the workers on construction site not much literate, media has a great role to play in this regard. Same is indicated in Figure 7.

6.8. Sufficiency of Current Safety Regulations

Since the law enforcing agencies are not much effective in our country, thus the safety standards are not much highlighted. The existing laws are weak to some extent or not applicable in our culture as depicted in Figure 8.

7. CONCLUSIONS & RECOMMENDATIONS

From the analysis of the responses, and short personal interviews with different site personnel, the following conclusions were made.

- 1- Workers are not concerned about their safety due to lack of knowledge.
- 2- Proper safety trainings are missing at sites which make the workers vulnerable to the hidden risks that they may have to face on new sites.
- 3- Local clients prefer to get the projects completed at low budgets rather than compelling the contractor to follow safety rules. Even underage workers are not prohibited on construction sites.
- 4- The government agencies have made few laws but an improper management and political influence has made them inefficient to implement these laws.
- 5- Safety is an important issue on a construction project and should be given significant weight-age in the prequalification process.

Analysis shows that there are many barriers due to which safety is not implemented on projects.

Following are some recommendations to overcome these barriers:

1. In Pakistan, currently there is no regulatory agency or organization for occupational safety management (for instance, OSHA – Occupational Safety and Health Administration in the USA). Safety regulations need to be defined and enforced. Hence the need for such an administrative body is evident; however, the integrity and effectiveness of such an organization is a major concern in relation to the existing adversarial business environment in the construction industry of Pakistan and need to be addressed. The jurisdiction and authority of this organization also need to be defined.

2. There is a need of strong awareness campaign amongst the site workers that could be generated through many methods like on site safety charts having pictures to explain the safe work habits, practical demonstrations on site etc.
3. It would be appropriate to arrange some form of formal and/or informal education and training for the workers on site. These could be linked with the bonuses and other incentives on completion of such trainings.
4. The authors strongly believe that a major need of the industry is to develop the attitude of project construction firms towards an active on site safety implementation plan. The owners should also discuss it with the construction firms before giving them the contract. They should give safety some weighting in the award of the contract.
5. As a catalyst for maintaining a safe project, contractor top management should formulate strategies and develop policies that nurture a safe culture. Safety should be emphasized at all times no matter how fast the construction needs to be completed and under what budget constraints. Contractors should integrate safety training programs with other practices according to their budget. Training can be provided in many ways: on-site training, safety meetings before the start of any work; large size contractors may develop separate safety departments. Contractors should encourage their project managers to develop safety incorporated project plans and schedules.
6. Regulatory bodies like Pakistan Engineering council should design a system to judge the safety performance levels of the construction firms at the site and should incorporate it with the licensing requirements of the construction firms. In this regard, the investigation style adopted in this study can be used as the benchmark or the starting point.
7. There is a need of strong awareness campaign amongst the site workers that could be generated through following.
8. Safety Training Institutes can help the cause of implementing the safety procedures.
9. Use of media can play a vital role in implementing safety on construction projects in Pakistan.
10. The regulatory body like Pakistan Engineering Council should design a system to judge the safety performance levels of construction firms.
11. Safety precautions should be made a permanent item of each bid to allocate a portion of budget to this serious issue as well.
12. The PEC should compel the clients as well to maintain zero accident policy on their sites which in turn make it mandatory for the contractor to follow OSH policy.

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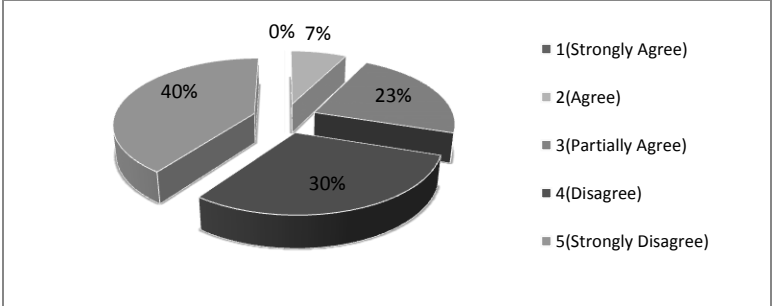


Fig 1. Level of Safety Awareness

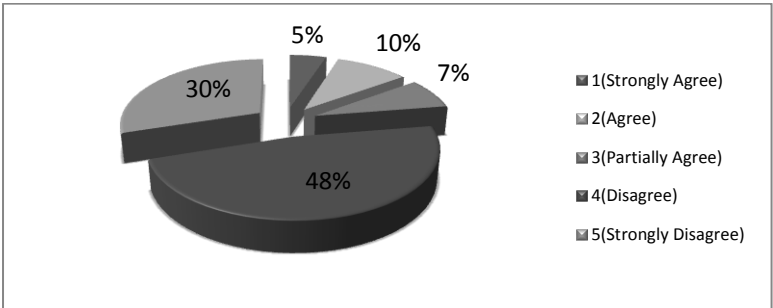


Fig 2. Concern of Labour about Their Own Safety

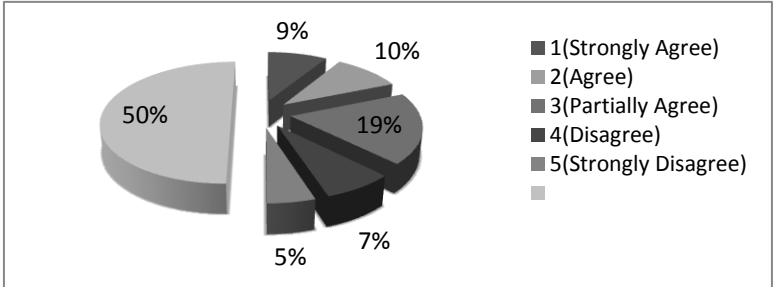


Fig 3. Impact of Adoption of Safety Measures

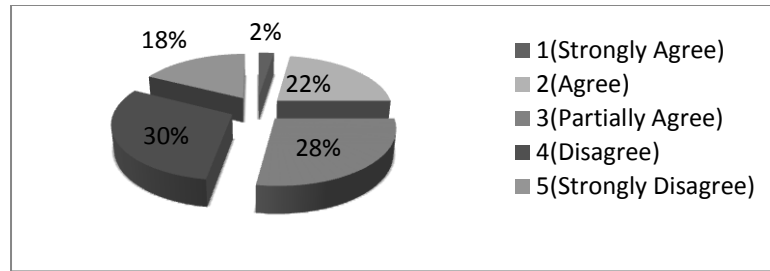


Fig 4. Provision of Sufficient Budget to the Contractor by the Client

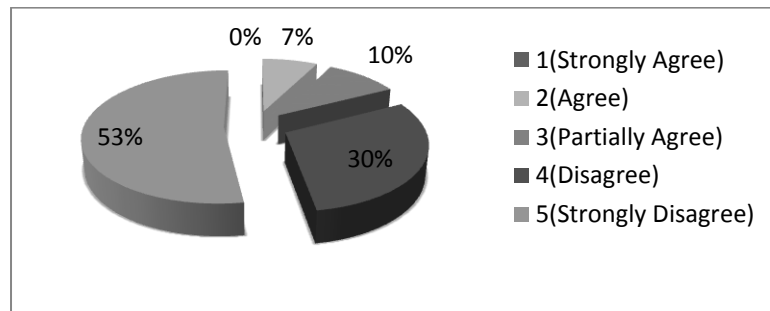


Fig 5. Interventions by Regulatory Bodies in Implementing Safety

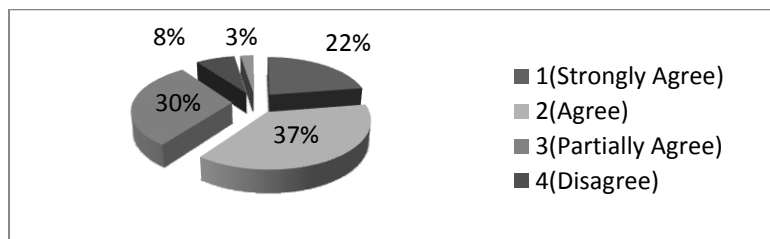


Fig 6. Impact of Safety Training Institutes in Improving Construction Safety

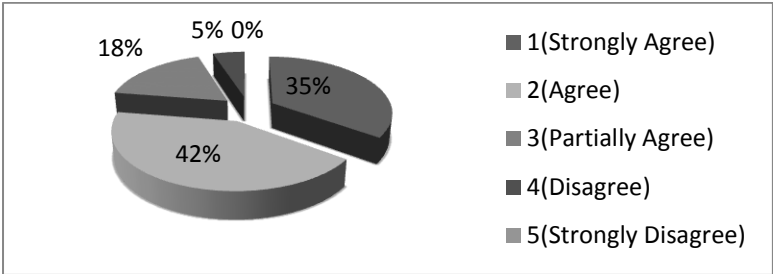


Fig 7. Role of Media in implementing Safety

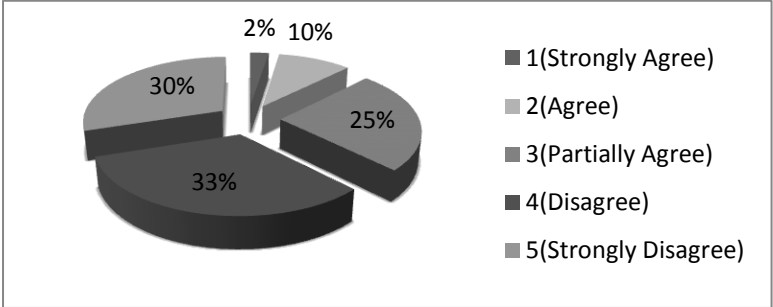


Fig 8. Role of Media in implementing Safety

Table 1. Questionnaire and Average Responses

S.No	Research Questions	Average Response
	Do you think that:	On a scale of 5
1	People related to the construction industry of Pakistan are unaware of the safety regulations that must be adopted for the safety of the individual?	4.025
2	Labour is not concerned about his safety?	3.875
3	By following the standard safety procedures in construction industry, it affects the overall progress of work?	3.800
4	Local clients do not provide sufficient budget to the contractors, so that the safety procedures are completely followed?	3.375
5	Regulatory bodies like Pakistan Engineering Council (PEC) are not inclined to implement the standard safety procedures in our Construction Industry?	4.275
6	Safety training institutes can help the cause of implementing the safety procedures in our construction industry?	2.300
8	Media can play a vital role in implementing the safety procedures for the construction industry in Pakistan?	1.925
9	Current safety laws are not enough for the safety of workers in the Industry?	3.775