THE FACTORS AFFECTING THE IMPLEMENTATION OF SAFETY AND HEALTH PRACTICES IN THE LIBYAN CONSTRUCTION SITES

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Abstract—Construction industry is both economically and socially important although, the construction industry is one of the most hazardous industries due to the unique nature of its products and the processes involved in it. The injuries and the health problem associated with the construction show that the industry is high-risk environment in the world, where workers face a greater risk of work-related fatality or injury, due to the factors that effect the implementation of the safety and poor health practices. Practices of safety and health reduce risk, hazard, accident and budget for a project although negligence has caused many human tragedies, loss of life, productivity, and delay in projects. Therefore, this paper is to investigate the main factors that effect on the safety and health implementation in the Libyan construction sites. This paper will be beneficial to practitioners and academicians who study the practices of safety and health and work in construction site in order to improve the implementation of safety and health practices in the construction industry.

Keywords—Construction, Libya, Safety and Health

I. Introduction

The construction industry is one of the important industries in the world. However, it is also the most risky and dangerous industries due to the unique nature of its products and the processes involved\(^1\) and \(^2\). Compared with other industries, construction is often classified as high risk because historically it is plagued with higher and unacceptable injury rates. In both developed and developing countries, the construction industry is considered to be one of the most significant industries in terms of its impact on health and safety of the working population.

In developed as well as developing part of the world, construction industry is considered to be one of the most significant industries in terms of its contribution to GDP ‘Gross domestic product’. However, the construction industry is also recognized to be the most hazardous. Although a dramatic improvement was made in recent decades, the safety record in the construction industry continues to be one of the poorest \(^3\).

All construction workers must deal with some of the most unsafe and critical working conditions faced by employees in any industry. As a result, serious work-related injuries at construction sites occur with unfortunate frequencies. Regulations, specifications, inspection requirements, and job safety programs all seek to prevent construction site accidents and promote safety awareness on the part of all parties involved in the construction sites \(^4\).

Recently, \(^5\) the issue of safety performance has been focused at construction projects in both developed and developing countries. As a matter of fact, the construction industry contributes in a significant proportion in the economic and social aspects. However, it is also considered to be the most hazardous industry in terms of personal safety and health. Many factors are involved in the accidents occurring at construction sites therefore, this paper is to investigate the main factors that affect the safety and health implementation in Libyan construction sites.

II. Feature of construction industry in Libya

The record of safety and health requirement implementation in the workforce in Libya is still far behind in comparison with countries such as Japan, America, Germany as well as Malaysia \(^6\).
Libya extends over 1,759,540 square kilometers (679,182 m²), making it the 17th largest nation in the world by its size; Libya is smaller than Indonesia, and roughly the size of the US state of Alaska. The climate is mostly dry and desert like in nature whereby, the northern regions enjoy a milder Mediterranean climate. A lot of constructions are taking place in Libya due to its spacious land in the country. However, according to Ministry of Housing and Local Government of Libya, (2006) cited in [6] it was found that focus on the safety and health requirements are the least concern of companies and not at all important to them. People even can see the poor safety conditions on the sites and witness accidents there. This bad condition in the construction industry in Libya has existed for a long time but, there are also factors affecting the construction safety in Libya, in a negative way, such as; the severe competitive tendering methods, experience, the lack of training on workers and the main concern of the management on productivity with ignorance of safety issues[6]. Therefore, the image of the construction industry in Libya needs to be improved.

iii. Problem statement

As the focus on the safety and health requirements are of the least importance thus, the construction companies neglect the safety practices in construction sites in Libya and this causes many human tragedies, the loss of life, productivity and projects delay [6].

Despite of safety and health regulations in most countries, high rates of injury and fatality persist. In many countries, such procedures are intended to prevent accidents and are usually mandated by the appropriate occupational safety authority, [7] and [8]. The existence of laws and awareness campaigns for the safety and health in Libya found that safety and health requirement implementation in the construction industry in Libya is still low and the record of safety and health requirement in construction sites in Libya is still far behind developed countries [6]. One of the major problem faced by companies are the factors affecting the implementation of the safety and health in construction site,[5] and [6]. Therefore, this research is to investigate the factor that influences on the implementation of safety and health practices particularly in the Libyan construction industry.

iv. Literature Review

The construction industry is one of the most unsafe and serious industries. Wherever reliable records are available, construction is found to be one of the worst, and often the worst industry regarding health and safety criteria. Many construction hazards lead to loss of life, injuries, disease and permanent disability. Also the direct impacts on the worker of such hazards can include loss of working days due to disease or injury and job loss. These effects generally spill over to the family, community and society around the worker [9], [10] and [11].

It is economically important that the safety and health conditions should be improved in the construction industry. Poor safety and health performance is costly and can impact negatively on an industry and also reflect on the economy. It is estimated that the costs of accidents account for about four percent of the global Gross Domestic Product (GDP), [12].

A. Global Construction Safety and Health Practices

Construction is a risky business with 13 workers per 100,000 being killed in construction as against 5 per 100,000 in all-sector average and also expose workers to a wide range of health problems ranging from asbestosis to back pain, hand-arm vibration syndrome to cement burns [13]. In most countries, the rates of accidents and injuries prevailing in the industry are higher that what prevail in other industries; For developed countries that the United States of America construction industry currently accounts for, there are over 22% of all occupational fatalities in the entire United States of America (USA) even though it employs less than 7% of the country’s workforce [14]. The injuries and the health problem associated with construction show that the industry is the most hazardous occupation and high-risk environment in the world, where workers face a greater risk of work-related fatality or injury, due to poor safety and health practices [13]. Therefore, it is considered one of the dangerous and unsafe businesses that is 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.

[15], reported that 256 people were fatally injured in the Australian Construction Industry; Statistics revealed that the fatality rate was 10.4 per 100,000 workers. [16], their study revealed that 3,000 construction workers are killed in work related accidents each year. In comparison, 10 construction workers in every 1,000 suffer an injury in a year in Japan, and the figure is around 50 for the United Kingdom [15].

In Arabic region, construction safety conditions resemble those in developing countries that deal with safety problems. In the construction industry, the working environment is constantly changing, sites exist for a relatively short time and the activities and inherent risks change daily [17] and [18].

The accident rate in construction is highest when compared with other industries. Statistics have remained reasonably constant over the past six years, it features that the construction industry generally accounts for nearly 20% of all industrial injuries [9]. The construction industry, because its nature, is susceptible to potentially dangerous conditions that affect the safety of all personnel working on construction projects and the company. Thus, there have been quite a high number of accidents, deaths and injuries. Therefore, construction industry is the critical and high-risk environment in the world and need to improve the safety and health implementation by investigate factors that affecting on it in construction sites.
B. Factors affecting the implementation of safety and health practices

The factors causing construction site accidents have been addressed by several researchers. Figure 1 showed factors that affect the safety and health in construction sites [20], [6] and [21]. Where, the identified factors that are affecting the implementation of the safety and health are: Inadequate training, Budget, Unawareness and Misunderstanding towards occupational safe and health, Equipment’s and facilities to support the safety requirements, Workers’ attitude towards the practices of occupational safety.

![Figure 1: Main factors affecting the implementation safety and health practices source [20] and [6]](image)

According to [6], it was found that training has no relationship with the implementation of safety and health at construction sites, although training is important for better understanding, it was identified that there is no time for on the job training for the companies. Thus, it is not an element that contributes to lack of implementation in the Libyan construction sites. The untrained workers are essentially the most dangerous source of hazards on sites. Injury records indicate that nearly 95% of the fatal accidents on jobsites resulted from unsafe action of workers. The root cause behind unsafe actions was often poor safety knowledge and awareness [22]. According to [5], one of the important factors that influence the implementation of safety and health is Safety Training and Education. Management should emphasize on giving adequate training and education that will equip them with appropriate safety knowledge to mitigate future accidents [23] and [24]. [22], believed that in the safety programs, for each project of many contractors, it is a requirement that anyone working on site should receive at least eight hours of safety training or refresher safety training. Findings of [25] show that training must continue beyond the orientation training and this training must be provided to both workers and supervisory personnel.

One of the major problem faced by these companies is the cost budgeted for their employees safety are comparatively low. This leads to high expenditure on hiring new workers and trainings given to them [20]. According to [23] concluded that the reluctance to invest resources in safety was closely associated with the operating nature of construction firms in China. When firms of different sizes competed for the same jobs, it resulted in excessive competition, thin profit margins and a compromise in safety standards. Economic investment in safety has a considerable influence on safety management. However, currently in China many projects generate little profit for the contractors and in some cases huge losses are incurred. Thus, there often is an inadequate economic investment in safety on most projects [26], [6], it was identified that most construction companies have an amount of budget allocated for this purpose. Despite this, most of these construction companies in Libya are found to be meeting the requirement of setting aside the budget for safety issues. Moreover, these companies in Libya are doing well as they gain a lot of profit from the construction projects, although most companies have not been trained on the safety due to cost.

According to [23], poor safety awareness of project managers is one of the main factors affecting the implementation of safety and health. [27], it was concluded that the most important factors affecting safety performance are safety awareness of company’s top management, safety awareness of project managers, and safety inspections. [6], it was found that lack of understanding awareness among the workers contributes to the low implementation of safety and health requirements at most construction sites in Libya.

Use of safe machinery and facilities are essential to maintain the health and safety of site personnel [28]. The lack of proper safety equipment is a major source of accidents on sites [29]. Some construction accidents result, in part, because the safety equipment necessary to perform the job safety is not present at the location of the work [20]. According to [6], most equipment and tools are not reviewed by the safety personnel; it is often put into operation unless defects are found. That is the reason it is being ignored by most of these construction companies.

Some employees are more accident prone than others while, some other employees have preventive attitude towards accident [28]. The success of the implementation of safety and health requirements also lies in the attitude of workers towards these issues. Workers should be more positive and adaptable towards the various strategies used to implement of the safety and health practices in construction sites. A workers’ attitude also includes getting information from the company, involve in the training provided, and follow the safety procedures and policies. Thus, it is all in the attitude of workers towards the practices of safety and health implementation [6]. Attitude is the key to understanding employee behavior and preventing job injuries; before any safety and health program can be instituted, however, employees must understand that a workplace injury is possible and it can happen to them.

C. The summary of factors effect on the safety and health implementation in construction

From the literature review of this paper, the major factors affecting implementation of the safety and health practices of the construction sites were identified. Table 1 shows the
factors that affect the safety and health implementation in construction site.

### Table 1: Summary of the factors that affect the safety and health implementation in construction

<table>
<thead>
<tr>
<th>Authors</th>
<th>Inadequate training</th>
<th>Budget</th>
<th>Awareness and understanding towards occupational safe and health</th>
<th>Equipment’s and facilities to support the safety requirements</th>
<th>Workers’ attitude towards the practices of occupational safety</th>
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<tr>
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<td>Fang et al., (2004)</td>
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According to the literature review the purpose of the table 1 is to identify the main various factors that are inadequate training, budget, awareness and understanding towards occupational safe and health, equipment’s and facilities to support the safety requirements, workers’ attitude towards the practices of occupational safety and their consequences towards numerous hazards and risk that have been caused in construction sites.

Although, most of the authors focused on the study of the importance of training as an influential factor on safety, this does not mean neglect and not importance of other factors affecting the implementation of safety and health practices. In terms of accident prevention and risk reduction should focus on the factors and reduce their impact on the implementation of the safety and health in construction industry.

v. Conclusion

As a matter of fact in both developed and developing countries, the construction industry significantly contributes in the economic and social aspects. However, it is also considered to be the most hazardous industry in terms of personal safety and health. Many factors are involved in the accidents occurring at construction sites. The synopsis of the paper is the importance of the implementation of safety and health practices in construction sites and to be an opportunity to investigate the factors that prevent it.

The construction industry in Libya lacks the relevant data to carry out the research on the implementation of safety and health practices. Therefore, the research presented in this paper is part of an ongoing Master research at the Faculty of Technology Management and Business (FTPT), University Tun Hussein Onn Malaysia (UTHM) can contribute towards any further study pertaining to this subject or topic to achieve an even better implementation of safety and health practices in construction sites. Based on studying these influential factors that are inadequate training, budget, awareness and understanding towards occupational safe and health, equipment’s and facilities to support the safety requirements, workers’ attitude towards the practices of occupational safety so as to attempt future researchers to identify the appropriate method to improve their implementations in the construction industry.

The research will be focused on the contractors who involved in safety and health in the Libyan construction sites. To operationalize the research, a quantitative research approaches through questionnaires adopted.

vi. References


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