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ANALYZING THE FACTORS AFFECTING THE SAFETY OF WORKERS IN THE CONSTRUCTION INDUSTRY IN THE UNITED ARAB EMIRATES

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Abstract: Occupational safety and health (OSH) is generally defined as the science of anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and well-being of workers, taking into account the possible impact on the surrounding communities and the general. Occupational Safety and Health assures safe and healthful working conditions by setting and enforcing standards, and by providing training, outreach, education and assistance. The scope of occupational health safety and hygiene includes prevention and control of hazards, curative and rehabilitative programs. 1. To determine whether the work environment and working conditions of workers are harmful to their health and well-being and prevent such conditions from occurring. It provides knowledge and skills about health and safety principles, regulations, hazard identification, and emergency preparedness, among other things.

1. Introduction

Safety is regarded as an important element of all industries, especially in the Construction Industry where the occurrence rate of accidents is at the highest level. The working pattern in the Construction Industry is highly vulnerable, and accidents in the industry are mainly associated with an individual (unsafe human conduct) or with sector factors (a risky working state). As a result, the construction site is regarded as the most dangerous workplace, as the concerns related to the health and safety parameters of the workers are minimal.

2.Background

Safety at work is defined as the condition in which an individual is protected from any hazardous incident that could lead to fatal results. On the other hand, accidents are sudden or unexpected incidents that cause injury, harm, damage, or death to an individual or to groups of individuals. While considering the Construction Industry, each assignment and project is different from others and poses different promises and challenges for the workers. Moreover, the working environment in the Construction Industry is also constantly changing frequently, which causes inherent risks to the employees. The Construction Industry involves different work like fabrication, installation, maintenance, repair, painting, decorating, etc. All these activities are highly risky and must be performed under supervision and the right equipment so that risks associated with the work can be averted. Therefore, to ensure that no harm is caused to the employees while working at heights on ladders using drillers, cutting boards, special blades, glazing knives, etc., the workers must perform construction activities under the management and regulation of supervisors. The supervisor provides personal guidance by developing a positive relationship with the workers, encouraging, and ensuring that they adopt safety measures while working.

3.UAE

The Middle East (particularly the Gulf States) are making great strides in regeneration and development and creating a competitive environment in the world. As a result, all these countries are proving themselves against lawsuits from construction accidents as a huge construction boom with favorable demographics of the growing youth population. Like other neighboring states, the UAE is investing in public ad infrastructure heavily so that it can reduce its dependency on the dwindling reserves of oil and gas. Although the government of the UAE is focusing on diversification of the global economy from purely oil-based to multifunctional activity, it has introduced reduced measures to provide safety to the construction workers. Therefore, it can be said that all these efforts have resulted in a big growth in the Construction Industry. An examination of the major development projects in the UAE mainly includes projects that are estimated to exceed US$478 billion, which are registering the growth rate of 83.4 percent in 2006. The UAE also announced 332 projects with a total value of US$381 billion.

4. Construction Industry

The Construction Industry in the United Arab Emirates is growing at an exponential rate and registered more than US$0.5 trillion investments. A growth rate of 83.4 percent was reported in the Arab World Competitiveness Report, 2007. The UAE Construction Industry has expanded and crossed the US$124 billion mark by developing more than 325 islands such as Sayara, Mangrove, and the Lagoons in Dubai. In 2006, construction contractors and companies in the UAE declared the inauguration of more than 332 projects valued at more than US$0.4 trillion. Accordingly, due to the high expansion of the Construction Industry, a higher number of suboptimal workers are employed in the sector, which has resulted in a higher rate of accidents and fatal injuries. For example, in 1999, 923 accidents were recorded in Construction Site. As per the Qatar Statistical Yearbook of Construction (2000), 1097 deaths were recorded in countryside Construction Site. Moreover, the Construction Industry's fatal accident rates in Gulf countries like the Kingdom of Saudi Arabia have been recorded as high as 29 percent (Kuwait). In KSA was 23.3 percent in which 16.9 percent were caused by falls from a ladder at a Construction Site. In total, 249 workers met with accidents while working at heights in the Construction Industry in Dubai, UAE, in 2007. Hence, it is essential to introduce safety measures so that the injury and mortality rate in the Construction Industry will be reduced to a minimum.

5.Organization Safety Culture

Organizational culture is all about the way mutual basic assumptions are formulated to solve issues pertaining to internal integration and external adaptation. As a result, it leads to effective operation thus making them valid to be considered and to be taught to new team members as the accurate way to observe, reflect, and feel about those problems
Organizational culture in broader terms fundamentally refers to what employees think of a specific pattern of expectations and beliefs and how they are carried out within an organization in such a way that it encourages effective practice and behavior. "Objects, advocated beliefs and values, and underlying assumptions" are the parameters which define levels of organizational culture. Visible processes and structures come under organizational artifacts or objects (indicators of organizational values and beliefs) that include organizational policies, and charts highlighting the organization's daily functioning.

6.Safety as a Factor in Organizations

Globalization appears to be evolving into a mechanism that is making cross-cultural effects extremely influential. Now people can learn and adopt the cultures of safety from those in diverse sections of the world. Globalization is appropriate and has a considerable impact on business organizations. The idea of cross-cultural studies is relevant to this topic. Under certain circumstances, not only are multi-nationals increasing in number day by day, but the number of related events is also rising in terms of training for cultural diversity and cross-cultural studies. Since employees related to

construction organizations experience changing conditions, they are destined to work
with different team members to complete projects. This has a direct influence on different projects, as employees face difficulty in understanding not only the body language but also the mentality of different team members. Because of this growing concern related to cross-cultural events, cultural diversity and training have gained more significance.

7.Systems Approach to Safety

There are many different concepts of organizational safety in the Construction Industry. Security is a condition where an entity is already doing what they need to be doing with the aim of ensuring the safety of the staff, associated individuals, and the public. An organization's safety practices depend on various principles and policies relating to claims, designs, visions, and policies relating to engineering and architecture. Security is a fundamental aspect for most organizations irrespective of their nature or size because it promotes specific principles of what is appropriate and what is required. This can be understood by considering that the security of a home is dependent on its protection from external threats and risks. There really is no set safety definition, but that the safety condition means that the risk faced by an entity is within its risk tolerance level. Safety may also be defined as the circumstances that involve the exploitation of all available means to reduce risk and threats. In simpler words, protection refers to the absence or reduction of threats or risk probable to disrupt the normal condition of a person or entity.

8.Safety as a Factor in Organizations

Goetsch (2013) reported that the CI in every country has its own distinct environment comprising diverse subcultures in various trades, multi-structured ventures, the evolving work climate, and constantly changing staff. Managers, employees and supervisors are all required to contribute to the creation of safety measures within the CI. If an organization expands, its influence on safety culture also enhances. In general, institutional framework, regulations, and project-specific variables affect the culture of safety. However, most of these factors are socio-technical rather than technical, and most factors are found to be associated with human resources and general management responsibilities

9.Systems Approach to Safety

The development of an effective system approach is necessary so that the activities that are performed in the organization are conducted while keeping organizational and technical safety in mind. The system approach that is to be included in the system engineering process majorly consists of a top-down system. The adoption of the top-down system helps in recognizing the safety parameters by implementing a system property as compared to bottom-up synopsis, which is based on reliable attitude and features. The system approach also includes the functions that are associated with the socio-technical system and developing efficient interfaces between community attributes, technical, and firms. It includes the adoption of models and methods through which designing and examining specific organizational safety modules could be executed effectively by considering all the principles. The safety goals could be reached by various means by developing safe trade-off methods. Moreover, as per the system approach, the adoption of safety measures that comply with the business needs and environment enhancement needs to be implemented so that there is the attainment of organizational goals along with the implementation of the safety process (Figure 5).

10.The Construction Industry in the UAE

An enquiry in the history of the Construction Industry in the UAE (especially in Dubai) found that the Construction Industry suffered a major blow in 2009 because of the worldwide financial crisis and the Dubai world debt crisis. As a result, large numbers of planned projects were put on hold. The outlook of the UAE Construction Industry is positive for the year, but due to the law and practice, it creates the biggest challenge for the country because the hydrocarbon sector still contributes 34.3 percent to the nominal GDP. As a result, the Construction Industry is determined to get the benefit for the development of tourism, especially international events such as Expo 2020 that are recorded as major government investment in the transportation infrastructure. A large amount of infrastructure work has been started in the recent year in the United Arab Emirates such as roadways, airport projects that are ongoing in preparation for the expected population boom, and the upcoming Expo 2020 event in Dubai. At present, the infrastructure of the UAE has increased with an impressive international ranking, and it ranks first worldwide based on road construction, second for ports, and third for airports. In terms of residential projects, the UAE was labeled as the tallies of projects that were completed in 2013 and 2014, which is expected to rise in the coming year. The residential construction market is dominated by the UAE with two major cities, Dubai and Abu Dhabi. As a result, the government of the United Arab Emirates has bridged the gap between supply and demand of the lower-income group by allocating land in Dubai to an affordable housing unit. In the field of hospitality, the United Arab Emirates profits from its strategic geographical location between the East and West, and there are a growing number of visitors visiting Dubai and Abu Dhabi, which causes a growing demand for hotel rooms, so that the undersupplied market of UAE hospitality was recorded.

11.Health and Safety Principles in the UAE

Regarding safety practices, the governing body in the UAE focuses on the introduction of stringent laws and regulations to ensure that Health and Safety parameters are maintained at every Construction Site. In respect to this, the UAE government has introduced Article 32 of Federal Law No. 8 so that adequate safety regulations are to be followed in the country. The law is implemented throughout the UAE uniformly. It protects the rights of workers working in dangerous occupational sectors like construction. However, there is an urgent need to review and inspect the law by specialists so that it meets the changing needs of 04
construction workers. As a result, the Ministry of Labor in the UAE has come forward to strengthen the directives that are laid down under the policy so that the Health and Safety standards are improved to maximum levels. The Ministry of Labor is also making plans to extend the reach of the law to another sector like the oil and gas industry so that the workers in these industries are provided with adequate safety measures. It has been proposed that the two crane companies that were involved in the crane accident must be blacklisted and their licenses not renewed. The Ministry of Labor in the UAE has also proposed that construction companies be required to consult and inform the Ministry Council before setting up machinery at the Construction Site so that experts could inspect the installation of machinery at the site

12.Obstacles to Implementing a Health and Safety System

To focus on factor responsibility for site accidents, the Construction Industry is a unique industry that is unlike a fixed place like a factory. Several aspects create dangerous incidents in the Construction Industry as compared to other industries. First, the Construction Site are known as temporarily and constantly changing in nature because each Construction Site includes many subcontractors who are performing different types of work in different workplaces. Furthermore, there are several trades and tasks in the Construction Site at the same time, which can bring them the specific risk of their trade. Besides this, the construction workers' equipment frequently changes as per the worksite, which results in a lack of training in the work in new procedures and equipment. In addition, the rush to meet the deadline and quick completion of the project also increases the chance of accidents. It was also found that most of the contractors who work at the Construction Site are subcontractors who have been hired by the main contractor. As a result, the unchecked condition of their equipment may cause hazardous conditions that are not meeting the safety and health parameters on Construction Site, which can cause death or injuries. Several people can be held accountable for the cause of accidents at the Construction Site. It may be constructor owners, architects, insurance companies, and manufacturers of the equipment. Hence, the contractor needs to inspect the Construction Site with safety engineers and enforcing employee compliance with safety precautions.

13.Assessing Safety in the Construction

Health and Safety are essential for all branches of industry and particularly for the Construction Industry where it has been a major issue, as it is regarded as the most exposed sector when it comes to occupational accidents. Construction Industry has introduced a tremendous improvement in the performance of Health and Safety in some countries. However, certain countries have not implemented adequate workplace safety measures. Many studies show different examples related to Health and Safety improvement, which has been implemented by the countries to achieve the safety of the workers.

To assess the safety culture in the Construction Industry, several indicators or methods are utilized such as the management commitment of Health and Safety as a company's

value, accountability, worker involvement, supervisory leadership, company communication, owner involvement in projects, and safety culture spectrum.
Culture in the Construction Industry also include organizational safety practices that
mainly define the job site workers in the safety process and designated completed projects safety personnel conduct job hazard analysis and job safety analysis before the construction. It also includes prevention thought design by integrating safety mitigation into the engineering and design process.

14.Factors Affecting Safety Based on Theories

There have been limited studies related to Health and Safety effectiveness in the Construction Industry in the UAE. In one of the studies that were conducted by Noura Al-Kaab in 2002 by taking 120 construction industries in the UAE into consideration, it was found that there was a severe lack of safety and security measures in the Construction Industry in the UAE. It was found that 25 percent of the construction companies that were operating in the UAE did not provide Personal Protective Equipment (PPE) facilities to the workers. About 21 percent of the construction companies did not have adequate installations related to fire safety, while 26 percent did not provide any facility related to first aid provision to the workers. Moreover, 34 percent of the construction companies in the UAE did not have safety personnel at the Construction Site, while 63 percent of the construction companies had a record of fatal accidents and 16 percent of the UAE construction companies did not keep records related to accidents at the worksite. The prevailing labor law that is present in the UAE was also not considered sufficient to provide safety to the workers at the construction worksites.

15.Incentives

The incentive is known as one of the motivating factors that ensures the performance of the worker in an anticipative manner toward Health and Safety rules on site. Incentives have three main forms: (a) monetary, (b) non-monetary, and (c) disciplinary action. Financial and in-kind incentives as rewards focus on improving the Health and Safety performance, thereby increasing the worker's safety, which they can themselves monitor. Diversely, punitive action for violating instruction on the site may also be considered a part of combining the reward and punishment that teaches discipline among the workers. states that incentivizing must be considered as less important in improving the safety performance on sites and as it need not necessarily drive the safety record agenda for the organization, as an individual's outlook towards following safety guidelines in lieu of being incentivize may vary. Safety is something that should be valued and harnessed, not to be paid for.

16.Awareness

The construction managers conduct Health and Safety meetings and discussions so that employees are provided with adequate knowledge and learning about the standard safety practices in the organization. The discussions that are held by the managers

provide valuable knowledge to the workers regarding different safety standards such as first-aid arrangements, safety, and health inspections, and others that are to be maintained while carrying out work at the construction site. The workers must ensure that first aid arrangements are made appropriately so that immediate help can be provided for the injured. In addition, the managers also supervise the work of employees and ensure that they follow standard construction rules and safety parameters while carrying out construction work. The managers ensure that the safety signals, signs, and barricades are properly placed at the site so that the frequency of the occurrence of accidents decreases. For example, the implementation of safety signs such as color warning labels alerts the workers about any damp or pit at a particular place, and they adopt adequate precautions to safeguard themselves from the possible threat.

The active participation of the workers in the management process is highly essential to ensure good safety at all levels of construction work in different sites in the UAE. The workers increasingly participate in the organizational work activities, they become highly responsible and contribute towards the firm's growth. Employees believe themselves to be an integral part of the organization and carry out work activities as per the standards and safety precautions necessary for the completion of the task. As a result, there is the establishment of a better work environment that motivates the workers to perform different work activities such as material handling, production workshops, site offices, and storage handling carefully while following safety instructions.

17. Communication

Communication is regarded as one of the most important measures that are used to create a safety culture by preventing injuries. It ensures that safety-related interaction is established within the firm so that risky behaviors are discussed, and appropriate measures are taken to reduce and restrict them. The workers in the Construction Industry are reluctant to share or warn other workers of the probable risks they might face while progressing in the work. In the lack of adequate communication channels, the workers fear that the advice they give might not be taken in a positive way and may disturb or harm the good relationship they have with their co-workers and managers. Consequently, it is essential to develop sound communication channels at the Construction Site so that the interaction between workers to workers and workers to managers takes place adequately. The adoption of an empathic communication style within the UAE Construction Industry will help contractors, construction managers, laborers, and workers to establish construction interactions and develop long-term healthy relationships.

18.Training

It was recognized that in the Construction Industry, training plays an important role in enhancing Health and Safety among workers. Training is provided to certify the people who are responsible for supervising the scaffolding, as these are considered the riskiest

jobs at the Construction Site. Accordingly, the training session mainly includes different techniques such as safety induction, toolbox talk, worker orientation, and a communication program that defines rights and responsibilities of the workers, electrical safety, and personal protective equipment. The safety management procedure is also to be implemented to ensure safety measures at Construction Site. It includes safety planning, training, the provision of medical services, and medical policies. For example, to avoid accidents in the use of scaffolding, it must be ensured that the scaffolds used by the workers are rigid and strong. They must be supported by bricks and blocks so that the worker faces stable situations. To avoid accidents occurring from slips, trips, and falls (STFs), the work floor must be kept clean and dry, and the walkway must be made obstacle-free. The cables and binding wires that are found at different locations on the Construction Site must be fixed and allotted into their proper places. Likewise, safety must be maintained while using a ladder and crane, as most of the accidents occur while handling this equipment. Hence, the chains, wires, ropes, and hooks must be placed properly. The crane user must not move the load over the workers and must not be an unskilled technician. In the case of the ladder, it must be ensured that the right ladder is used as per the work requirement and erected at right angles to ensure stability. By using all these measures, training, and supervisors' guidance, the occurrence of accidents at construction worksite could be reduced.

19.Working Location

The working location of the workers plays an important role in ensuring safety. If the workers are working at a site that is close to a landfill, they may experience health issues because of high pollution levels. It will have a negative impact on the Health and Safety of the workers. Incentives are the motivating factor for the worker to associate safety with a particular task. If the employees are provided with an adequate incentive, they will not be forced to perform riskier tasks. A better incentive will encourage the workers to opt for safe working projects.

The high incidence of accident cases in the UAE signifies that there is an absence of adequate safety measures and policies to govern the working conditions of workers in the CI. For example, the crane accident that occurred in the UAE reveals the non-performance of the UAE safety regulations. Additionally, the issue of crane accidents has been discussed in Abu Dhabi's National Consultative Council to highlight the need for stringent regulative measures in the UAE. The Council has also established several discussions with the governing authorities in the UAE to discuss the activities of civil defense, municipality, and town planning so that the working conditions in the CI are improved.

20.Safe Tools

The factors such as morale and job satisfaction highly affect the good safety performance of the workers. When adequate safety measures such as regular Health

and Safety meetings are organized by the construction managers, there is the promotion of safety in the work conduction practices. It also helps in developing trust between the manager and the worker that encourages the workers to adopt safety measures while carrying out construction activities. The work activities in the Construction Industry are highly sophisticated, which increases the risks and challenges for the workers. For example, many workers must work at heights using ladders or scaffolding. If the equipment is not kept or stabilized properly, the worker might experience a fall that could cause serious injury. Hence, adequate safety measures such as safety gear, safety belts, and first-aid arrangements are made by the managers at the worksite to ensure that the workers are provided with a safe working environment. Provision of training and safe work practices also motivates the workers to adopt healthy work practices at Construction Site in the UAE. Training educates the workers and makes them proficient in carrying out difficult and riskier tasks such as erecting or supervising the scaffolding properly

21.Time Pressure

Time pressure is an important factor that highly affects the safety of construction workers at the site. Due to excessive time pressure on the contractors to accomplish a task on time, there are often the non-following standard rules and regulations at the time of performing construction activities, such as loading, scaffolding, erecting ladders, or using machinery. It increases the risk of accidents and injuries, as there is no maintenance of safety measures while performing tasks. Thus, time pressure is an important factor that ensures maintaining or non-maintaining safety measures at Construction Site in the UAE. If there is a reduction in time pressure, the workers will follow the safety parameter and construction standards more effectively.

Regular breaks mean giving the workers short breaks in between the work to be refreshed and energized so that the construction task can be performed with more focus and concentration. Construction work is highly labor-intensive, and workers are often required to work long hours to accomplish the task. Long working hours cause exhaustion, stress, and a reduction in efficiency. By taking short breaks, the monotonous work regime is stopped for a while and work is resumed with a fresh and positive work attitude. Breaks help in ensuring better safety measures at the workplace in the UAE so that tasks are accomplished. Additionally, the governing body of the UAE has also introduced safety measures for construction workers in which the workers are provided with a break of two and a half hours in the afternoon during July and August. The rest of workers during excessive hot conditions will help restore their energy, which may be utilized in the construction work later during the day.

22.Long Working Hours

Long working hours cause exhaustion, stress, and a reduction in efficiency. By taking short breaks, the monotonous work regime is stopped for a while and work is resumed with a fresh and positive work attitude. Breaks help in ensuring better safety measures at the workplace in the UAE so that tasks are accomplished. Additionally, the governing

body of the UAE has also introduced safety measures for construction workers in which the workers are provided with a break of two and a half hours in the afternoon during July and August. The rest of workers during excessive hot conditions will help restore their energy, which may be utilized in the construction work later during the day.

23.Regular Breaks

Regular rest breaks are recommended to prevent the accumulation of accident risk during sustained activities. The construction of construction tasks requires a high amount of physical labor, which often tires the workers in a short period. Thus, the provision of regular breaks helps the workers to rejuvenate themselves and continue the work freshly with high spirits. In the Construction Industry, the workers are required to work for long hours under the sun, during cold weather, or in humid climatic conditions. Under such conditions, the workers become tired and do not follow safety aspects of the work, which increases the frequency of accidents and hazards. Therefore, the long working hours of the workers must be reduced so that the potential of the workers to perform the tasks is maintained.

24. Conclusion

The researcher examined different factors which are important for the safety of workers in the Construction Industry in the UAE. The rapid growth of the Construction Industry in the UAE has posed many challenges for organizations, employers, and regulatory authorities. Construction is the foundation or crucial part of the UAE economy. The frequency of accidents poses question about the Safety of Workers and this needs to be taken care of by the employer and by the legislation of the country. The increasing number of accidents in the Construction Industry raises questions about the Safety of Workers. Hence, researchers, practitioners, and construction companies need to understand the factors that lead to Safety of Workers. Most of the findings further strengthen the normal accident theory, which proposes that accidents can be foreseeable in advance, if working systems are well developed and synchronized.

Based upon the results of statistical analysis, the following answers correspond to the questions of this research study. The researcher developed two main questions:
The results of the independent sample t-test indicate that there is no statistically significant difference in the perceptions of males and females towards the safety of workers in the Construction Industry in the UAE. “Safety of workers” does not show significant difference based upon different age groups, education groups, and marital status. The results also show that there is a significant difference in the perceptions of employees based upon the different groups of job titles and experience. The findings were empirically tested in one CI in the UAE, and it was found that the results of the study are like the results of the main study.
So far, in this chapter, the researcher has covered some crucial points, which spanned from conclusion to discussion to implications. Under this subheading, the researcher addresses recommendations for future research studies. The researcher has identified certain areas, which might be investigated by other researchers. Overall, the

recommendations are provided to address methodological and conceptual limitations that were identified by the researcher at the time of this dissertation.

The findings of the study revealed some interesting aspects, which took the researcher by surprise. One of such conclusions pertained to no differences in perceptions

towards the Safety of Workers across respondents of different ages, education, marital status, and gender. The researcher recommends further examination to investigate the reasons for the above results in the current study. The researcher recommends examination of the moderate effect of gender, age, and other socio-demographic factors between the predictors and outcome variables.

