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The impact of occupational health and safety factors on private sector projects in the Kingdom of Saudi Arabia

A proposal submitted for completing the requirements of M.S. degree in projects management

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1.1 Introduction

Occupational health and safety is the protective tools for all members of society against dangers and accidents inside and outside of work. Accordingly, all individuals must be fully aware and convinced of the value of the occupational health and safety, in order to avoid the occurrence of injuries and accidents inside homes, public places, companies, and industrial institutions (Abu Al-Rous, 2006). Also, the field of occupational health and safety is one of the factors affecting the production efficiency in any industrial institution, due to the phenomena of work accidents and occupational diseases (Hanan, 2006). The risks to which humans are exposed have increased significantly with the complexity of the life in which we live, and one of the places where these risks intensify and increase is the companies of the private sector, where conditions differ fundamentally from the normal lifestyle in terms of temperature, degree of humidity, purity or pollution of the air, in addition to the use of electrical current in the process of operating machines and equipment, causing electrical shocks to individuals and fires inside the factory.

The professional and safety risks have various harmful effects in their form, size, and duration of impact, as they include the worker, his family members, and the entire community (Al-Sabaawi, 1998). The issue of production efficiency in the companies of the private sector is one of the important matters that has called for the attention of the countries of the world in general, given that it is a basic criterion in evaluating industrial institutions, and an indicator of profit and efficiency of performance in these companies, assuring the great effects of occupational health and safety in the companies of the private sector (Hanan, 2006).

As a result of these multiple risks to which the workforce is exposed, it is necessary to pay attention to taking the necessary measures that ensure the care and preservation of these forces in terms of planning, implementation and evaluation of occupational health and safety programs, and the need to pay attention to providing personal protective equipment such as body protective clothing,

protective helmet, gloves and shoes, safety equipment to protect the eyes, face, and hearing, as well as providing first aid box, alarms, and fire extinguishers, in order to confront emergency situations (Jaber, 2001). The importance of occupational health and safety results from the direct and close relationship with the standard of living of the individual and society in general, as it is a means of achieving economic and social goals. It is taken for granted that importance occupational health and safety for the private sector projects lies in its great effect on the productive efficiency, affecting the economic and social development in any society (Hanan, 2006).

Accordingly, many academics and practical researchers have studied and analyzed the various factors affecting productive efficiency for the private sector projects, assuring that these factors are numerous and differ in their nature and intensity of their impact, as well as the method of influence. Owing to the importance of the impact of occupational health and safety factors on private sector projects in the Kingdom of Saudi Arabia, this research is conducted.

1.2 Problem Statement

The observer of occupational health and safety issues in the projects of the private sector notes the large amount of violations of occupational health and safety rules in such projects.

There is no doubt that neglecting health professional and safety rules has ended the lives of some and left others with permanent disabilities. As a result of accidents and injuries that occurred while performing works in the projects of the private work, which naturally occurs frequently in a work environment that does not have the minimum requirements for preserving human life. Hence, the problem of the research is determined in answering the main question, which is, what is the impact of occupational health and safety factors on private sector projects in the Kingdom of Saudi Arabia?

1.3 Research objectives

The objectives of the current research can be defined as follows:

- Identify the extent of application of occupational health and safety standards followed in private sector projects.
- Detecting the level of production efficiency among workers in private sector projects, especially with regard to occupational health and safety and fumes resulting from them.
- The research will clarify the relationship between attention to occupational health and safety standards for workers and production efficiency.
- Determine the extent to which private sector projects take into account to provide healthy working conditions that preserve the worker's safety and occupational health.

1.4 Research methodology

The current research will depend on the descriptive analytical approach, which is compatible with the nature of the study and its objectives, with the aim of describing the studied phenomenon in terms of its nature and degree of existence. This approach depends on studying reality and describing the phenomenon accurately, expressing it qualitatively or quantitatively.

Based on the nature of the data, and on the approach followed in the study, the researchers find that the most appropriate tool to achieve the objectives of this study is the questionnaire, since it is an appropriate tool for gathering information, data and facts related to a specific reality and presented in the form of a number of questions to be answered by a number of individuals concerned with the subject of the questionnaire. The research tool will be built by referring to literature and previous studies related to the subject of the research.

1.5 Research significance

- **The theoretical significance**

1. The research contributes to enriching scientific libraries in general and the Saudi Library in particular, in the field of occupational health and safety.
2. The research benefits researchers who are interested in the quality of occupational health and safety, and scientific research provide information on occupational health and safety.
3. The research clarifies the relation between following occupational health and safety factors and the production efficiency in the private sector projects.

- **The practical significance**

1. The research will the owners of institutions of the private and public sectors to be careful and adhere to the rules of occupational health and safety, through which it helps increase the performance of workers on the one hand, which leads to increased production on the other hand.
2. The research also helps employees adhere to occupational health and safety laws.

1.6 Research questions

1. To what extent are occupational health and safety standards applied in private sector projects?
2. What is the level of production efficiency among workers in private sector projects?
3. What is the relationship between attention to occupational health and safety standards for workers and production efficiency?
4. To what extent do private sector projects provide healthy working conditions that preserve worker safety and occupational health?

1.7 Fields of the research & the time line

- **The Objective field:** The current research will be limited to the extent of applying the occupational health and safety standards followed in private sector projects.
- **The Human field:** The research will be limited to workers in private sector projects.
- **The Spatial field:** private sector projects, Kingdom of Saudi Arabia
- **Time line:** The research will be conducted in the year 2023/2024

1.8 Terminology of study:

A. Occupational safety:

Occupational safety is defined as the totality of procedures and measures to protect lives and property in industrial facilities (Abu Shama, 1999). Also, it is defined as providing the necessary conditions, technical specifications, and organizational procedures in the work environment to make it safe and healthy, meaning that no accidents occur and no occupational injuries result. The occupational safety means protecting all production elements from harm caused by work accidents. Occupational health and safety is defined as providing safe and appropriate working conditions for both the worker and the work tool (Abdel Fattah et al., 2009).

B. Safety & health

Safety means protecting human resources from harm and damage caused to them by possible accidents in the workplace, and the results of this harm appear immediately, such as fractures of all kinds, wounds, burns, suffocation (Aqili, 2005).

As for health, it is defined as a state of relative balance of the body's functions and that this state of balance results from the body's adaptation to the harmful factors to which it is exposed. The World Health Organization has defined it as a positive state of physical, mental and social safety and adequacy and not merely the absence of disease or disability (Qutaishat et al., 2009).

1.9 Literature review

The concept of occupational health and safety:

As a result of the many risks and accidents to which the worker is exposed, organizations seek to provide a safe work environment in order to provide safety and health for their human resources, avoiding work disruption.

Occupational health and safety objectives

Occupational health and safety aims to reduce the risks faced by the worker due to his use of many machines and equipment, as well as health safety from diseases resulting from the practice of professional work, as well as safety from the work environment itself and the dangers that accompany it. All of these factors are the main objectives of the concept of occupational health and safety. It seeks to achieve the following (Madi, 2010)

1. Protection of the human power
2. Protecting and developing skills, experiences, and specializations.
1. Raising the technical level of workers through training and training.
3. Determining the performance methods and manage them with the least efforts and least risks.
4. Reducing productivity costs while increasing production.

It can be said that the objectives of occupational health and safety are to protect the elements of production (the workforce, production equipment and means, and production materials from harm caused as a result of accidents and work injuries. Hence, occupational health and safety aims to the following (Bilal, 2010):

1. Protecting the human element from injuries resulting from the dangers of the work environment by preventing their exposure to accidents, injuries, and occupational diseases.

2. Providing and implementing all occupational health and safety requirements that ensure a safe environment that prevents risks for both the human and material elements.
3. Reducing the cost of production by providing funds that are paid as a result of the occurrence of work accidents, such as compensation and expenses for treatment, transportation, repair and replacement of equipment, devices or facilities that are subject to damage and destruction, in addition to reducing expenses related to lost work time as a result of the occurrence of work injuries.

Importance of Occupational health and safety Management

It can be said that management is responsible for directing, planning, implementing and following up on everything related to occupational health and safety in the organization, setting rules and technical instructions to ensure the safety of workers, property and the work environment and developing a strategy in training programs, through which the level of employee performance and the level of development can be raised. The importance of occupational health and safety management is highlighted as follows: (Mohammed, 2010):

1. Reducing work costs, as proper management of the work environment keeps the organization from many problems and obstacles such as health accidents and diseases, which the organization covers for workers' compensation in addition to disruption of the workflow.
2. Providing a healthy and low-risk work environment, as management is responsible for providing a suitable place free from risks that lead to harm to workers during their work.
3. Providing an appropriate work system by providing protective devices and equipment, using regular records about any accidents or diseases.

4. Reducing the psychological effects resulting from accidents and diseases at work sites, as accidents' impact is not limited to the physical aspects only, but their effects extend to the feelings of workers within the organization.

1-10 previous studies:

Arab Studies:

There are many Arab studies which dealt with some similar topics regarding the importance of using occupational health and safety procedures in the private sector projects.

In a study conducted by (Al-Jabareen, 2015) entitled The impact of applying occupational health and safety standards on the performance of workers in industrial establishments in Jordan, the study aimed to identify the impact of applying occupational health and safety standards on the performance of workers, identifying the reality of the performance of workers in Jordanian industrial establishments, as well as clarifying the obstacles that limit the provision of clear programs and standards for occupational health and safety in Jordanian industrial facilities. The study assured several results, the most important of which are:

- In Jordanian industrial establishments, there is a commitment on the part of senior management in the risk assessment process and the development of occupational health and safety procedures.
- It was shown that the administration is interested in providing safety, prevention and security equipment and means for workers, and that workers are trained on ways to deal with safety systems and equipment and on occupational health and safety procedures.
- Work is being done to activate the laws and legislation that will commit to providing all occupational health and safety requirements in the work environment on an ongoing basis.

- There is a statistical effect between each of the previous factors and improving the performance of workers in industrial facilities

In a study conducted by (Al-Habil and Ayeshe 2012) entitled: "Assessing the effectiveness of occupational health and safety procedures in scientific laboratories from the employees' point of view", the study aimed to evaluate the effectiveness of occupational health and safety procedures in laboratories. The study relied on the descriptive analytical method to collect data and information for the study, in addition to relying on the questionnaire tool. The study population consisted of workers in scientific laboratories, and the sample size was (218) people, in addition to relying on the interview tool to answer. The study concluded that the commitment of senior management affects to a moderate degree the effectiveness of occupational health and safety procedures in laboratories, and that providing rules and means of safety and prevention in the work environment affects to a moderate degree the effectiveness of occupational health and safety procedures.

Moreover, in another study conducted by Ismail (2011) entitled: "situational study of the possibility of establishing an integrated system for environment, safety and occupational health in accordance with specifications (OHSAS 18001) & (ISO:14001:2004)", the study aimed to identify the possibility of establishing the requirements of an integrated system for environmental health and safety in accordance with (OHSAS 18001) & (ISO:14001:2004). The study sample included workers from different industrial institutions. The study clarified that that companies differ in the level of abilities to meet the requirements of integrated management systems.

Furthermore, in a study conducted by Hadar (2011) entitled "The Role of Occupational health and safety Standards in Improving the Performance of Workers in Small and Medium Enterprises", the study aimed to identify all aspects of occupational health and safety, revealing the human resources management in small and medium enterprises. The study relied on the descriptive analytical

approach, depending on a set of tools and data sources. The study concluded that the Occupational Health and Safety Administration work to maintain workers and provide a suitable work environment to increase workers' productivity. Also, the results clarified that small and medium enterprises are considered a type of institution, according to the classification of institutions.

In addition, in a study by Bilal (2010) entitled "The Role of Occupational Safety Programs in Improving the Performance of Workers in Algerian Small and Medium Enterprises, the study aimed to determine the extent to which safety programs contribute to improving the performance of workers in Algerian small and medium enterprises. The study relied on the descriptive analytical approach to determine the relationship between its variables. The study also relied on questionnaire tools to collect data and information related to the subject of the study. The study reached several results, the most important of which is that the percentage of workers exposed to occupational accidents is large. Poor working conditions are considered the most important reasons leading to the occurrence of work accidents. The study revealed that some private institutions are somewhat negligent in implementing occupational safety programs. Also, the large and negative impact of occupational accidents on the psychology and performance of workers is reflected in the overall performance of the institution. The study confirmed that there is a lack of communication and dialogue between management and workers, which gives them the impression of their lack of importance within the organization, the thing which negatively affects satisfaction for workers, which has a negative impact on their performance and productivity.

In another study conducted by (Muhammad, 2010) entitled "Work accidents and their relationship to some personal and professional variables", the study aimed to reveal the relationship between work accidents, disability levels, and some personal and professional variables among workers according to some variables, namely (age differences, professional age, educational differences, level of work seriousness, causes of the accident). The study sample consisted of 200 Workers. After

applying the tests and verifying the validity of the scale, the study reached several results, including the following: There are statistically significant differences between workers who were exposed to work-related injuries with regard to the age. For workers, there were statistically significant differences between workers who were exposed to work-related injuries with regard to the variable of the workers' length of service. There are statistically significant differences between the workers who were exposed to work-related injuries with regard to the variable of work seriousness.

Let alone, in another study conducted by (Mohsen, 2009) entitled "The role of the media in developing awareness of the concepts of preventive safety and occupational health among workers in Jordan", the study aimed to shed light on the risks of growing work injuries and their increasing rates among workers in various productive sectors in Jordan. The study also aimed to draw attention to their danger and harm to the lives of workers, productive institutions and national economies day after day. The study showed the role and impact of various media in Developing awareness of the concepts of preventive safety and occupational health among workers in Jordan, by identifying the exposure habits of workers and their categories to the media, the extent to which the media contain messages related to occupational health and safety, and the impact of the media in raising the level of preventive awareness among workers and developing their concepts of occupational health and safety.

Also, in a study conducted by (Marhej et al., 2006) entitled: "Safety management in construction projects in Syria", the study aimed to examine the reality of safety management in Syria by presenting the basic elements (legal framework, knowledge and training, senior management commitment, resources and equipment), discussing the current reality of engineering projects. The study relied on the observation card and questionnaire tools. The study revealed a lack of awareness of the importance of safety and safe performance at work, and a weak management commitment to developing safety programs and following up on their implementation.

Also, in another study conducted by (Al-Mughni, 2006) entitled: "The reality of occupational security and safety procedures used in manufacturing sector facilities in the Gaza Strip", the study aimed to identify the reality experienced by manufacturing sector establishments in terms of their commitment to applying, developing and providing systems, regulations and laws related to occupational health and safety. The questionnaire tool was relied upon to collect information and data for the study. The sample size was 258 people, and the recovery rate reached 98% of those who participated in the study. The study concluded that there is a statistically significant correlation between the effectiveness of occupational health and safety procedures and the commitment to applying, providing and developing systems. The study clarified that there is a statistically significant correlation between the level of qualification at the level of regulatory and industrial institutions and the effectiveness of occupational health and safety procedures, in addition to the fact that industrial establishments do not care about making reports on work accidents and injuries. Also, the results showed that the supervisory facilities do not take disciplinary measures in the event that industrial facilities do not comply with the application of occupational health and safety rules, while industrial facilities are interested in taking these measures.

In another study (Al-Dhiyab, 2006) entitled "The Role of Environmental Laws and Regulations in the Kingdom of Saudi Arabia in Reducing Environmental Pollution", the study aimed to analyze the extent of application of the environmental laws and regulations that were established to reduce the effects of Environmental pollution and its increase in severity by workers in the agencies concerned with the environment and the extent of their efficiency and awareness of these systems and regulations, along with identifying the systems and regulations and the types of pollutants and their causes in the city of Riyadh. The study reached several results, the most important of which are that some pollutants have exceeded the permissible limits in the city and that there are reasons that led to an increase in the rate of environmental pollution in Riyadh,

including failure to implement the results and recommendations of international research, withholding information indicating that there is pollution by project implementers, and leniency in applying penal procedures when standards exceed the permissible limit. Let alone, in the study of (Hanan, 2006) entitled: "Occupational health and safety and its impact on production efficiency in an industrial enterprise", the study aimed to identify the reality of the phenomena of work accidents and occupational diseases in the industrial establishment, revealing the impact of the phenomena of work accidents and occupational diseases on the productive efficiency in the industrial establishment. The study relied on the descriptive analytical approach, in addition to relying on the corresponding study tools (reports and observed records). The study reached several results, including that Occupational health and safety is a field concerned with protecting the human element from the dangers of work accidents and occupational diseases, and protecting material elements from the damage that could be caused to them. Also, the results affirmed that production efficiency is one of the important matters that called for the attention of countries of the world, considering that it is an indicator of profit.

Also, in a study conducted by (Haniyeh, 2005) entitled: "Factors affecting the productivity of workers in the industrial sector", The study aimed to reveal the concept of productivity, its importance, methods of measuring it, as well as the most important factors affecting it, and an attempt to reach an identification On the reality of the Palestinian economy in light of the Al-Aqsa Intifada, the extent of the problems and obstacles it faces, and the amount of losses it was exposed to during this period, by reviewing productivity indicators and the factors affecting them, and revealing the extent of growth or decline of the industrial sector in the national economy. Of all the establishments operating in the wood industries sector in the Gaza Strip, which number approximately 600 establishments, the study sample amounted to 160 establishments, i.e., a rate equivalent to 26.6% distributed across all regions of the Gaza Strip, where 140 questionnaires were

retrieved, i.e., a rate of approximately 88%. The results showed that there are A relationship between the productivity of workers in the wood industry sector and a number of factors that affect it, such as: the incentive system applied, the extent of labor rights, the impact of followed Israeli practices, and the size of invested capital. Furthermore, in a study conducted by (Hassouna, 2005) entitled: "Improving safety performance in construction projects in the Gaza Strip", the study aimed to study the current laws related to safety, in terms of the extent of their application and suitability to the construction environment in the Gaza Strip, and the problems associated with enforcing the laws on construction sites. The study also aimed to determine the role of all parties in order to implement safety systems in engineering projects. The questionnaire tool was relied upon to collect data and information from 110 people, including contractors, owners, and consultants. The study found that there is awareness among contractors, owners and consulting parties of the importance of safety in engineering projects, and despite this, sufficient efforts are not being made to achieve safety goals in construction projects by these parties.

An additional study was conducted by (Abboud's, 2005) which entitled "Assessing the Risks of Practicing the Medical Analysis Profession in Tripoli" , the study aimed to familiarize workers in the field of medical analysis with the principles of occupational safety in medical laboratories. Information was collected from 200 practitioners of the medical analysis profession. The study reached several results, the most important of which are: The lack of occupational safety components in laboratories, such as emergency doors, emergency windows, chemical preparation cabins, and bacteria cultivation cultures, is one of the most important risks of practicing the profession, in addition to the lack of teaching occupational safety to workers in the field of human medical analyses, as 90% consider the elements of professional safety to be non-existent, and 60% are dissatisfied with the state of services provided by laboratories.

In an additional study conducted by (Al-Mudaifer, 2005) entitled: "The effectiveness of applying occupational and technical security and safety systems", the study aimed to identify the occupational and technical security and safety systems in the laboratories of the scientific departments in women's colleges, and to determine the level of knowledge of each of those responsible for the laboratories and the professional and technical security and safety systems manufactured in the laboratories of the scientific departments in women's colleges. The results of the study concluded that there is a lack of application and availability of many technical security and safety elements, means, tools and general requirements for security and occupational safety for personal protection in department laboratories. The study revealed a weak level of knowledge and awareness of both laboratory officials and female students regarding security systems and means, Occupational safety and applied technology.

Let alone, in a study conducted by (Sharif, 2001): entitled " Safety and its relationship to the performance of workers in private sector industrial facilities in the city of Dammam, the study aimed to analyze the feasibility of using safety means and their relationship to raising the level of performance of workers in industrial facilities by conducting a survey on the two industrial cities in Dammam. The study clarified the types of industrial risks and safety means required in the facilities and the extent to which industrial facilities follow Safety means, equipping them, showed the extent of the supervisory role in applying safety means in industrial facilities. The results of the study showed that the majority of industrial facilities amounting (75%) are interested in creating a department specialized in safety, and there is an appropriate tendency for most of these facilities to have a connection with this is at the highest authority in the facility, and that a large percentage of the sample of facility managers focus only on their training of workers in the various areas of safety programs through indicative training, seminars, and general training, while there is no interest in specialized training.

In addition, in an additional study conducted by (Sarhi, et al. 2000) entitled "Health and Safety in Automated Offices, Case Study of the Library of King Abdul-Aziz University in Saudi Arabia", the study aimed to identify the work rules and established policies, clarifying the suitability of the devices used for the health and safety of workers. Information was collected from male and female workers in the university library who deal with computers. The sample size was (40) people. The results of the study showed that there is an absence of legislation and technologies that regulate work in automated offices, and the devices and furniture used in the library are consistent with public health and safety standards.

The Foreign students:

One of the foreign studies related to the study topic is the study (Gauchard, et al., 2006) entitled "Factors causing work accidents", the study aimed to reveal the basic factors behind a railway worker's exposure to accidents. The study sample consisted of 1,305 male workers working in the railway company. The study relied on a questionnaire tool. One of the most important results of the study was that accidents were concentrated with a short period of service. Also, it was concentrated with younger ages.

Moreover, in a study conducted by (David, et al, 2005) entitled: "Voluntary risk-taking among young drivers and its relationship to their ability to avoid accidents in the United States of America", the study aimed to identify the relationship between taking voluntary risks and committing accidents among young drivers. The study relied on the police driving records tool in the United States by conducting a survey. The sample number reached 3,437 drivers, and their ages ranged between 17 and 75. The study found that the number of accidents involving young drivers was three to four times that of accidents per year compared to the number of accidents involving older people.

Furthermore, in a study conducted by (Walker, 2003) entitled: "Worker productivity and occupational health and safety in industry in Britain", the study aimed to identify the factors that affect the worker's production rate, clarifying the importance of occupational health and safety in various industries. The study sample amounted 50 production managers. The study showed that there are various factors that affect workers' production, including the presence of a hot and noisy environment. It also became clear that managers received complaints from workers regarding fatigue, back pain, upper body pain, and headaches. The results showed that management does not have sufficient information about the humanitarian factors to which workers are exposed, and it also became clear that there is a lack of skills among workers and a lack of training.

In another study conducted by (Sawacha, et al., 1999) entitled: "Factors affecting the implementation of safety at construction sites in Britain", the study aimed to identify the various factors affecting the implementation of occupational safety, as the study sample amounted to 120 sites. The results showed that there are several various factors affect safety on sites, including age, economic factors, personal factors, and technical factors. The results concluded that training the workers on how to use occupational safety tools helps reduce accidents and achieve safety. The most important factor that affects the safety conditions is the organizational factor which is important to identify sources of danger, and the causes of accidents.

Finally, in a study conducted by (Yeow, 2003) entitled: "Productive Quality, Occupational health and safety in Britain", the study aimed to improve workplaces and identify the problems facing workers inside the factory. The sample size reached 30 factories. The results of the study showed that there is poor planning for workplaces which affects the safety conditions in the work place.

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