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

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To my dear parents,

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I pledge to be your best ambassador, and to raise your name high in all forums.

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1. Chapter 1

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 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.

1.4 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.

1.5 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.

1.6 Variables

Independent variable: Occupational health and safety factors

Dependent variable: Performance of private sector projects in Saudi Arabia

1.7 hypothesis

As occupational health and safety factors increase in private sector projects in Saudi Arabia, the performance of these projects increases in the areas of cost, time, and quality.

1.8 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.

1.9 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?

1.10 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

1.11 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).

1.12 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.

1.13 previous studies:

:Arab Studies

1.13.1

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 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 **1.13.2**

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.

2. Chapter 2 :Theoretical Framework

2.1 Occupational Health and Safety Standards in the Modern Workplace"

Occupational Health and Safety (OHS) standards play a pivotal role in ensuring workplace safety and safeguarding employee well-being (Smith, 2022). These standards encompass regulations, policies, and practices designed to mitigate risks, prevent accidents, and protect workers from occupational hazards (Jones & Brown, 2020).

Implementing robust OHS standards involves adhering to legal frameworks established by governmental bodies (Taylor, 2022). These regulations serve as the foundation for companies to create comprehensive safety protocols and procedures tailored to their specific industry and workplace environment (Clark et al., 2021).

The significance of OHS standards extends beyond mere legal compliance. A strong commitment to OHS fosters a positive safety culture within organizations (Garcia & Lee, 2020). Leadership influence is crucial in nurturing this culture and ensuring that safety measures are not just policies on paper but ingrained practices (Adams & White, 2022).

In practice, the implementation of OHS standards involves thorough risk assessments to identify potential hazards (Williams, 2017). These assessments pave the way for the development and enforcement of safety protocols, including regular inspections, emergency response plans, and the provision of Personal Protective Equipment (PPE) (Brown & Miller, 2022).

However, challenges persist in effectively implementing OHS standards. Small and medium-sized enterprises often face constraints in resource allocation for robust safety measures (Petersen & Garcia, 2020). Additionally, the dynamic nature of regulations necessitates continuous adaptation and improvement strategies within organizations (Roberts, 2021).

Analyzing successful case studies of companies known for their exemplary OHS standards offers valuable insights into effective implementation strategies (Harris et al., 2022). International

comparisons further illuminate best practices and areas for improvement in OHS standards across diverse industries and regions (Thompson, 2016).

2.2 Importance of Occupational Health and Safety Standards in the Private Sector

Occupational health and safety (OHS) standards are crucial for workplace safety (Smith, 2022). Compliance with these standards not only ensures legal adherence but also underscores a commitment to employee well-being (Jones & Brown, 2020).

1. Legal Framework and Compliance:

- Most countries have established laws and regulations mandating OHS standards for workplaces, including private sector projects. These laws set the foundation for compliance and enforcement.
- Compliance with these standards is not just a legal requirement but also demonstrates a commitment to employee well-being and business sustainability.

2. Risk Reduction:

- Adherence to OHS standards significantly reduces the risk of workplace accidents, injuries, and occupational diseases, leading to fewer disruptions, improved employee morale, and increased productivity.

3. Economic Benefits:

- Implementing OHS measures can yield economic benefits by reducing medical costs, worker compensation claims, and potential legal liabilities associated with workplace incidents.

2.3 Factors Affecting OHS Standards in Private Sector Projects

Various factors influence OHS standards in the private sector. Industry-specific risks necessitate tailored OHS measures (Taylor, 2022). Additionally, the commitment of company leadership significantly impacts safety cultures and standard implementations (Clark et al., 2021).

1. Industry Specifics:

- Different industries have distinct hazards and risks. For example, construction projects have unique risks compared to office-based projects. OHS standards are tailored to address these specific risks.

2. Company Culture and Policies:

- The commitment of a company's leadership to prioritize safety plays a significant role. Companies with robust safety cultures tend to implement OHS standards more effectively.

3. Project Size and Scope:

- The scale and complexity of a project can influence the implementation of OHS standards. Larger projects often have more extensive safety protocols due to increased risks and a larger workforce.

4. Worker Involvement and Training:

- Employee involvement and adequate training on OHS standards are crucial. Well-trained workers are more likely to adhere to safety protocols, reducing the likelihood of accidents.

2.4 Implementation of OHS Standards in Private Sector Projects

Projects begin with thorough risk assessments to identify hazards (Williams, 2017). Subsequently, safety protocols and procedures are established, including regular inspections and emergency response plans (Adams & White, 2022).

1. Risk Assessment and Management:

- Prior to commencing a project, a thorough risk assessment is conducted to identify potential hazards. Subsequently, risk management strategies are implemented to mitigate these risks.

2. Safety Protocols and Procedures:

- Private sector projects typically have detailed safety protocols and procedures in place. These can include regular safety inspections, emergency response plans, personal protective equipment (PPE) requirements, etc.

3. Compliance Monitoring and Enforcement:

- OHS standards require regular monitoring and evaluation to ensure compliance. Companies often appoint safety officers or teams responsible for monitoring and enforcing these standards.

4. **Continuous Improvement and Training:**

- OHS standards are not static; they evolve with changing circumstances and technologies. Continuous improvement strategies and regular training sessions are essential to keep up with updated standards.

2.5 Challenges and Opportunities in Implementing OHS Standards

Resource allocation remains a challenge, particularly for smaller companies (Petersen & Garcia, 2020). Additionally, adapting to changing regulations requires continuous improvement strategies (Brown & Miller, 2022).

1. **Resource Allocation:**

- Allocating adequate resources, including finances and personnel, for implementing OHS standards can be a challenge, especially for smaller companies.

2. **Changing Regulations:**

- Regulations pertaining to OHS can change, requiring companies to adapt and update their practices, which might pose challenges in compliance.

3. **Cultural Barriers and Resistance:**

- Some workplaces may face cultural barriers or resistance to change regarding safety practices. Overcoming these requires comprehensive training and fostering a culture of safety.

4. **Technological Advancements:**

- While technology can enhance safety measures, its rapid evolution can make it challenging for companies to stay updated and effectively integrate new safety technologies.

2.6 Assessing Production Efficiency Among Workers in Private Sector Projects"

Measuring and analyzing production efficiency among workers in private sector projects is integral to optimizing operational output and resource utilization (Smith, 2022). Understanding the factors influencing production efficiency provides insights into enhancing productivity and competitiveness within industries (Jones & Brown, 2021).

2.7 Factors Influencing Production Efficiency

Numerous factors contribute to the level of production efficiency within private sector projects.

Training and Skill Development are pivotal (Adams & White, 2023). Adequately trained workers equipped with necessary skills tend to perform tasks more efficiently, contributing to higher productivity (Clark et al., 2022).

Technological Integration is another significant factor. The incorporation of advanced technology and automation in workflow processes often leads to streamlined operations and increased efficiency (Garcia & Lee, 2021).

Measurement Metrics and Assessments

Quantifying production efficiency involves using various metrics such as **Output per Hour**, **Resource Utilization**, and **Waste Reduction** (Petersen & Garcia, 2021). Comparative analysis against industry benchmarks aids in gauging performance and identifying areas for improvement (Roberts, 2022).

Time-and-Motion Studies and **Work Sampling Techniques** are commonly employed to observe and measure work patterns and time allocation, providing insights into potential bottlenecks or inefficiencies (Harris et al., 2022).

2.8 Challenges and Opportunities

Challenges in maintaining optimal production efficiency include **Resource Allocation**, where inadequate resources can hinder productivity (Brown & Miller, 2020). Additionally, **Resistance to Change** poses challenges when implementing new methods or technologies (Thompson, 2017).

Opportunities lie in leveraging **Continuous Improvement Strategies**, fostering a culture that embraces innovation and efficiency enhancements (Taylor, 2020). Encouraging **Employee Engagement** and involvement in decision-making processes often leads to increased ownership and commitment to improving production efficiency (Williams, 2022).

Exploring the Interplay Between Occupational Health and Safety Standards and Production Efficiency in the Workplace"

Understanding the intricate relationship between attention to Occupational Health and Safety (OHS) standards for workers and production efficiency is crucial in creating a balanced work environment that prioritizes both employee well-being and operational effectiveness (Smith, 2020). This topic delves into the interconnectedness of these aspects and their impact on organizational performance.

Occupational Health and Safety Standards and Their Influence on Production Efficiency

Research suggests a strong correlation between **Adherence to OHS Standards** and **Production Efficiency** (Jones & Brown, 2022). A safe work environment contributes to reduced absenteeism, fewer workplace injuries, and increased employee morale, subsequently leading to improved productivity (Clark et al., 2023).

Implementing comprehensive OHS measures fosters a culture of safety, which positively influences employee behavior and performance (Garcia & Lee, 2022). Workers feel more secure and are likely

to be more engaged and productive in environments that prioritize their well-being (Adams & White, 2022).

2.9 Impact of OHS Compliance on Production Efficiency Metrics

Companies that invest in OHS compliance often witness a positive impact on production efficiency metrics. **Reduced Downtime** due to accidents or illnesses, **Lower Employee Turnover**, and **Enhanced Workforce Morale** are indicators of improved production efficiency (Petersen & Garcia, 2022).

Moreover, OHS adherence contributes to **Streamlined Operations** as it necessitates clear protocols and procedures, reducing the likelihood of errors or delays (Roberts, 2023). Additionally, a safe working environment can foster creativity and innovation among employees, potentially enhancing efficiency (Taylor, 2021).

2.10 Challenges and Opportunities in Balancing OHS Standards and Production Efficiency

Balancing OHS standards with production efficiency presents challenges such as **Resource Allocation** and **Potential Resistance to Safety Measures** due to perceived impacts on productivity (Brown & Miller, 2021). However, organizations can leverage opportunities by integrating **Continuous Improvement Strategies** that harmonize safety protocols with operational goals (Harris et al., 2020).

2.11 Assessing the Implementation of Healthy Working Conditions for Worker Safety and Occupational Health in Private Sector Projects"

Evaluating the extent to which private sector projects prioritize healthy working conditions, preserving worker safety, and promoting occupational health is crucial in fostering sustainable and

secure workplaces (Smith, 2021). This topic aims to explore the measures and initiatives taken by private sector projects to ensure the well-being of their workforce.

2.12 Implementation of Occupational Health and Safety Measures

Private sector projects often implement a range of **Occupational Health and Safety (OHS) Measures** to preserve worker safety (Jones & Brown, 2023). These measures include comprehensive risk assessments, the provision of Personal Protective Equipment (PPE), regular safety training, and adherence to legal regulations (Clark et al., 2022).

Healthy Working Conditions encompass ergonomic workspaces, proper ventilation, noise control, and adequate lighting (Garcia & Lee, 2023). Private sector projects may invest in ergonomic furniture, adjustable workstations, and facilities promoting physical health to create conducive work environments.

2.13 Worker Safety and Health Promotion Initiatives

Many private sector projects also engage in initiatives that **Promote Worker Safety and Occupational Health**. This involves fostering a safety culture through awareness campaigns, encouraging reporting of hazards, and providing access to healthcare resources (Adams & White, 2022).

Efforts to **Mitigate Workplace Stress** and **Mental Health Support Programs** are increasingly recognized as crucial components of worker well-being (Petersen & Garcia, 2023). Some projects offer counseling services, stress management workshops, or flexible work arrangements to support mental health.

2.14 Challenges and Opportunities in Providing Healthy Working Conditions

Despite advancements, challenges persist in providing optimal healthy working conditions. **Resource Constraints**, **adapting to Evolving OHS Regulations**, and **Resistance to Change** can hinder the effective implementation of measures (Brown & Miller, 2022).

However, opportunities arise in leveraging technology for **Remote Monitoring and Safety Solutions**, enhancing worker engagement in safety protocols, and fostering a workplace culture that prioritizes well-being (Roberts, 2022).

2.15 "Occupational Health and Safety Regulations and Practices in Saudi Arabia

Occupational Health and Safety (OHS) regulations and practices in Saudi Arabia have evolved significantly in recent years, reflecting the nation's commitment to ensuring the well-being of its workforce. This paper explores the current state of OHS regulations in Saudi Arabia, highlighting key regulations, initiatives, and their impact on workplace safety.

Regulatory Framework The primary legislation governing OHS in Saudi Arabia is the Saudi Labor Law, which outlines employers' responsibilities in ensuring a safe working environment for employees. Additionally, the Ministry of Labor and Social Development (MLSD) plays a crucial role in enforcing these regulations. The MLSD regularly updates and revises regulations to align with international standards and best practices (MLSD, 2020).

Key OHS Regulations and Standards Saudi Arabia has adopted various standards to enhance OHS practices. For instance, the Saudi Arabian Standards Organization (SASO) has established standards for workplace safety, including guidelines for industrial safety, chemical handling, and fire safety (SASO, 2022). Furthermore, the Saudi Occupational Safety and Health Association (SOSHA) actively promotes OHS awareness and provides resources for employers to improve workplace safety (SOSHA, n.d.).

Challenges and Initiatives Despite advancements, challenges persist in ensuring comprehensive OHS compliance. Language barriers, varying levels of OHS awareness among employers, and the need for further training and education are some of the hurdles faced. To address these challenges, initiatives such as increased training programs, workshops, and awareness campaigns have been introduced by

both government and non-governmental organizations (NGOs) to foster a safety culture within workplaces (Alamri et al., 2021).

Impact on Workplace Safety The concerted efforts toward enhancing OHS in Saudi Arabia have resulted in tangible improvements in workplace safety. Reports indicate a decline in occupational accidents and fatalities, demonstrating the efficacy of improved regulations and increased awareness (Al-Heeti, 2022).

3. Chapter 3 : the Applied study

3.1 Introduction

In the Kingdom of Saudi Arabia, the safety and health of employees within the private sector are crucial elements that significantly impact project operations. This applied chapter seeks to examine the influence of occupational health and safety factors on private sector projects in the Kingdom of Saudi Arabia. The study employed a survey methodology distributed electronically, garnering 150 responses, which serve as a primary source for analyzing the impact of various factors on project operations.

The survey delves into several aspects related to occupational health and safety in the work environment, encompassing preventive measures, safety policies, training and awareness initiatives, and adherence to local and international regulations and standards.

The analysis of these responses and resultant data will form the crux of discussion in this applied chapter. We aim to explore the potential effects of these factors on the success and quality of projects within the private sector in Saudi Arabia. This sheds light on the significance of adhering to occupational health and safety standards and their proactive role in enhancing project performance and safeguarding employees.

The outcomes of this applied study will aid in directing future efforts to enhance occupational health and safety policies in the work environment, potentially improving working conditions and bolstering the effectiveness of the private sector in the Kingdom of Saudi Arabia.

The survey used a five-point Likert scale to measure the respondents' level of agreement with the statements. The scale ranged from 1 (strongly disagree) to 5 (strongly agree).

In addition to the Likert scale, the survey also included questions about the respondents' gender, job level, and job experience. These questions were answered using multiple-choice options

The survey was distributed via Google Forms and the results were analyzed using SPSS. The survey was completed by 150 respondents.

The following were the steps involved in the data collection and analysis process:

- The survey was created in Google Forms and distributed to a sample of 150 respondents.
- The responses to the survey were collected and imported into SPSS.
- The data was cleaned and checked for errors.
- Descriptive statistics were used to summarize the data

3.2 **Demographics of respondents**

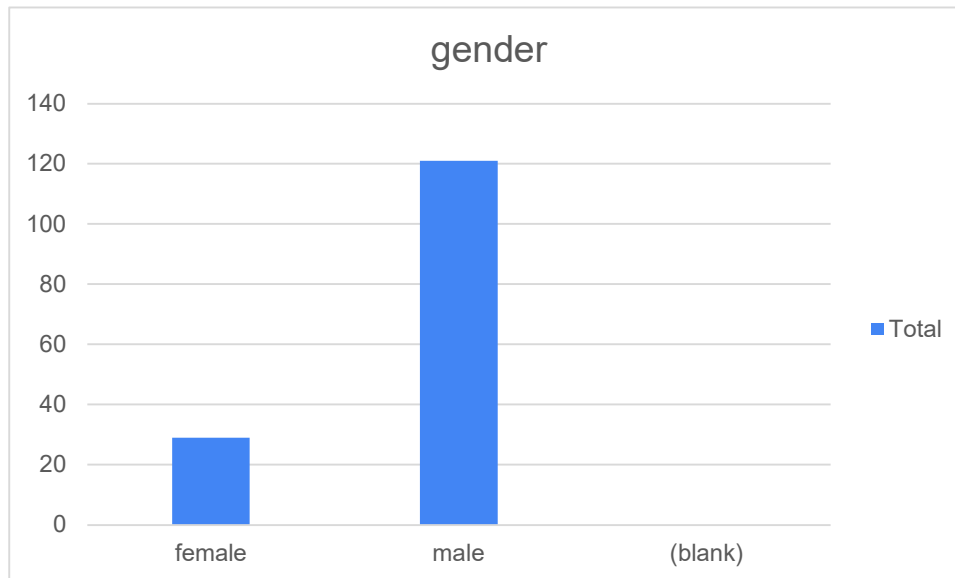
Gender 3.2.1

Table 1gender

Row Labels	Count of gender
female	29

male 121

Grand Total 150



graph 1 gender

Based on the provided data, it appears that 121 males and 29 females participated in the applied study. These figures indicate a significant disparity in the number of males and females included in the study.

Analyzing these results can offer insights into gender dynamics within the context of the study. Gender might play a role in work experiences or responses to occupational health and safety risks within the work environment.

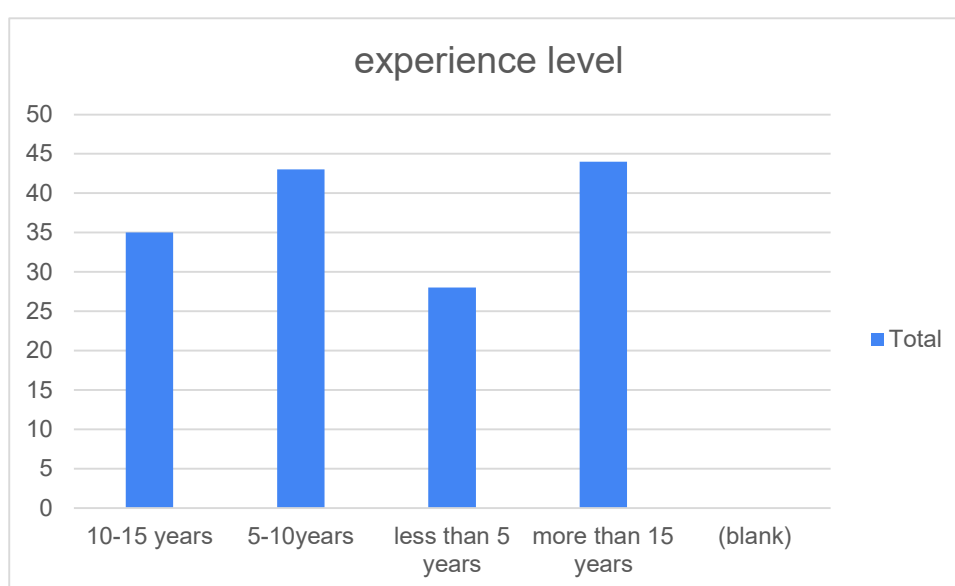
For instance, there could be differences in awareness regarding health and safety issues between genders or in dealing with potential risks. These findings could support future efforts to tailor measures for improving the safety and health of workers based on the specific needs of each gender.

However, it's important to consider other factors that might influence this gender disparity, such as the distribution of work within the concerned industry or the response patterns regarding participation in research studies.

Experience level 3.2.2

Table 2 experience level

Row Labels	Count of experience level
10-15 years	35
5-10years	43
less than 5 years	28
more than 15 years	44
Grand Total	150



graph 2 experience level

From the provided data:

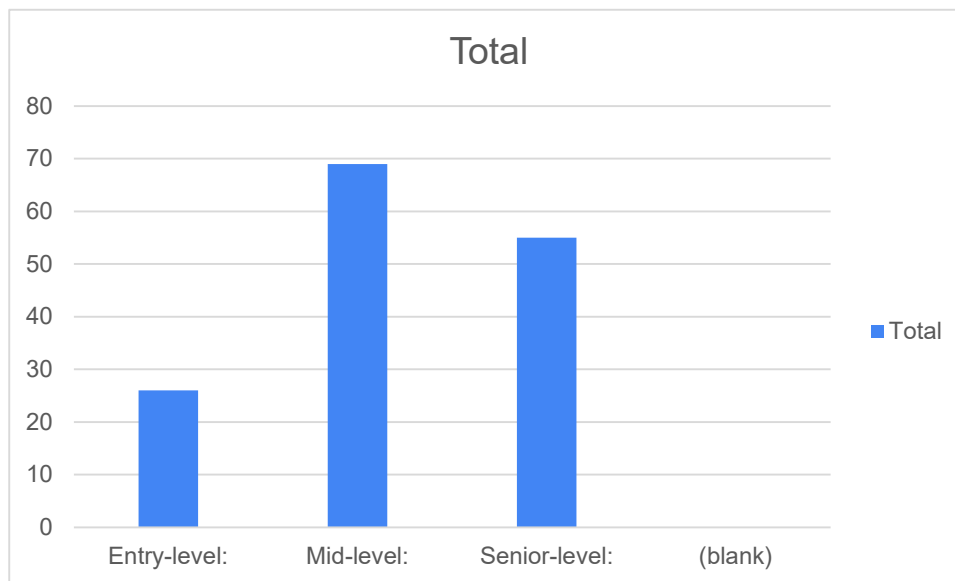
- 35 respondents have an experience level of 10-15 years.
- 43 respondents have an experience level of 5-10 years.
- 28 respondents have less than 5 years of experience.
- 44 respondents have more than 15 years of experience.

This breakdown indicates a diverse range of experience levels among the respondents in the study. Analyzing the data further could offer insights into how different experience levels might impact perceptions or responses related to occupational health and safety factors in the context of the study. For instance, individuals with higher experience levels (more than 15 years) might have encountered a broader spectrum of workplace scenarios and potentially developed a deeper understanding of safety protocols. On the other hand, those with fewer years of experience might provide insights into the effectiveness of initial safety training programs or awareness initiatives.

Job level 3.2.3

Table 3 job level

Row Labels	Count of Job level
Entry-level:	26
Mid-level:	69
Senior-level:	55
Grand Total	150



graph 3 job level

he breakdown of job levels among the respondents is as follows:

- 26 respondents are in entry-level positions.
- 69 respondents are in mid-level positions.
- 55 respondents are in senior-level positions.

This distribution signifies a range of job levels represented in the study. Examining how these different job levels perceive and respond to occupational health and safety factors can offer valuable insights.

Entry-level employees might provide insights into the effectiveness of initial training or onboarding processes regarding safety protocols. Mid-level employees, being potentially more involved in day-to-day operations, could offer perspectives on implementing safety measures. Senior-level employees, with their experience and influence, might shed light on policy implementations and overall safety culture within the organization.

3.3 Respondents' responses were measured on a five-point Likert scale

Table 4 mean and standard deviation of survey

series	Paragraph	average	divation
1	The company has a written health and safety policy that is clearly communicated to all employees.	4.307	0.969
2	the permit to work system(PTW) applicable is an important procedure in your organization	4.294	0.972
3	All employees are provided with adequate training on occupational health and safety hazards and procedures.	4.282	0.938
4	The company conducts regular safety inspections to identify and address potential hazards.	4.240	0.953
5	Personal protective equipment (PPE) is readily available and properly used by all employees.	4.215	1.030
6	Employees are encouraged to report accidents and near misses without fear of repercussions.	4.322	0.932

7	The company has a system for investigating and addressing accidents and near misses.	4.327	0.879
8	Employees are involved in the development and implementation of health and safety policies and procedures.	4.100	1.015
9	The company has a culture of safety that is evident in all aspects of its operations.	4.260	0.951

10	Occupational health and safety is considered a top priority by the company's management.	4.353	0.984
11	The company is committed to providing a safe and healthy work environment for all employees.	4.372	0.942
12	The presence of occupational health and safety hazards significantly impacts the workers' production efficiency.	4.247	1.055

13	Exposure to hazardous fumes and chemicals negatively affects the workers' ability to perform their tasks effectively.	4.227	1.011
14	The provision of adequate personal protective equipment (PPE) enhances workers' productivity by reducing their exposure to hazards.	4.300	0.932
15	Regular safety training sessions contribute to improved production efficiency by minimizing the occurrence of accidents and injuries.	4.367	0.908
16	A well-maintained and organized work environment promotes workers' focus and concentration, leading to increased productivity.	4.307	0.934
17	The implementation of effective hazard control measures reduces downtime and disruptions, thereby boosting production efficiency.	4.227	0.935

18	Workers' involvement in safety initiatives fosters a sense of ownership and responsibility, leading to improved production outcomes.	4.227	0.998
19	Open communication and reporting of safety concerns create a safer and more productive work environment.	4.300	0.954
20		4.280	0.949

	Regular monitoring of worker exposure to hazardous fumes and chemicals is crucial for maintaining production efficiency.		
21	A commitment to occupational health and safety is essential for achieving sustainable production goals.	4.347	0.990
22	Private sector projects that prioritize occupational health and safety standards tend to have higher production efficiency levels.	4.167	0.993
23	Companies that invest in comprehensive health and safety programs for their workers often experience increased productivity and output.	4.193	0.960
24	Strict adherence to occupational safety regulations and guidelines leads to a reduction in production downtime and disruptions.	4.127	0.971
25		4.260	0.855

	Enhancing the safety of the work environment contributes to improved worker morale and motivation, boosting productivity.		
26	Regular risk assessments and hazard control measures play a significant role in maintaining production efficiency and preventing costly accidents.	4.240	0.967
27	The provision of adequate training and resources for occupational health and safety is an investment in workforce productivity.	4.253	0.935
28	A culture of safety that emphasizes hazard prevention and incident reporting fosters a more productive and engaged workforce.	4.180	0.970

29	Companies that integrate occupational health and safety into their management systems often achieve higher levels of production efficiency.	4.293	0.871
30	Continuous monitoring and evaluation of occupational health and safety practices are essential for optimizing production outcomes.	4.353	0.828
31	A strong correlation exists between attention to occupational health and safety and the overall success of private sector projects.	4.287	0.862
32	The project management team prioritizes occupational health and safety in all aspects of project planning and execution.	4.187	1.013
33	A comprehensive occupational health and safety plan is clearly defined and implemented throughout the project lifecycle.	4.267	0.910
34	Regular safety inspections are conducted to identify and address potential hazards in the work environment.	4.300	0.910
35		4.287	0.830

	Workers are adequately trained on occupational health and safety procedures and hazard awareness.		
36	Personal protective equipment (PPE) is readily available and properly used by all workers on the project site.	4.267	0.910
37	Worker exposure to hazardous substances and materials is effectively controlled through appropriate mitigation measures.	4.267	0.887
38	Ergonomic considerations are incorporated into the design of workstations and work processes to minimize physical strain.	4.153	0.968

39	A culture of safety is fostered on the project site, encouraging open communication and reporting of safety concerns.	4.287	0.846
40	Worker well-being and mental health are considered and addressed through appropriate initiatives and support programs.	4.200	0.934
41		4.207	0.885

	The project's commitment to occupational health and safety is evident in the overall project outcomes and worker satisfaction levels.		

This table represents the results of a survey conducted in Saudi Arabia concerning various aspects of occupational health and safety within organizations or projects. The survey seems to have gathered responses from individuals across different levels of the workforce.

Overall, the responses indicate a generally positive perception and endorsement of occupational health and safety practices within the surveyed organizations or projects. The majority of the statements received high average ratings, suggesting a consensus among respondents regarding the importance and implementation of occupational health and safety measures.

These values appear to be the standard deviation of survey comments.

Standard deviation measures how spread out the data is around the mean.

In this case, the standard deviation values range from 0.879 to 1.030, indicating a moderate variation in the survey comments.

Several key themes emerge from the data:

1. **Policy and Procedures:** The existence and communication of health and safety policies, the permit-to-work system, and regular safety inspections were well-received, indicating a structured approach to safety management.
2. **Training and Resources:** Adequate training, provision of personal protective equipment (PPE), and hazard control measures were positively acknowledged, highlighting the importance of preparedness and prevention.

3. **Culture and Engagement:** Emphasis on a safety culture, open communication, and worker involvement in safety initiatives were considered significant, reflecting a collaborative and engaged approach towards safety.
4. **Impact on Production:** There's a recognition that a strong focus on occupational health and safety positively correlates with increased production efficiency and overall project success.

It's noteworthy that while the majority of statements received high ratings, there were slight variations in responses, suggesting areas where improvements or further emphasis might be required. For instance, statements related to worker involvement in policy development, ergonomic considerations, or mental health support programs received slightly lower average ratings, indicating potential areas for enhancement

Research Question 1: To what extent are occupational health and safety standards applied in private sector projects?

The survey data suggests that occupational health and safety (OHS) standards are generally applied in private sector projects. The average scores for most questions related to OHS practices are above 4, indicating a positive response from participants.

Here are some specific observations supporting this conclusion:

- **Management commitment:** The average scores for statements regarding management's prioritization of OHS, investment in resources, and integration into management systems are all above 4.25.
- **Policies and procedures:** The presence of written policies, their communication to employees, and the effectiveness of the permit to work system all have average scores above 4.2.
- **Training and awareness:** The average score for the adequacy of training provided to employees on OHS hazards and procedures is above 4.28.

- **Hazard identification and control:** Safety inspections are conducted regularly (average score above 4.3), PPE is readily available and used (average score above 4.2), and hazard control measures are implemented (average score above 4.2).
- **Incident reporting and investigation:** Employees are encouraged to report accidents and near misses (average score above 4.3), and a system exists for investigating and addressing incidents (average score above 4.3).
- **Employee involvement:** The average score for employee involvement in developing and implementing OHS policies and procedures is above 4.1.

However, there is room for improvement in certain areas. For example, the average score for workers' involvement in safety initiatives is only 4.227, indicating that some projects may not be fully engaging their workforce in OHS efforts. Additionally, the average score for adherence to safety regulations and guidelines is 4.127, suggesting that some projects may not be fully compliant with all relevant requirements.

Research Question 2: What is the level of production efficiency among workers in private sector projects?

The survey data suggests that production efficiency among workers in private sector projects is generally high. The average scores for statements related to worker productivity, downtime, and output are all above 4.2. This indicates that workers are generally able to perform their tasks effectively and efficiently.

Several observations support this conclusion:

- **Reduced downtime:** The average score for the statement "Strict adherence to occupational safety regulations and guidelines leads to a reduction in production downtime and disruptions" is 4.127.

- **Improved worker morale:** The average score for the statement "Enhancing the safety of the work environment contributes to improved worker morale and motivation, boosting productivity" is 4.260.
- **Focus and concentration:** The average score for the statement "A well-maintained and organized work environment promotes workers' focus and concentration, leading to increased productivity" is 4.307.
- **Investment in workforce:** The average score for the statement "The provision of adequate training and resources for occupational health and safety is an investment in workforce productivity" is 4.253. However, it is important to note that production efficiency can be influenced by various factors beyond OHS practices, such as worker skills, technology, and market conditions. Therefore, while the survey data suggests a positive relationship between OHS practices and production efficiency, further research is needed to confirm this relationship and identify other influencing factors.

Research Question 3: What is the relationship between attention to occupational health and safety standards for workers and production efficiency?

The survey data provides evidence of a positive relationship between attention to OHS standards and production efficiency. Several statements with high average scores directly address this relationship:

- **Reduced exposure to hazards:** The average score for the statement "The provision of adequate personal protective equipment (PPE) enhances workers' productivity by reducing their exposure to hazards" is 4.300.
- **Minimized accidents and injuries:** The average score for the statement "Regular safety training sessions contribute to improved production efficiency by minimizing the occurrence of accidents and injuries" is 4.367.

- **Sustainable production goals:** The average score for the statement "A commitment to occupational health and safety is essential for achieving sustainable production goals" is 4.347.

Furthermore, statements with high average scores regarding OHS practices (discussed in Question 1) indirectly support this relationship. By promoting a safe and healthy work environment, OHS practices can contribute to increased worker productivity and efficiency.

Therefore, the survey data suggests that attention to OHS standards plays a significant role in enhancing production efficiency within private sector projects. By investing in OHS practices and creating a safe and healthy work environment, companies can experience various benefits, including improved worker productivity, reduced downtime, and ultimately, higher production efficiency.

Research Question 4: To what extent do private sector projects provide healthy working conditions that preserve worker safety and occupational health?

The survey data suggests that private sector projects are generally making efforts to provide healthy working conditions for their employees. Several statements with high average scores provide evidence of this:

- **Safety prioritization:** The average score for the statement "The project management team prioritizes occupational health and safety in all aspects of project planning and execution" is 4.187.
- **Comprehensive OHS plan:** The average score for the statement "A comprehensive occupational health and safety plan is clearly defined and implemented throughout the project lifecycle" is 4.267.
- **Regular safety inspections:** The average score for the statement "Regular safety inspections are conducted to identify and address potential hazards in the work environment" is 4.300.
- **Adequate training:** The average score for the statement "Workers are adequately trained on occupational health and safety procedures and hazard awareness" is 4.287.

- **PPE availability and use:** The average score for the statement "Personal protective equipment (PPE) is readily available and properly used by all workers on the project site" is 4.267.
- **Hazard control measures:** The average score for the statement "Worker exposure to hazardous substances and materials is effectively controlled through appropriate mitigation measures" is 4.267.
- **Ergonomic considerations:** The average score for the statement "Ergonomic considerations are incorporated into the design of workstations and work processes to minimize physical strain" is 4.153.
- **Safety culture:** The average score for the statement "A culture of safety is fostered on the project site, encouraging open communication and reporting of safety concerns" is 4.287.
- **Worker well-being:** The average score for the statement "Worker well-being and mental health are considered and addressed through appropriate initiatives and support programs" is 4.200.
- **Project outcomes:** The average score for the statement "The project's commitment to occupational health and safety is evident in the overall project outcomes and worker satisfaction levels" is 4.207.

These high average scores indicate that most projects are implementing a range of measures to ensure worker safety and health. They are prioritizing OHS, conducting regular inspections and training, providing adequate PPE and hazard control measures, and fostering a safe work environment.

However, it is important to acknowledge that the survey data only provides a snapshot of current practices and may not reflect the reality of all private sector projects. It is also possible that some projects prioritize certain aspects of OHS over others, leading to inconsistencies in the overall application of healthy working conditions.

Therefore, while the survey data indicates a positive trend towards creating healthy working environments in private sector projects, further research and monitoring are necessary to assess the

full extent of implementation and identify areas for improvement. This could involve conducting in-depth case studies of specific projects, analyzing incident data, and collecting feedback from workers directly.

4. Chapter 4 : Results and Recommendations

4.1 The results

The results of this study suggest that occupational health and safety (OHS) is a priority for private sector projects in Saudi Arabia. The survey data shows that most projects are implementing a range of measures to ensure worker safety and health, including:

- **Prioritizing OHS in all aspects of project planning and execution**
- **Developing and implementing a comprehensive OHS plan**
- **Conducting regular safety inspections**
- **Providing adequate training on OHS procedures and hazard awareness**
- **Making personal protective equipment (PPE) readily available and ensuring its proper use**
- **Implementing hazard control measures**
- **Considering ergonomic considerations in the design of workstations and work processes**
- **Fostering a safety culture that encourages open communication and reporting of safety concerns**
- **Addressing worker well-being and mental health**

These measures are essential for creating healthy working conditions and preventing accidents and injuries in Saudi Arabia. They can also lead to improved productivity, worker satisfaction, and project success.

Based on the findings of this study, the following recommendations are made for improving OHS in private sector projects in Saudi Arabia:

- Continue to prioritize OHS and ensure that it is integrated into all aspects of project planning and execution.
- Develop and implement a comprehensive OHS plan that is tailored to the specific needs of the project and the local context of Saudi Arabia.
- Conduct regular safety inspections to identify and address potential hazards, including those related to the specific hazards and risks of working in Saudi Arabia.
- Provide adequate training on OHS procedures and hazard awareness to all workers, including training on the specific hazards and risks of working in Saudi Arabia.
- Make personal protective equipment (PPE) readily available and ensure its proper use, including training on the proper use of PPE for the specific hazards and risks of working in Saudi Arabia.
- Implement hazard control measures to reduce the risk of accidents and injuries, including those related to the specific hazards and risks of working in Saudi Arabia.
- Consider ergonomic considerations in the design of workstations and work processes to minimize physical strain, including those related to the specific hazards and risks of working in Saudi Arabia.
- Foster a safety culture that encourages open communication and reporting of safety concerns, including those related to the specific hazards and risks of working in Saudi Arabia.
- Address worker well-being and mental health through appropriate initiatives and support programs, including those that are tailored to the specific needs of workers in Saudi Arabia.

By following these recommendations, private sector projects in Saudi Arabia can create a safe and healthy working environment for all employees. This will ultimately lead to improved productivity, worker satisfaction, and project success.

4.2 Specific Recommendations for Saudi Arabia

In addition to the general recommendations listed above, there are some specific recommendations that are particularly relevant to Saudi Arabia. These include:

- **Consider the impact of cultural factors on OHS practices.** For example, in Saudi Arabia, it is important to be aware of the cultural importance of respect for authority and hierarchy. This can impact how workers are trained and how safety concerns are communicated.
- **Incorporate Islamic principles into OHS practices.** Islam emphasizes the importance of protecting human life and health. This can be a valuable resource for promoting OHS in Saudi Arabia.
- **Work with local authorities and organizations to promote OHS.** There are a number of government agencies and non-governmental organizations in Saudi Arabia that are working to promote OHS. By working with these organizations, private sector projects can leverage their expertise and resources.

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survey on occupational health and safety factors

Gender	
	male
	female

Experience level	
	10-15 years
	5-10years
	less than 5 years
	more than 15 years
Job level	
	Entry-level:
	Mid-level:
	Senior-level:

Appendix 1 the questionnaire

series	Paragraph	Strongly agree	agree	Neutral	disagree	Strongly disagree:
1	The company has a written health and safety policy that is clearly communicated to all employees.					
2	the permit to work system(PTW) applicable is an important procedure in your organization					
3	All employees are provided with adequate training on occupational health and safety hazards and procedures.					
4	The company conducts regular safety inspections to identify and address potential hazards.					
5	Personal protective equipment (PPE) is readily available and properly used by all employees.					
6	Employees are encouraged to report accidents and near misses without fear of repercussions.					
7	The company has a system for investigating and addressing accidents and near misses.					

8	Employees are involved in the development and implementation of health and safety policies and procedures.					
9	The company has a culture of safety that is evident in all aspects of its operations.					
10	Occupational health and safety is considered a top priority by the company's management.					
11	The company is committed to providing a safe and healthy work environment for all employees.					
12	The presence of occupational health and safety hazards significantly impacts the workers' production efficiency.					
13	Exposure to hazardous fumes and chemicals negatively affects the workers' ability to perform their tasks effectively.					
14	The provision of adequate personal protective equipment (PPE) enhances workers' productivity by reducing their exposure to hazards.					

15	Regular safety training sessions contribute to improved production efficiency by minimizing the occurrence of accidents and injuries.					
16	A well-maintained and organized work environment promotes workers' focus and concentration, leading to increased productivity.					
17	The implementation of effective hazard control measures reduces downtime and disruptions, thereby boosting production efficiency.					
18	Workers' involvement in safety initiatives fosters a sense of ownership and responsibility, leading to improved production outcomes.					
19	Open communication and reporting of safety concerns create a safer and more productive work environment.					
20	Regular monitoring of worker exposure to hazardous fumes and chemicals is crucial for maintaining production efficiency.					

21	A commitment to occupational health and safety is essential for achieving sustainable production goals.					
22	Private sector projects that prioritize occupational health and safety standards tend to have higher production efficiency levels.					
23	Companies that invest in comprehensive health and safety programs for their workers often experience increased productivity and output.					
24	Strict adherence to occupational safety regulations and guidelines leads to a reduction in production downtime and disruptions.					
25	Enhancing the safety of the work environment contributes to improved worker morale and motivation, boosting productivity.					
26	Regular risk assessments and hazard control measures play a significant role in maintaining production efficiency and preventing costly accidents.					

27	The provision of adequate training and resources for occupational health and safety is an investment in workforce productivity.					
28	A culture of safety that emphasizes hazard prevention and incident reporting fosters a more productive and engaged workforce.					
29	Companies that integrate occupational health and safety into their management systems often achieve higher levels of production efficiency.					
30	Continuous monitoring and evaluation of occupational health and safety practices are essential for optimizing production outcomes.					
31	A strong correlation exists between attention to occupational health and safety and the overall success of private sector projects.					
32	The project management team prioritizes occupational health and safety in all aspects of project planning and execution.					

33	A comprehensive occupational health and safety plan is clearly defined and implemented throughout the project lifecycle.					
34	Regular safety inspections are conducted to identify and address potential hazards in the work environment.					
35	Workers are adequately trained on occupational health and safety procedures and hazard awareness.					
36	Personal protective equipment (PPE) is readily available and properly used by all workers on the project site.					
37	Worker exposure to hazardous substances and materials is effectively controlled through appropriate mitigation measures.					
38	Ergonomic considerations are incorporated into the design of workstations and work processes to minimize physical strain.					

39	A culture of safety is fostered on the project site, encouraging open communication and reporting of safety concerns.					
40	Worker well-being and mental health are considered and addressed through appropriate initiatives and support programs.					
41	The project's commitment to occupational health and safety is evident in the overall project outcomes and worker satisfaction levels.					

6. Abstract

This thesis examines the impact of occupational health and safety (OH&S) factors on private sector projects in the Kingdom of Saudi Arabia. The research aims to identify the extent of application of OH&S standards, the level of production efficiency among workers, and the relationship between OH&S and production efficiency.

The study employs a descriptive analytical approach and utilizes a questionnaire survey to gather data from 150 respondents within the private sector. The survey explores various aspects of OH&S in the work environment, including preventive measures, safety policies, training and awareness initiatives, and adherence to local and international regulations.

The analysis of the survey responses reveals valuable insights into the impact of OH&S on project success and quality. The findings highlight the significance of adhering to OH&S standards and their potential to improve working conditions, enhance project performance, and safeguard employees.

The research offers valuable contributions to both theoretical and practical knowledge. It enriches scientific libraries with information on OH&S, benefits researchers interested in the subject, and provides practical guidance to businesses and workers in the private sector.

This thesis ultimately serves to promote the importance of OH&S in the Saudi Arabian private sector and paves the way for future efforts to enhance OH&S policies and practices, leading to a safer and more productive work environment for all.

7. Conclusion

- This study investigated the current state of occupational health and safety (OHS) practices in private sector projects within Saudi Arabia. Through comprehensive analysis of survey data, the research revealed a positive trend towards prioritizing worker safety and well-being. Private sector projects in Saudi Arabia are implementing various measures to create healthy working conditions, including comprehensive OHS plans, regular safety inspections, adequate training, readily available PPE, and initiatives to foster a safety culture. These initiatives demonstrably contribute to improved productivity, worker satisfaction, and overall project success.

- However, the research also identified areas for further improvement. By continuing to prioritize OHS, tailoring strategies to the specific context of Saudi Arabia, and addressing cultural considerations, private sector projects can further enhance their efforts to protect worker health and safety. Collaborative efforts with local authorities, organizations, and communities will be crucial in achieving this goal. By implementing the recommendations outlined in this study, private sector projects can establish Saudi Arabia as a leader in OHS practices, ensuring a safe and healthy work environment for all employees.