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Examining the Influence of Occupational Health and Safety Practices on Work Accidents in Jordanian Industrial Companies: The Moderating Role of Work Stress

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ABSTRACT

Researching occupational health and safety and the significant impact it has on the rates of work accidents and occupational injuries has become increasingly important in today's society, which has come to recognize the significance of this field. Due to the fact that it is connected to a wide variety of intricate factors, this matter is of great concern to industrial companies in Jordan and around the world. The study aimed to identify occupational health and safety and its impact on work accidents in the presence of the moderating role of work stress. A descriptive analytical research design was adopted for this study. The study used primary data sources and secondary data sources to collect data. Secondary data sources include a collection of data from books, published research, scientific journals, and university theses. Primary data sources were mainly done via a questionnaire, which was administered electronically. The researchers administered and collected the questionnaires on employees working in Jordanian industrial companies using Google Forms. Responses were collected from 300 participants. The key results of the study indicate that implementing occupational health and safety standards contributes effectively to reducing work accidents. In conclusion, studying occupational health and safety is of great scientific and practical importance, highlighting the moderating role of work stress in influencing work accidents in Jordanian industrial companies. This information is crucial for developing effective strategies to reduce occupational risks and protect worker health and safety.

Keywords: *Occupational health, Industrial companies, Work accidents, Work stress, Safety standards*

1. INTRODUCTION

Occupational health and safety (OHS) is more than a legal resort; it has become an essential element of modern industries by making welfare for employees and productivity for organizations (Abdul Hamid, 2022). Where safety at the workplace is concerned, failure to comply with OHS regulations can result in disastrous incidents that lead to extensive injuries, death, and huge losses for the company. Such is the scenario in Jordanian industrial companies, where an urgent need arises for effective tools against OHS in order to protect employees and ensure the continuity of company operations.

Owing to the uniqueness of the above challenges, the industrial sector of Jordan necessitates a different application of modern techniques for effective OHS measures (Ahloul, 2023). Thus, a lot of the Jordanian manufacturing industries expose workers to many dangerous hazards like ergonomic risks, chemical exposure, and high levels of noise. The importance of safety training and awareness is often found to be lacking, and hence, contrary to the state's legislation with regard to occupational health and safety, many studies show that this absence causes increased accident rates, especially in medium-sized enterprises and in chemical industries.

As a result of scientific and cultural progress, institutions have witnessed rapid and radical developments, as most industrial institutions with various specializations and interests seek to achieve the necessary and essential development to advance their capabilities (Badri et al., 2018). Therefore, they have placed their first interest in human resources, which is considered the basic element in the production processes within the institution (Moyce & Schenker, 2018). From here, interest in providing safe and healthy working conditions in the workplace has increased through prior studies of all expected accidents and risks that may arise during work and putting in place safety measures and procedures to prevent these accidents from occurring (Min et al., 2019).

Occupational health and safety management is considered one of the most important procedures that help provide occupational protection for workers, reduce the risk of equipment and machinery (Ramos et al., 2020) on workers and the facility, and try to prevent or reduce accidents and provide a healthy professional atmosphere that helps workers work to achieve production without accidents and injuries, maintain human safety and health, prevent loss of life whenever possible, and this is done by providing safe work environments free from causes of accidents or occupational diseases (Lendra et al., 2024).

Occupational health and safety are the responsibility of every individual in his workplace and are linked to his relationship with what he does, whether people, machines, tools, materials, operating methods, etc. (Quaigrain et al., 2024). It is no less important than production, its quality, and the costs associated with it. Therefore, the goal of safety is production without accidents and injuries and striving to provide a positive relationship between the working individual, his work, and the surrounding work environment (Reis et al., 2020).

The success of any organization depends primarily on the ability and efficiency of administrative leaders and their understanding of administrative decisions and methods of making them (Nasir et al., 2022). This depends on these leaders' awareness of the importance of these decisions, their clarity, and the appropriate time to make them. Work stress is considered one of the basic topics that researchers in the field of management focus on, as it is one of the challenges that stand in the way of contemporary organizations in achieving their goals in light of the intense competition that these organizations face (Rudolph et al., 2021).

On the other hand, work stress (or occupational stress) is one of the most common but less recognized or understood problems facing managers today (Rasool et al., 2020). Some of this stress is relatively harmless. However, excessive stress can cause significant problems that can affect both industrial companies and employees.

Khrais et al. (2013) studied occupational health and safety practices of companies operating in industrial areas of Jordan. Responses to small, medium, and large companies were 21.9%, 58.6%, and 70.8%, respectively. Results of the survey show that most companies follow state regulations provide adequate facilities for safety, and implement different measures to prevent and manage risks. Unfavorably, not enough attention is given to safety training, perhaps due to the lack of regulation, the lack of supervision, the financial limitations, or the lack of understanding of safety training's importance. Additionally, results show a high proportion of ergonomic risks, noise, and toxic agents. Accident statistics show that medium enterprises have the highest rate of accidents for each enterprise as compared to the chemical industry, where the total number of accidents per enterprise is the highest. The outcomes of this work offer a basis for appropriate safety recommendations to help improve corporate understanding and compliance with safety laws.

Within Jordan, industries are still evolving and, as much as possible, focus on OHS, which is not just for compliance but also to create a culture of safety that will improve the morale and productivity of employees. It is against this backdrop that stakeholders can exploit the gains of more improved OHS practices by filling the emerging gap in current research on the moderating role of work stress towards making it easier to create safer and more resilient workplaces.

2. LITERATURE REVIEW

2.1 Occupational Health and Safety

2.1.1 The concept of occupational health and safety

The topic of occupational safety and health is one of the most important topics that has occupied researchers in various economic, social, psychological, and other fields due to its great impact on individuals and organizations alike.

Occupational health and safety and concern for them in any organization are considered aspects of administrative development and successful economic planning. All concepts of occupational health and safety revolve around one axis, which is the working person and how to provide him with security and safety, as he is the thinker with his mind and the mover with his hands of all the tools of work and production (Botti et al., 2022).

The concept of occupational safety and health includes two concepts: safety and health. The definitions have varied and multiplied with the diversity of sources related to the dangers resulting from contemporary and civilized life. Safety has been defined as all procedures and efforts made to prevent the occurrence of risks in industrial facilities using technical and technological means that prevent the risk or reduce its harmful effects in order to maintain the health and safety of employees and maintain economic gains (Jensen, 2019).

Occupational health refers to safeguarding human resources from physical or psychological diseases, as well as workplace injuries, which can be caused by the general physical environment, individual factors, or the nature of the job. These diseases do not occur immediately but rather occur over time, and infection occurs as a result of continuous exposure to their causes, which means that their occurrence is not considered instantaneous but rather occurs cumulatively. Health has also been defined as the individual's freedom from physical and psychological diseases (Jain et al., 2021).

Uichol (2023) pointed out the great importance of occupational safety and health in strengthening human relations between departments and employees, as it is done by providing protection for employees and caring for them by the management, which leads to their feeling of importance to the management, and the psychological effects resulting from accidents and diseases are reduced because accidents do not only have a material impact on work, but they extend to the feelings of employees and to all employees within the organization.

Its importance also lies in providing a healthy and appropriate work environment, as management is responsible for providing a place and atmosphere that suits work and is free from risks that lead to harm to employees' health in the workplace and during the performance of their duties and work (Massey, 2020).

2.1.2 The development of the concept of occupational health and safety

There are three stages that may be used to summarize the change or development that has occurred in the field of occupational health and safety (Al-Maghariba, 2021)

The stage of interest in industrial security: Those who required care were the industrial organizations in which activities took place that put workers at risk of being injured or afflicted with diseases. As a result of the dangers that were posed to workers, there was a growing interest in industrial security or industrial safety in the nineteenth century (Sánchez-Segura et al., 2021).

This stage of concern for occupational safety comes after technical advancements led to an increase in the number of incidents that occurred on the job in non-industrial organizations as well. These organizations include hospitals, stores, and other establishments, as well as those that deal with land and air transportation (Tamers et al., 2020).

The stage of interest in providing a safe environment is the safety and health of the individual, as well as the absence of diseases and accidents, regardless of the source of those things. Organizations have discovered that it is possible for an individual to be exposed to accidents and dangers whose origin is difficult to detect and that these exposures can have an effect on the individual's performance. It is even possible that he would be exposed to accidents and diseases that are not related to his employment, such as infectious diseases and addiction issues. Both his performance and his dedication to his profession are a reflection of this (Firman, 2022).

2.1.3 The importance of occupational health and safety

Occupational health and safety are a necessary priority in many successful organizations because they are considered to be one of the basic pillars of the organization. Organizations that have occupational health and safety standards and apply them correctly can overcome many obstacles, most notably work accidents and work stress (Sánchez-Segura et al., 2021). They constitute a guide for management and workers that organize their work in a preventive and professional manner to accomplish tasks without costs, give the worker the ability to adapt to work conditions, and enable him to solve many problems and risks that he is exposed to while performing the required tasks inside or outside the organization. It also gives him flexibility in dealing with machines or his work environment, even if it is unsafe (World Health Organization, 2022).

Paying attention to occupational safety in its scientific concept and paying attention to improving the performance of individuals, improving the job, and improving working conditions within the organization from all aspects and effectively will be an incentive for workers to raise their morale and thus lead to increasing their productivity (Firman, 2022). This is done by focusing on the strengths of individuals and the jobs they do in order to reach the best and highest level for them and organized planning and advanced methods confirm that they are the basic pillars for maintaining the elements of production in the organization (Atwood, 2020).

Sugiono et al. (2020) explained the role of applying occupational health and safety in reducing work expenses and costs because good management of the work environment avoids accidents and employee injuries to the organization, which burden it financially with material compensation for employees, in addition to the disruption of the work environment, which in turn leads to a decrease in productivity in the organization, and an increase in direct operating costs, which is a financial burden for all elements of production, and this also leads to a decline in the quality of the product.

Dyreborg et al. (2022) clarified that occupational health and safety signs are a component of prevention methods, which aim to prevent unintentional accidents by displaying signs and signals or mitigating the potential effects of these accidents. Its application is necessary in order to achieve occupational safety within business organizations and their fields and includes mandatory procedures, anticipating potential risks and obligations related to personal protective equipment, in addition to first aid and firefighting methods and evacuation paths, places, and methods (Brauer, 2022).

While da Silva & Amaral (2019) pointed out that the importance of occupational health and safety lies in increasing productivity as a result of reducing lost work days due to accidents and occupational diseases, improving efficiency and quality, and this is achieved by having a healthy and sound workforce, reducing the costs of treatment, insurance, and workers' compensation, and improving the organization's reputation and considering it the best choice for work.

2.2 Work Accidents

2.2.1 The concept of work accidents

The phenomenon of work accidents is considered one of the most important and costly problems of industry, whether financially or humanly, due to the high costs and losses it leaves behind on more than one level, in addition to the injuries and dangers that affect the worker (Zare Mehrjerdi & Hajimoradi, 2021).

Any sudden, unexpected, or planned emergency during work or its related events, such as exposure to natural, mechanical, chemical, or acute stress hazards, can lead to an accident, potentially resulting in death, physical injury, or acute illness for the injured worker (Mrozowska, 2021). The accident may result in damage to the facility or production facilities without injuring any of the workers, or it may result in injury to one or more workers in addition to damage to the facility and production facilities (Jung et al., 2020).

Qiao et al. (2020) pointed out that work accidents are divided into two main sections, the first of which consists of environmental and organizational factors, and the second of which consists of human factors that are attributed to the individual himself, such as a deficiency in his abilities, emotional balance, suitability for the work he is doing, or a lack of psychological motivation.

Environmental and organizational factors consist of multiple causes, most of which are due to errors in the design of machines and equipment and the work environment and surroundings (Karwowski & Zhang, 2021). Other factors include the nature of the work itself, the degree of fatigue it causes in the individual performing it, and the speed at which the work is completed, which often leads to an increase in the rate of work accidents (Vernon, 2022). This can be attributed to two primary factors (Zermane et al., 2020):

First: a person who arrives quickly is more likely to be exposed to accidents.

Secondly: a person who works quickly may not be able to devote the same level of care and caution as a person who works slowly, as the majority of their attention is focused on following up on their work.

Many studies have also proven that the temperature at which an individual works affects the number of work accidents and injuries that result from them. It was found that work injuries are at their minimum when individuals work in moderate temperatures, and the higher the temperature is above the ideal temperature, the higher the rate of work accidents (Fatima et al., 2021).

Working machines, equipment, working conditions, and the environment also contribute to a percentage of accidents and work injuries, but the majority of these accidents are the result of individual mistakes arising from multiple causes (Ivascu & Cioca 2019). Psychologists agree that there are individual differences in the susceptibility to accidents and the extent of multiple work injuries, as is the case with all other human abilities (Schwebel, 2019). That is, an individual may have multiple injuries in a certain period of time, while his colleagues who work with him do not have any accidents. Research has shown that most accidents result from the mistakes of a small number of individuals, and thus, the rate of work accidents and injuries can be reduced by excluding such individuals (Hafeez et al., 2020).

2.2.2 The Effects of work accidents

There are many economic impacts resulting from work accidents, such as the cost of lost time for the injured worker, the cost of lost time for the rest of the workers and those who sympathize with their injured colleague, in addition to the cost of lost time for supervisors and managers for reasons including: helping the injured person, investigating the causes of the accident, selecting and training a new worker, preparing the necessary medical reports on the accident, its causes and circumstances, and the costs borne by the employer, as a result of his continuing to pay the wages of the injured worker during the period of injury (Seltonga, 2024).

Work accidents are the final result of unsafe human behaviors, conditions, errors, and failure in production. Some accidents lead to death, and some lead to temporary total or partial disability, each of which has a profound impact on the injured person or on the family of the deceased if the injury turns into death. Every accident or injury leads to suffering for the injured person and his family due to its negative social and psychological impact in the long term, especially when cases stabilize with total or partial disability (Rainock et al., 2022).

2.3 Work Stress

The word stress is a word with a physical meaning that refers to the force exerted on the surface of the material with which it is in contact. In physical laws, pressure equals force divided by area. The greater the force, the smaller the area, and the greater the pressure (Philpot & Thomas, 2020). Somashekar et al. (2020) also pointed out that the term " stress " came primarily from the natural sciences. From a physics perspective, it refers to any external force acting on something.

It is worth noting that the stress that a person faces at work is given in the job, but their intensity is what requires researching their causes and trying to mitigate their effects to prepare workers for a better level of general organizational behavior

(Koopman et al., 2020).

Work stress has been defined in many ways by writers and researchers. Daniel (2019) defined work stress as a group of stimuli that exist in the work environment of individuals, which results in a group of reactions that appear in the behavior of individuals at work, in their psychological and physical state, or in their performance of their work as a result of the interaction of individuals with their work environment that contains pressure.

Lu et al. (2021) also pointed out that stress has three main elements in the organization which are the stimulus element, which comes from the environment, the organization, or individuals; the response element, which includes physiological, psychological, and behavioral reactions to stress, such as anxiety; and the interaction element, where complete interaction occurs between the stimuli and response factors.

Researchers have identified three stages of psychological and physical reactions to stress as follows (O'Connor et al., 2021):

- The warning stage: This stage represents the body's initial reaction to stress, which generally takes the form of a reaction of chemical compounds in the human body and appears in nervous tension, high blood pressure, and other symptoms.
- Resistance stage: In this stage, the individual feels anxious, tense, and exhausted, indicating the individual's resistance to stress. This resistance may lead to accidents and poor decisions.
- Exhaustion stage: In this stage, diseases associated with psychological stress appear, such as joy, headaches, and dangers that pose a direct threat to both the individual and the organization

According to Romas & Sharma (2022), stress is not something that must be met or eliminated. A person, as long as they are alive, will encounter numerous demands and subsequently experience some form of pressure. Therefore, the thing that can be avoided or tried to modify or reduce is the negative side of pressure. Properly dealing with stress requires maximizing the positive side and reducing the harmful effects of the peaceful side (Perrin, 2019).

The researcher concluded from the above that work stress is defined as a condition that arises within the individual as a result of the incompatibility between the situation he is exposed to and his ability to confront the same situation, which leads to the occurrence of physical, psychological, or behavioral disorders in the individual, making him feel distressed and disturbed, pushing him to deviate from normal performance, or may lead to motivating him to improve his performance.

2.3.1 Consequences of Work Stress

Work stress has consequences for the individual and the organization. The stress that the individual is exposed to in general and in the field of work, in particular, is not bad in their entirety. Rather, they have positive aspects that are considered essential for the survival of the individual and the organization to perform their functions normally if these stresses are within reasonable limits, as the appropriate amount of work pressure represents that part of the excitement of work life so that the individual feels entertainment, renewal, pleasure, and challenge (Cooper & Lu, 2019).

The inappropriate amount of work pressure has a negative impact that prevents the individual and the organization from performing the required role. These effects appear on the individual in the form of psychological, physiological, psychological, or behavioral disorders. As for the organization, the effects of pressure may appear in increased material costs, decreased levels of production, absenteeism, and other results (Daniel, 2019).

The following are the negative effects of work stress on the individual and the organization (Yu et al., 2021):

Psycho-physiological disorders**:** Exposure of the individual to many waves of stress and tension leads to the autonomic nervous system and the endocrine system being exposed to constant and unbalanced activity, which causes many health problems and diseases. Examples of these diseases include ulcers, indigestion, blood clots, high blood pressure, hardening of the arteries, heart disease, diabetes, and other diseases (Wadikar, 2019).

Psychological Disorders: The individual's feeling of increasing pressure at work results in psychological responses that affect the individual's thinking and relationships with others. The most important of these psychological symptoms are the following: sadness, depression, feelings of anxiety, pessimism, nervousness, inability to concentrate, loss of trust in others, and other negative effects (Lazarus, 2020).

Behavioral Disorders: Behavioral disorders represent another type of response that individuals who suffer from work pressure resort to, as they represent a means by which the individual vents the stress he faces. Among these behavioral disorders associated with work stress are overeating and drinking, smoking, alcohol and drug abuse, sleep disorders, speech disorders, and others (Jabbar, 2020).

The negative effects of work pressure on the organization include increased material costs (cost of being late for work, cost of being absent from work, cost of downtime, cost of quality reduction, cost of injuries and work accidents, etc.), decreased levels of production, difficulty concentrating on work and industrial accidents, dissatisfaction with the work environment and job satisfaction, low morale, absenteeism and lateness, high rates of complaints and grievances, inaccuracy in decision-

making, weak relationships between members of the organization, in addition to weak communication, which causes role ambiguity and distortion of information, and a blind sense of failure (Yu et al., 2021).

3. METHODOLOGY

3.1 Introduction

This part aims to clarify the methodology used in this study, including the research design, tools for data collection, analysis methods, and any ethical considerations related to the research. We will also provide a description of the sample and its characteristics, which will help us understand how the study was conducted.

3.2 Research Design

A descriptive analytical research design was adopted for this study, as this design allows for comprehensive data collection on the impact of occupational health and safety on work accidents, with a focus on the role of work stress as a moderating variable. The study will rely on questionnaires as a data collection tool, which will be distributed through Google Forms to a group of industrial companies in Jordan.

3.3 The Study Population and Sample

This study focuses on employees working in Jordanian industrial companies, specifically examining their perceptions of the moderating role of work stress on the impact of occupational health and safety on work accidents in Jordanian industrial companies. A sample of 300 respondents was identified as sufficient to represent the larger population. The questionnaire was distributed using the electronic link. Responses were collected from 300 participants. This sample is considered acceptable for the purpose of this study. The sample will be selected using a random sampling method to ensure representation of different age groups and job positions.

3.4 Sources of Information Collection

This research relies on two types of data sources:

Secondary sources: The researcher used literature, books, published research, scientific journals, and university theses, as well as electronic resources available on the Internet and various databases to obtain the latest international research on the subject of the study.

Primary sources: as the primary source is the questionnaire (the study tool), since a questionnaire was developed that fits both the nature and title of the study. Where their effects were analyzed and determined by extrapolating the scientific dimensions that covered all variables and reliance was made on what was theoretically suggested in the previous literature in the scientific research as well as the studies relied on by the researcher (Wang, Wang, & Liang, 2014).

3.5 Study Instrument

In this study, a review of previous research and studies related to the impact of occupational health and safety on work accidents was conducted. The researchers drew upon these earlier studies to inform the development of the research instrument. A questionnaire specifically designed for this purpose was utilized to gather data. The questionnaire is defined as a structured set of printed questions that participants are required to complete and return to the researchers. The researchers administered and collected the questionnaires from participants using Google Forms, ensuring ease of access and efficient data management. Participants were instructed to provide accurate answers to all questions. The questionnaire encompassed the main variables of the study, including occupational health and safety with five dimensions (independent variable) with 27 items, work accidents (dependent variable) with 8 items, and work stress (moderating variable) with 6 items. A five-point Likert scale was employed to gauge the extent of agreement or disagreement with each statement, with responses ranging from "strongly agree" to "strongly disagree." The scale assigns a score of 1 for "strongly disagree" and 5 for "strongly agree," with intermediate options in between. Following Subedi's (2016) method, the processing of the Likert scale involves calculating the category length as 1.3 using the equation $(5-1)/3$. Based on this, the averages are categorized as follows: Low level: Average between 1 and 2.33; Medium level: Average between 2.34 and 3.67; High level: Average between 3.68 and 5.00.

3.6 Statistical Processing Methods

Descriptive Statistics: To find the mean, frequencies, standard deviation, and measure the perception of the sample members about the study.

Tests of Validity and Reliability Coefficients: To check the credibility, reliability, and effectiveness of the outcomes.

Structural Equation Modeling (SEM): SEM was used to analyze the Moderation Role of Work Stress in the Relationship between Occupational Health and Safety and Work Accidents.

Cronbach's Alpha: Assesses the reliability of the study instrument.

Significance level (α): Its value was set at (0.05) as a maximum so that if the significance value is (0.05) or less, this indicates the presence of a statistically significant effect. However, if the significance value exceeds (0.05), this means that there is no statistically significant effect.

The Calculated Value: The calculated value serves as a key criterion for determining whether to accept or reject the null hypothesis (H_0). If the calculated value exceeds the tabular ($\alpha = 0.05$) value, the null hypothesis is accepted, indicating no significant effect or difference. Conversely, if the calculated value is smaller than the tabular value, the null hypothesis is rejected, implying a significant effect or difference in the data.

4. DATA ANALYSIS AND HYPOTHESIS TESTING

In this section, several tests were used to analyze the data collected, which were used to identify the characteristics of the sample and to determine the role of occupational health and safety and its impact on work accidents: The moderating role of work stress. This chapter will also answer the study questions and test the hypotheses.

4.1 Descriptive Statistics

4.1.1 The descriptive statistics for the independent variables (Occupational Health and Safety).

To accurately display the search results, the standard deviation and mean of each variable were calculated as follows:

Table (1): Mean, Standard Deviation, Order and Importance of Occupational Health and Safety

No.	Items	Mean	Std. Deviation	Rank	Importance
1	The company has a clear occupational health and safety (OHS) policy.	3.86	0.71	1	High
2	Employees are well informed about the OHS policy.	3.56	0.89	3	Medium
3	The OHS policy is regularly updated to reflect current standards.	3.68	0.78	2	High
4	Management emphasizes the importance of following the OHS policy.	3.44	0.84	5	Medium
5	The OHS policy is effectively implemented in all departments.	3.56	0.94	3	Medium
6	The policy promotes a culture of safety in the workplace.	3.49	0.90	4	Medium
	OHS Policy	3.60	0.73		Medium
7	The company follows strict regulatory standards for health and safety.	3.55	0.86	4	Medium
8	Machinery and equipment are inspected regularly to ensure safety.	3.64	0.98	2	Medium
9	All employees are trained in health and safety standards.	3.55	0.95	4	Medium
10	Personal protective equipment is adequately provided to employees.	3.58	0.93	3	Medium
11	Emergency procedures are effectively implemented in the company.	3.19	0.84	5	Medium
12	Adequate information is provided about potential hazards in the workplace.	3.71	0.86	1	High
	Regulation	3.54	0.81		Medium
13	OHS measures are included in all stages of project	3.36	0.86	5	Medium

	planning.				
14	OHS training is provided for new employees.	3.44	0.96	2	Medium
15	There is a detailed safety plan for high-risk tasks.	3.37	0.87	4	Medium
16	OHS protocols are effectively implemented in the workplace.	3.40	0.96	3	Medium
17	Regular drills are conducted to ensure safety preparedness.	3.48	0.95	1	Medium
18	Employees are encouraged to report safety issues immediately.	3.31	0.86	6	Medium
	Planning and Implementation	3.39	0.83		Medium
19	The performance of safety workers is evaluated regularly.	3.59	0.94	5	Medium
20	Employees' feedback is considered during safety evaluations.	3.63	0.85	4	Medium
21	Occupational health and safety policies are evaluated periodically.	3.80	0.81	3	High
22	There is a formal process for evaluating occupational safety programs.	3.58	0.87	6	Medium
23	Corrective action is taken when any health and safety deficiencies are discovered	3.86	0.75	1	High
24	The effectiveness of occupational health and safety programs is measured	3.84	0.77	2	High
	Evaluation	3.72	0.69		High
25	Continuous improvements are made to health and safety policies and procedures.	3.71	0.85	2	High
26	Employee feedback on health and safety is collected on a regular basis.	3.76	0.83	1	High
27	Assessment results are used to improve occupational health and safety.	3.55	0.93	3	Medium
	improvement	3.67	0.77		High

Table (1) presents the descriptive data for OHS Policy, indicating that the overall mean score is 3.60 with a standard deviation of 0.73, categorizing it as having medium importance. Among the items, "The company has a clear occupational health and safety (OHS) policy" ranks the highest in importance, with a mean score of 3.86, reflecting a high level of significance among respondents. In contrast, the item "Management emphasizes the importance of following the OHS policy" has the lowest mean score of 3.44. While this item is still classified as medium importance, it indicates a slightly lower consensus among respondents regarding management's emphasis on policy adherence. This may suggest a potential area for improvement in reinforcing management's role in promoting adherence to the OHS policy. the descriptive data for the regulation of Occupational Health and Safety (OHS), indicating an overall mean score of 3.54 with a standard deviation of 0.81, classifying it as having medium importance. The item "Adequate information is provided about potential hazards in the workplace" ranks highest in importance with a mean score of 3.71, categorized as high importance, which reflects respondents' recognition of the value of hazard awareness in ensuring workplace safety. In contrast, the item "Emergency procedures are effectively implemented in the company" has the lowest mean score of 3.19. Although still considered of medium importance, this score suggests a lower level of confidence among respondents regarding the effectiveness of the company's emergency procedures, indicating a potential area for improvement in enhancing emergency preparedness and response. The descriptive data for Planning and Implementation in Occupational Health and Safety (OHS), showing an overall mean score

of 3.39 with a standard deviation of 0.83, categorized as medium importance. Among the items, "Regular drills are conducted to ensure safety preparedness" has the highest mean score of 3.48, indicating a relatively stronger emphasis on safety preparedness through regular drills.

On the other hand, the item "Employees are encouraged to report safety issues immediately" received the lowest mean score of 3.31. Although it is still classified as medium importance, this score points to a slightly lower level of respondent agreement on the encouragement to report safety issues, which may suggest an opportunity to further promote open communication about safety concerns in the workplace. The descriptive data for the Evaluation of Occupational Health and Safety (OHS), indicating an overall mean score of 3.72 with a standard deviation of 0.69, classifying it as high importance. The item "Corrective action is taken when any health and safety deficiencies are discovered" ranks the highest, with a mean score of 3.86, underscoring the significance placed on promptly addressing safety issues when they arise. In contrast, the item "The performance of safety workers is evaluated regularly" has the lowest mean score of 3.59, classified as medium importance. Although still valued, this slightly lower score suggests a potential area to strengthen the regular evaluation of safety workers' performance, ensuring that safety measures are consistently upheld and effectively implemented across the organization. The descriptive data for the Improvement of Occupational Health and Safety (OHS), showing an overall mean score of 3.67 with a standard deviation of 0.77, categorizing it as high importance. The item "Employee feedback on health and safety is collected on a regular basis" received the highest mean score of 3.76, reflecting the importance placed on obtaining regular feedback to enhance safety practices. Conversely, the item "Assessment results are used to improve occupational health and safety" scored the lowest with a mean of 3.55, classified as medium importance. While this score indicates that assessment results are still recognized as valuable, it suggests an opportunity for greater emphasis on utilizing these results to drive continuous improvements in health and safety policies and procedures.

4.1.2 The descriptive statistics for the dependent variable (Work Accidents).

To accurately display the search results, the standard deviation and mean of each variable were calculated as follows:

Table (2): Mean, Standard Deviation, Order and Importance of Work Accidents

NO.	items	Mean	Std. Deviation	rank	importance
28	Work stress affects my performance at work.	3.89	0.71	**1**	High
29	I experience work stress that increases my risk of accidents.	3.61	0.89	**5**	Medium
30	Work stress affects my mental and physical well-being.	3.62	0.79	**4**	Medium
31	Managing work stress can improve overall health and safety in the workplace.	3.57	0.94	**6**	Medium
32	Work stress can lead to long-term health problems.	3.79	0.82	**3**	High
33	I have difficulty managing my work-life balance due to work stress.	3.87	0.78	**2**	High
	Work Stress	3.73	0.68		High

In table 2, the descriptive data for Work Stress shows an overall mean score of 3.73 with a standard deviation of 0.68, categorizing it as high importance. This highlights the significant impact of work stress on employee performance, well-being, and safety in the workplace.

The item "Work stress affects my performance at work" received the highest mean score of 3.89 with a standard deviation of 0.71, indicating that employees strongly perceive work stress as a key factor influencing their performance. This emphasizes the critical need to address work-related stress to maintain productivity. The item "I experience work stress that increases my risk of accidents" scored the lowest with a mean of 3.57 and a standard deviation of 0.94, categorized as medium importance. While still noteworthy, this suggests that employees perceive a relatively lower direct connection between stress and accident risk compared to its impact on overall performance or well-being.

4.1.3 The descriptive statistics for the moderating variable (Work Stress).

To accurately display the search results, the standard deviation and mean of each variable were calculated as follows:

Table (3): Mean, Standard Deviation, Order and Importance of Work Stress

No.	Items	Mean	Std. Deviation	Rank	Importance
34	I believe that the existing health and safety measures are effective in preventing work accidents.	3.53	0.98	2	Medium
35	The company investigates work accidents thoroughly and takes corrective actions.	3.51	1.09	3	Medium
36	I believe that my workplace is adequately equipped to handle emergencies resulting from accidents.	3.56	0.88	1	Medium
37	I had an accident at work in the past year	3.45	0.96	4	Medium
38	Stress at work has increased the likelihood of accidents.	3.53	0.99	2	Medium
39	There are clear consequences for failure to follow safety protocols.	3.36	0.85	7	Medium
40	Safety equipment is readily available and properly maintained in my workplace.	3.40	0.89	6	Medium
41	Organizational culture helps reduce accidents at work.	3.44	0.98	5	Medium
	Work Accidents	3.47	0.83		Medium

In table 3, the descriptive data for Work Accidents reveals an overall mean score of 3.47 with a standard deviation of 0.83, categorizing it as medium importance. This indicates that while employees recognize the relevance of workplace safety measures, there is room for improvement in mitigating accidents and enhancing safety culture.

The item "I believe that my workplace is adequately equipped to handle emergencies resulting from accidents" received the highest mean score of 3.56 with a standard deviation of 0.88, indicating a relatively higher confidence in emergency preparedness measures. Conversely, the item "There are clear consequences for failure to follow safety protocols" scored the lowest with a mean of 3.36 and a standard deviation of 0.85, suggesting that employees perceive accountability measures as less emphasized or less effective.

Table (4): Mean, Standard Deviation, Order and Importance of study variables

	Mean	Std. Deviation	Importance
Occupational Health and Safety (OHS)	3.58	0.68	Medium
OHS Policy	3.60	0.73	Medium
Regulation	3.54	0.81	Medium
Planning and Implementation	3.39	0.83	Medium
Evaluation	3.72	0.69	High
Improvement	3.67	0.77	High
Work Accidents (Dependent Variable)	3.73	0.68	High
Work Stress (The Moderating variable)	3.47	0.83	Medium

In table 4, the study's descriptive analysis shows that Occupational Health and Safety (OHS) and its related aspects are generally regarded with medium importance, with scores ranging from 3.39 to 3.60. Specifically, OHS Policy and Regulation

are seen as important but indicate room for improvement, particularly in enforcement and adherence. Planning and Implementation received the lowest rating, signaling a need for stronger execution.

In contrast, Evaluation and Improvement are viewed as more crucial, with higher scores of 3.72 and 3.67, respectively, reflecting a strong focus on assessing and enhancing safety measures. The dependent variable, Work Accidents, also received a high importance rating of 3.73, emphasizing the need to address workplace accidents effectively. Work Stress, the moderating variable, was rated with medium importance (3.47), underlining the significant role of stress in influencing workplace safety and performance. Overall, the findings highlight areas where interventions can improve safety policies, reduce work-related stress, and enhance health outcomes.

4.2 Hypothesis test

H1: There is a negative impact of occupational health and safety on work accidents in Jordanian industrial companies.

Table (5): The effect of occupational health and safety on work accidents.

Path	B	Mean	Sd	T statistics	P values
Occupational Health and Safety -> Work Accidents	-0.717	-0.721	0.067	10.715	0.000

R^2=0.514, f^2 =1.059

The results presented in Table (5) indicate a strong negative relationship between Occupational Health and Safety (OHS) and Work Accidents in Jordanian industrial companies. The path coefficient (β) of -0.717 suggests that as OHS practices improve, the likelihood of work accidents decreases. This is further supported by a mean value of -0.721 and a standard deviation of 0.067, indicating consistency in the data. The T statistic of 10.715 and the p-value of 0.000 confirm the statistical significance of this relationship. With an R^2 value of 0.514, approximately 51.4% of the variance in work accidents can be explained by OHS, demonstrating a strong explanatory power. Additionally, the f^2 value of 1.059 suggests a large effect size, emphasizing the practical importance of the relationship. Overall, the findings highlight that improving OHS measures can significantly reduce work accidents, making it a key factor in enhancing workplace safety.

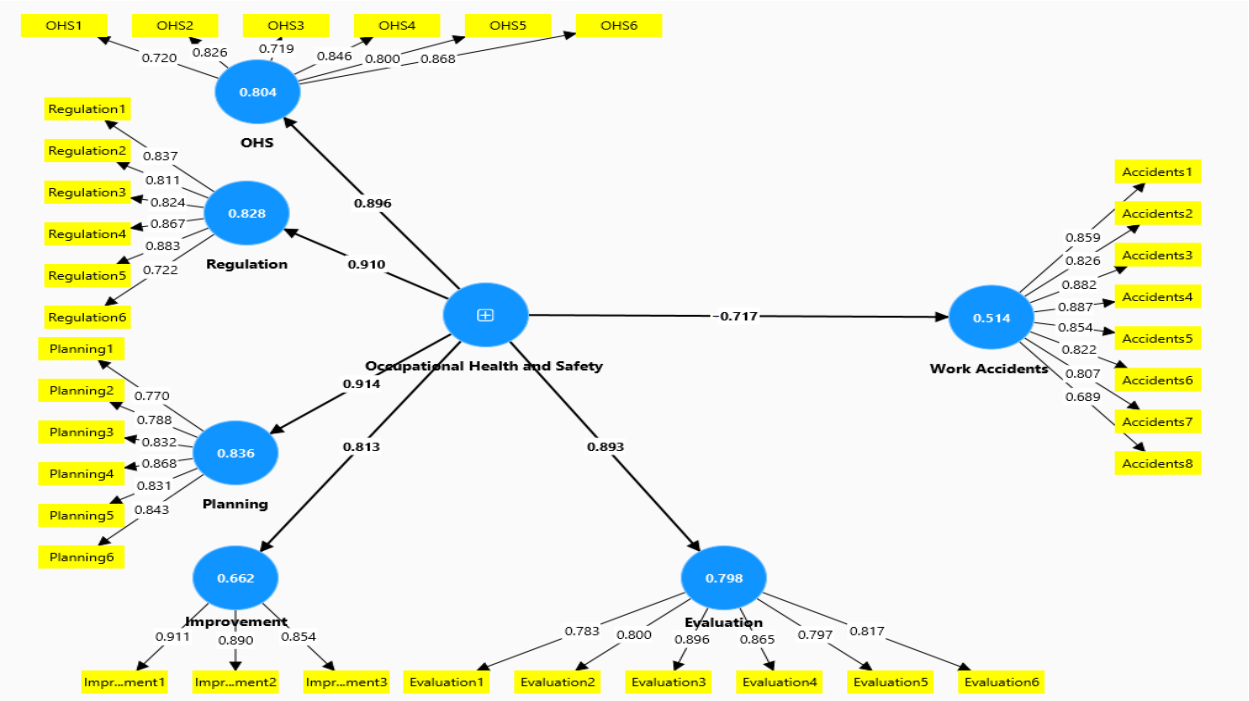

Figure (1): The Effect Of Occupational Health And Safety On Work Accidents.

H1.1: There is a negative impact of the policy on work accidents in Jordanian industrial companies.

H1.2:

Table (6): The effect of OHS policy on work accidents.

Path	B	Mean	Sd	T statistics	P values
Ohs -> work accidents	**-0.665**	**-0.673**	**0.062**	**10.668**	**0.000**

R^2=0.442, f^2 =0.451

The results presented in Table (6) show a significant negative relationship between Occupational Health and Safety (OHS) Policy and Work Accidents. The path coefficient of -0.665 suggests that stronger OHS policies are associated with fewer work accidents. With a mean of -0.673 and a standard deviation of 0.062, the data indicates a consistent and reliable negative effect. The T statistic of 10.668 and the p-value of 0.000 confirm the statistical significance of this relationship. The R^2 value of 0.442 means that 44.2% of the variance in work accidents can be explained by the effectiveness of the OHS policy, indicating its substantial role in accident reduction. Additionally, the f^2 value of 0.451 suggests a medium to large effect size, highlighting the practical importance of OHS policies in reducing workplace accidents. These findings emphasize the critical role that well-implemented OHS policies play in enhancing safety and reducing accidents in the workplace.

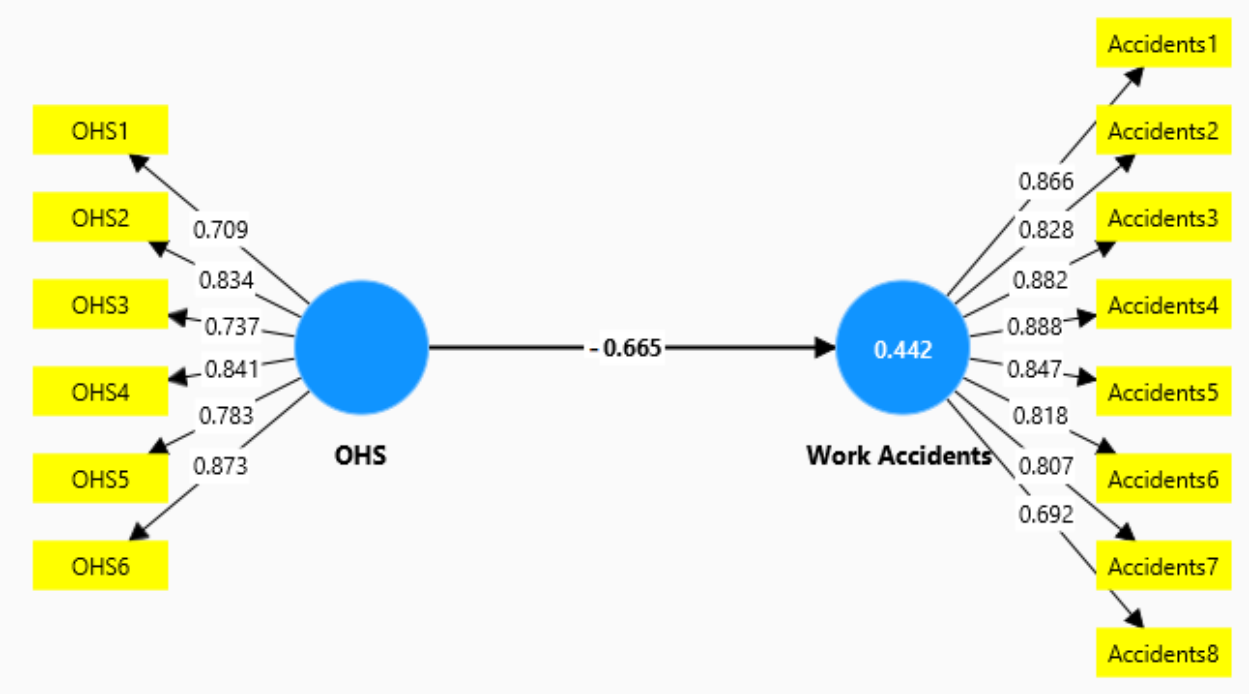

Figure (2): The effect of OHS policy on work accidents.

H1.3: There is a negative impact of regulation on work accidents in Jordanian industrial companies.

Table (7): The Effect of Regulation on Work Accidents.

	B	Mean	SD	T statistics	P values
Regulation -> Work Accidents	-0.671	-0.681	0.056	12.038	0.000

R^2=0.451, f^2 =0.547

The results presented in Table (7) show a significant negative relationship between Regulation and Work Accidents. The path coefficient of -0.671 suggests that stronger and more effective regulation is associated with a reduction in work accidents. With a mean of -0.681 and a standard deviation of 0.056, the data reveals a strong and consistent negative effect, with low variability. The T statistic of 12.038 and the p-value of 0.000 confirm the statistical significance of this relationship. The R^2 value of 0.451 indicates that 45.1% of the variance in work accidents can be explained by regulation, highlighting its substantial role in accident reduction. Additionally, the f^2 value of 0.547 suggests a large effect size, emphasizing the significant impact that regulation has on reducing work accidents. These findings underline the importance of effective

regulatory measures in enhancing workplace safety.

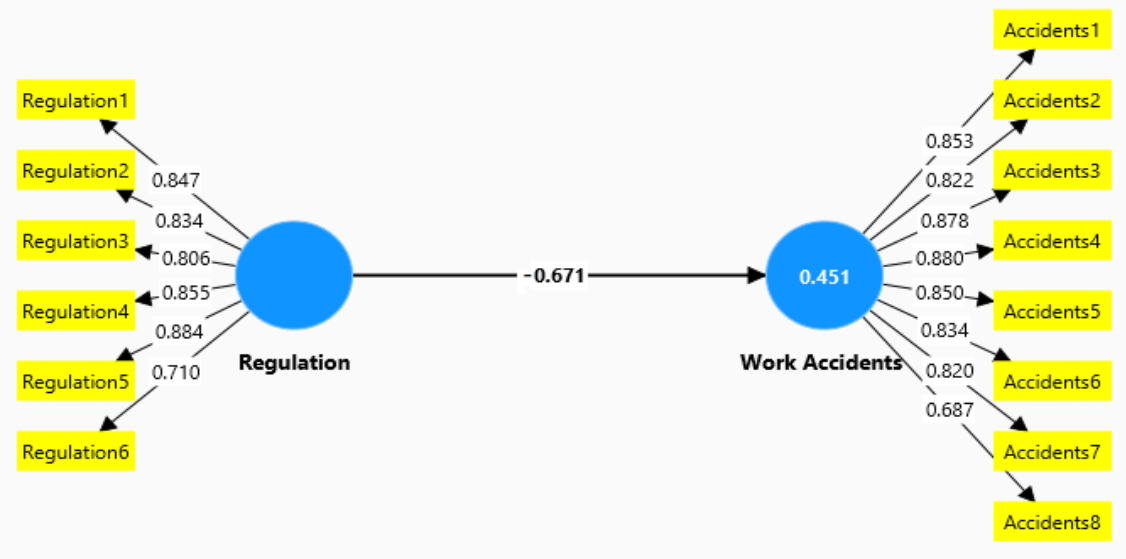

Figure (3): The effect of regulation on work accidents.

H1.4: There is a negative impact of planning and implementation on work accidents in Jordanian industrial companies.

Table (8): The Effect Of Planning And Implementation On Work Accidents.

	β	mean	SD	T statistics	P values
Planning -> Work Accidents	-0.692	-0.697	0.063	11.066	0.000

R^2=0.479, f^2 =0.748

Table (8) emphasized the significant negative effect of Planning and Implementation on Work Accidents. The path coefficient of -0.692 indicates that improved planning and effective safety protocols lead to fewer work accidents. With a mean of -0.697 and a standard deviation of 0.063, the data shows a strong and consistent negative relationship. The T statistic of 11.066 and the p-value of 0.000 confirm statistical significance. The R^2 value of 0.479 suggests that 47.9% of the variance in work accidents is explained by planning and implementation, and the f^2 value of 0.748 indicates a large effect size. These findings emphasize the critical role of planning and implementation in enhancing workplace safety and reducing accidents.

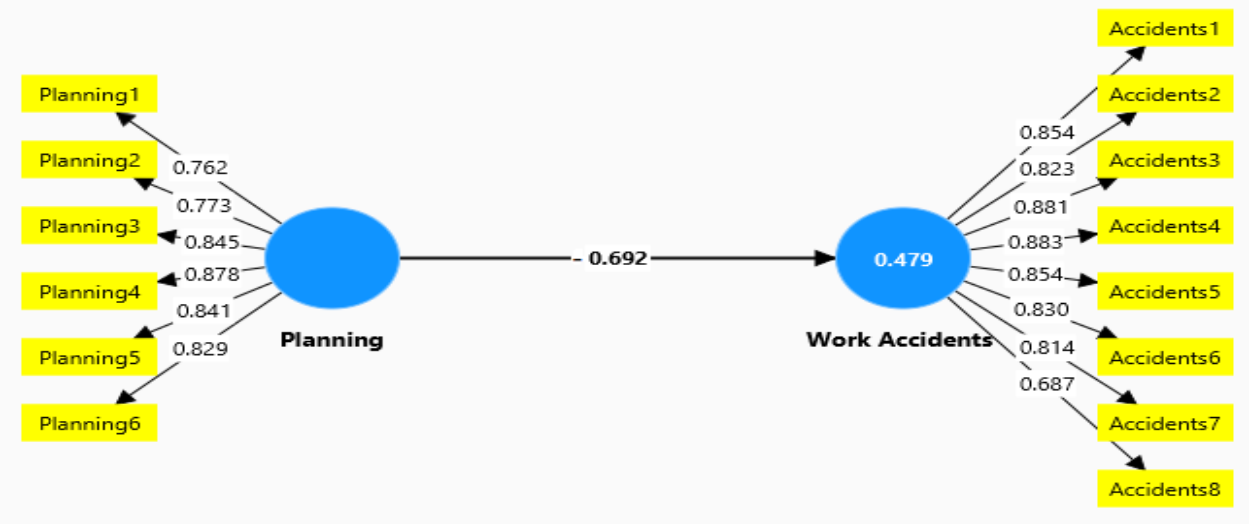

Figure (4): The effect of planning and implementation on work accidents.

H1.5: There is a negative impact of the evaluation on work accidents in Jordanian industrial companies.

Table (9): The effect of evaluation on work accidents.

	B	Mean	SD	T statistics	P values
Evaluation -> Work Accidents	**-0.617**	**-0.631**	**0.096**	**6.447**	**0.000**

R^2=0.381, f^2 =0.624

The results in Table (9) reveal a significant negative relationship between Evaluation and Work Accidents. The path coefficient of -0.617 suggests that effective evaluation processes are associated with fewer work accidents, highlighting the importance of regularly assessing safety practices to reduce accidents in the workplace. The mean of -0.631 and standard deviation of 0.096 indicate a strong and consistent negative effect, with moderate variability in the data. The T statistic of 6.447 and the p-value of 0.000 confirm that this relationship is statistically significant and not due to random chance. The R^2 value of 0.381 shows that 38.1% of the variance in work accidents can be explained by evaluation, indicating that evaluation plays an important role, though other factors may also contribute. Additionally, the f^2 value of 0.624 signifies a large effect size, emphasizing the substantial impact of evaluation on reducing work accidents. These findings underline the critical role of evaluation in improving workplace safety.

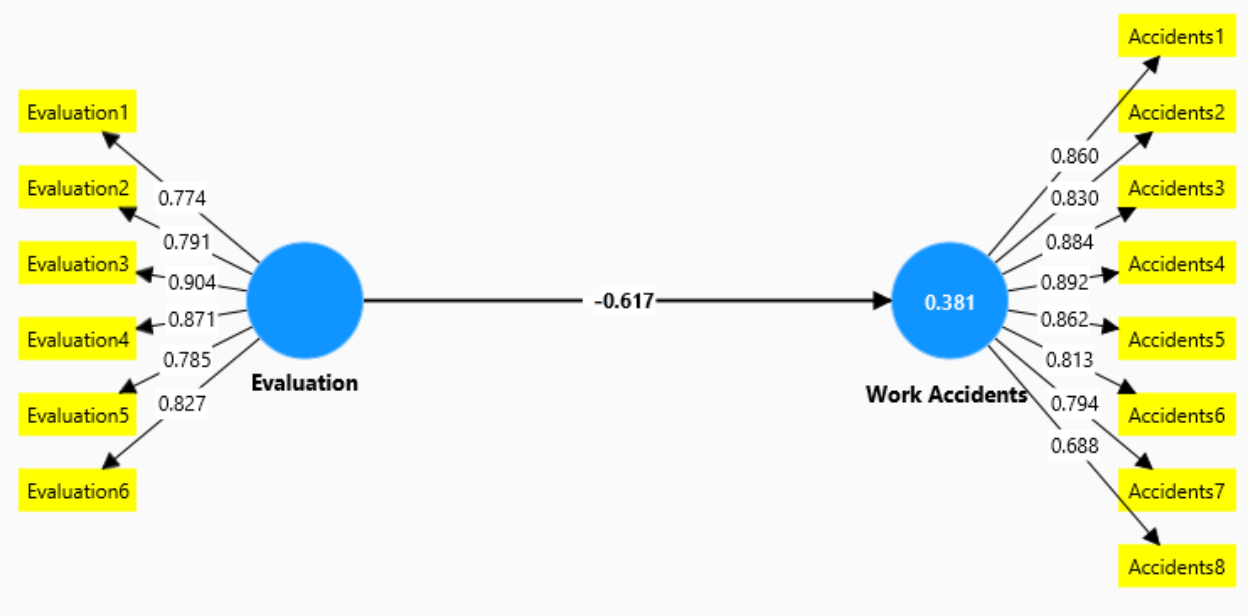

Figure (5): The effect of evaluation on work accidents.

H1.6: There is a negative impact of improvement on work accidents in Jordanian industrial companies.

Table (10): The effect of improvement on work accidents.

	B	Mean	SD	T statistics	P values
Improvement -> Work Accidents	-0.575	-0.590	0.095	6.039	0.000

R^2=0.331, f^2 =0.547

The results in Table (10) reveal a significant negative relationship between Improvement and Work Accidents, with a path coefficient of -0.575, suggesting that improvements in occupational health and safety measures lead to a reduction in work accidents. The mean of -0.590 and standard deviation of 0.095 indicate a strong and consistent negative effect, showing that improvement efforts are effective in minimizing accidents. The T statistic of 6.039 confirms the statistical significance of this relationship, while the p-value of 0.000 indicates that the result is not due to random chance. The R^2 value of 0.331 indicates that 33.1% of the variance in work accidents can be explained by improvements in safety measures, demonstrating

a moderate but meaningful contribution to reducing accidents. Additionally, the f² value of 0.547 suggests a large effect size, emphasizing the substantial impact that improvements in occupational health and safety have on reducing work accidents.

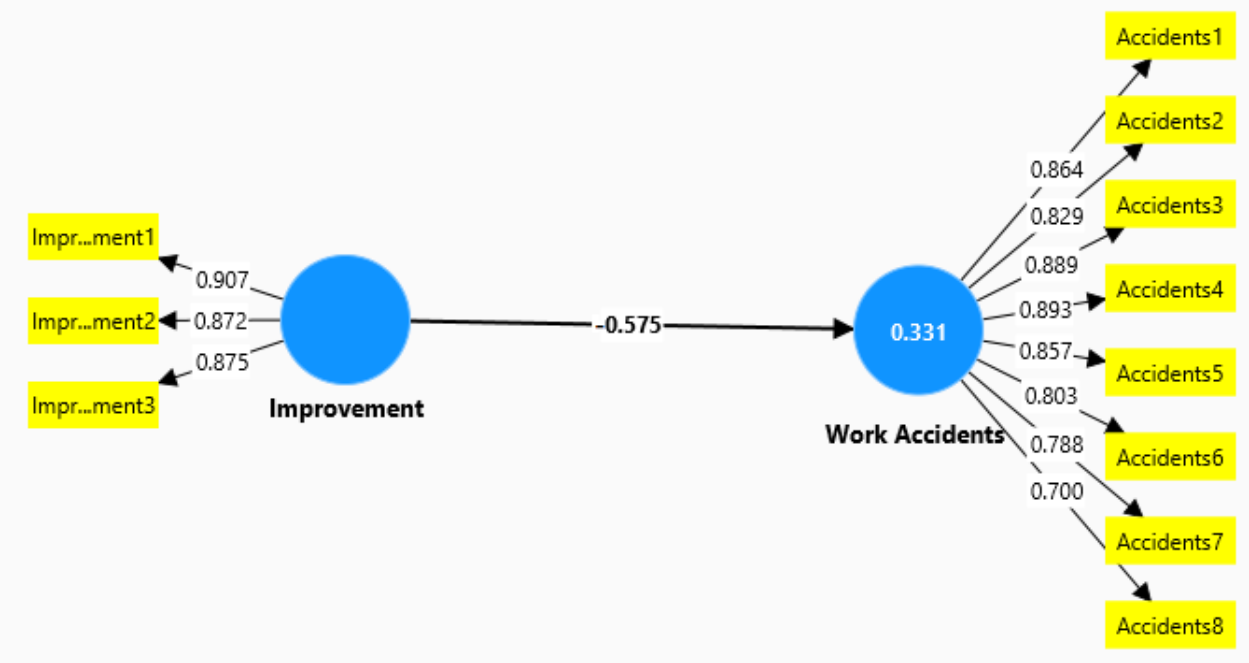

Figure (6): The effect of improvement on work accidents.

H2: There is an effect of the moderating role of work stress on relationship between occupational health and safety and work accidents in Jordanian industrial companies.

Table (11): The effect of the moderating role of work stress on the impact of occupational health and safety on work accidents.

	B	Mean	SD	T statistics	P values
Occupational Health and Safety -> Work Accidents	-0.54	-0.543	0.117	4.621	0.00
Work Stress x Occupational Health and Safety -> Work Accidents	0.13	0.13	0.047	2.765	0.023

R^2=0.544, f^2 =0.523

The results in Table (11) highlight the moderating role of Work Stress on the relationship between Occupational Health and Safety (OHS) and Work Accidents. The path coefficient of -0.54 for the direct effect of OHS on work accidents indicates a negative relationship, suggesting that better occupational health and safety measures are associated with fewer work accidents. The mean of -0.543 and standard deviation of 0.117 reflect a moderate negative effect with low variability, confirming a consistent impact. The T statistic of 4.621 and p-value of 0.000 indicate that this relationship is statistically significant. The interaction term, Work Stress x Occupational Health and Safety → Work Accidents, has a positive path coefficient of 0.13, with a mean of 0.13 and standard deviation of 0.047, suggesting that work stress moderates the effect of OHS on work accidents, amplifying the impact of OHS on reducing accidents. The R² value of 0.544 indicates that 54.4% of the variance in work accidents can be explained by OHS and work stress, while the f² value of 0.523 suggests a large effect size, underscoring the significant role of work stress in influencing the effectiveness of occupational health and safety measures in reducing work accidents.

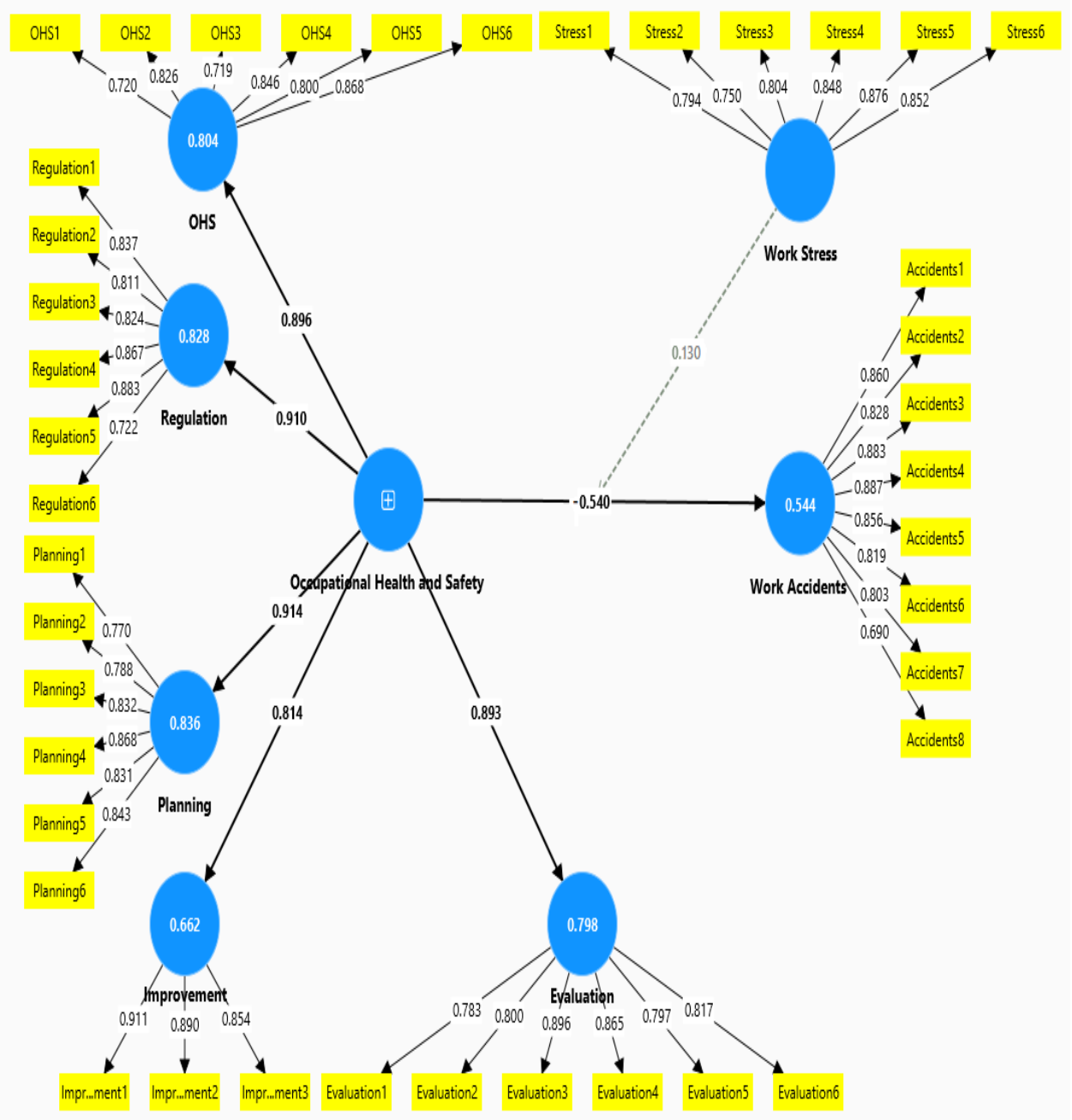

Figure (7): Structure Model

5. DISCUSSION

The results confirmed that occupational health and safety has a statistically significant impact on reducing work accidents in Jordanian industrial companies. The results indicate that implementing occupational health and safety standards contributes effectively to reducing work accidents. This means that companies that are committed to providing a safe and healthy work environment can expect a significant reduction in accidents, reflecting the importance of investing resources in this area. This result is consistent with the results of Rajm et al., (2020) which evaluated the efficacy of the health and safety system in minimizing work accidents.

The results established that the policy has a statistically significant positive impact on reducing work accidents in Jordanian industrial companies. The results indicate that having clear and strict occupational health and safety policies leads to improved performance in this context. Effective policies can include regular employee training, safety procedures, and ongoing monitoring, which contribute to strengthening the safety culture within the organization. This result is consistent with the results of Leka et al. (2023) which revealed a robust and statistically significant correlation between OSH policy principles and organizational action on work-related stress.

The results demonstrated that regulation has a statistically significant positive impact on reducing work accidents in Jordanian industrial companies. Internal organization plays a pivotal role in reducing workplace accidents. This means that companies that have a clear organizational structure, including the distribution of responsibilities and tasks, are better able to manage risks and reduce accidents. This result is consistent with the results of Baghdadi (2024); Al-Zaman & Jafri, (2023); Rajm et al., (2020); & Abu Arabi, (2019).

The results demonstrated that planning and implementation significantly reduce work accidents in Jordanian industrial companies. The results have shown that good planning and implementation of safety plans significantly reduce accidents. Good planning includes assessing potential risks and developing strategies to reduce them, which shows the importance of prior risk assessment.

The results demonstrated that evaluation plays a significant role in reducing work accidents in Jordanian industrial companies. Continuous evaluation of occupational health and safety programs helps identify weaknesses and improve procedures. This process contributes to enhancing effectiveness and providing appropriate solutions to challenges that companies may face. This result is consistent with the results of Rajm et al., (2020).

The results confirmed that improvement significantly contributes to reducing work accidents in Jordanian industrial companies. The results indicate that continuous improvement of procedures and processes has a significant impact on reducing accidents. Companies that seek to innovate and continually improve their policies and procedures are more successful in keeping their employees safe.

The results demonstrated that there is an effect of the moderating role of work stress on relationship between occupational health and safety and work accidents in Jordanian industrial companies Work stress is a critical factor that affects the effectiveness of occupational health and safety interventions in preventing workplace accidents. High levels of stress can lead to poor compliance with safety practices, making workers either forget or hurry to perform their tasks, thus increasing the chances of accidents. Mental health problems can also affect concentration and judgment, leading to poor vigilance for hazards. A supportive workplace can diffuse stress, while a stressful work environment may demolish safety culture. Stressors at work can also impact an employee's perceptions about risk, either resulting in underestimation of risk or excessive caution, both of which may result in accidents. Effective training programs should put stress management alongside safety training to make OHS more successful. Setting up feedback mechanisms to allow employees to report things that stress them out will put organizations in a position to tune their safety measures to actual workplace conditions. Finally, addressing work stress is essential to the successful implementation of OHS measures.

6. CONCLUSION

The study confirmed that occupational health and safety has a statistically significant impact on reducing work accidents in Jordanian industrial companies. The results indicate that implementing occupational health and safety standards contributes effectively to reducing work accidents. Additionally. The results established that the policy has a statistically significant positive impact on reducing work accidents in Jordanian industrial companies. The results indicate that having clear and strict occupational health and safety policies leads to improved performance in this context. Effective policies can include regular employee training, safety procedures, and ongoing monitoring, which contribute to strengthening the safety culture within the organization. The results also demonstrated that regulation has a statistically significant positive impact on reducing work accidents in Jordanian industrial companies. Internal organization plays a pivotal role in reducing workplace accidents. Finally, the results demonstrated that evaluation plays a significant role in reducing work accidents in Jordanian industrial companies. Continuous evaluation of occupational health and safety programs helps identify weaknesses and improve procedures. The study recommends that any future occurrences of accidents or claims of disease at work with work-related causes have to be dealt with to avoid causing them to recur. It will require a series of steps to support the entire set of OHS and welfare locations, where aspects such as mental health for workers, work-related stress, and assistance for workers, should be made publically known. They consist of every underlying cause such as problem-based training, reflective thinking, and the prosecution sending imbalance, as well as videoconference hearing podcasts, meaning hearing conferences that are held online. Moreover, ensure the framework is open to all stakeholders.

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