Academic Journal of International University of Erbil

Journal Homepage: https://ue.edu.krd/ojs/index.php/public

PRINT-ISSN: 2519-6928

The Influences of Health, Safety, and Environmental Management System on Employee Performance in the Khurmor Liquefied Petroleum Gas Field

An Analytical Study of the perceptions of Employees in Crescent Petroleum Company in the Khurmor LPG Field in Kurdistan Region of Iraq

Beston Muhammed Qadir [1]*, Karzan Jumaa Qadir [2], Ako Khalid Mohammed [3]

[1] Department of Oil, Gas and Energy Management, College of Business, Charmo University, Peshawa Street & Chamchamal, Sulaimani, Kurdistan Region, P. Box: 46023. IRAQ.

[2,3] Department of Business Administration, College of Business, Charmo University, Peshawa Street & Chamchamal, Sulaimani Kurdistan Region, P. Box: 46023. IRAQ.

*Corresponding Author: Beston Muhammed Qadir

Received 04 Oct 2024; Accepted 17 Oct 2024; Available online 23 Nov 2024

ABSTRACT:

The aim of the study is to understand the influences of the management systems of Health, safety, and Environment on employee performance in the Khurmor Liquefied Petroleum Gas Field. The main problem of the study is the unique and regional challenges faced by personnel in the Khurmor gas field, which may affect the operation and efficiency of HSE systems. The Descriptive analytical method has been used to analyze the data and describe the variables and dimensions in the study. The study was conducted on Crescent Petroleum, which is currently in the process of extracting and producing liquefied petroleum gas. Questionnaire form has been used as the data collection tool. The study population includes employees in Crescent Petroleum company, the number of employees was (63) employees, these employees answered the questions, but the total number of forms distributed is (87) forms. Simultaneously and realistically, Statistical tools were applied IBM SPSS Amos 26 and excel.

As a result of the data analysis in the study, several results were obtained by describing and identifying both variables, the most important of which was the existence of a direct and significant relationship between the dimensions of the management systems of health, safety and environment and employee performance. The variable dimensions of health, safety and environmental management systems also have been a positive effect on employee performance in the study framework company. At the end of the study, several recommendations are suggested for other research in future. The most important recommendation is that attention should be paid to the implementation of the study variables in all companies in the Kurdistan Region to solve some of the management problems. The originality of this study stems from the fact that it is the first time that these two variables have been combined together, being used in a study on Crescent Petroleum in the petroleum management in the Kurdistan of Iraq.

KEYWORDS: Health Management, Safety Management, Environmental Management, Employee Performance, Crescent Company.

1. INTRODUCTION

Focusing on employee performance in the management of oil and gas is essential for sustainability, employee efficiency, safety and productivity (Mudhsh et al., 2024). In such processes, the risks are high, and the relationship between employee performance, project success, and workplace safety is direct. The most important pillars for performance enhancement are effective training, adherence to health, safety and environmental (HSE) protocols and strong leadership (Yanty et al., 2024). If employees are well supported and attention is paid to safety protocols, companies achieve better business outcomes and foster a culture of resilience and reliability (Mudhsh et al., 2024).

The Khurmor liquefied gas field, located in the town of Qadir Karam in Iraqi Kurdistan, operated by Dana Gas and Crescent Petroleum, is a major energy asset for the Kurdistan Regional Government (KRG) and the source of

electricity generation for the Kurdistan Region (Salih, 2023). Extraction, production and processing of LPG needs implementation of the high-level technics of system of safety and environmental (HSE) management, because it is the hazardous and complex substance (Odeyemi, 2022). This paper is evaluating the effects of the systems of Health, safety, and environmental management systems on the employee performance, also the study emphasis the role of these systems to prepare the safe work places, increase productivity and environment of sustainable work.In the industrial sectors, particularly in the energy production process such as the process of production of LPG in the khourmor LPG field, the systems of HSM are the most important systems. The aims of these systems are to reduce and prevent the various hazards in the process of LPG production, such as gas leaks, environmental pollution, and explosions. The adoption and implementation of the principles of HSE management system by Crescent Petroleum Company illustrates a commitment to environmental protection, and it also efforts to the welfare of its employees, and the sustainability of the environment of work (Arif et al., 2022).

The main aim of achieving the HSM system implementation process is to prepare a safe work environment, safe and secure workplace and enhancing employee performance have a direct and significant relationships together (Wai, 2024). If the employees feel safe during them work, their motivation, engagement, and productivity increase (Lari, 2024). These kinds of this relationship are supported by various researches, there are a strong relationship between safe workplaces and health cultures, these relationships have a positive impact of the decrease of accident rate and increase of employee morale (Kashyap et al., 2023; Fu & Zhang, 2021). At Khurmor, the programs of training and development for safety have been designed by the highest technics to clear identification to hazardous substances and materials, the management system of health and safety, assessment and management of risk, ensure that staffs are well equipped to handle emergencies and adhere to safety standards, these standards cause to reducing accidents and boosting confidence.

Moreover, the systems of HSE Management have significant effects on employee health (Oh, 2023). These systems help organization to identify the health occupational risks in one hand and managing, assessing and controlling these risks in another hand. Health management and reducing health risks is the most important tool to enhanced employee performance at work place, which makes a direct effect on the increasing productivity and job satisfaction by employee (Chen et al., 2022). Crescent Petroleum Company has wellness initiatives, such as regular medical checkups and programs of stress management, these programs have the most important role in maintaining a healthy workforce. Another important aspect of HSE system at khurmor LPG Field is Environmental management (Qadir, et al, 2022). Crescent Petroleum Company focuses on the decreasing of environmental footprint in the process of LPG Extraction and production to sustainable practices (Qadir, et al, 2022). The implementation of the protocols of environmental pollution control, waste management has an impact on the protect the company's local system, enhances the company's reputation, moral, and business activities, and it also the part of requirements of corporate social responsibility (Wang et al, 2019). This commitment to environmental stewardship by employees is known to foster feelings of pride and involvement, and further enhance morale and performance (Sharma & Bansal, 2022).

These three management systems of Health, Safety and Environment have significant effects on the employee performance in the production of LPG in the khurmor LPG field (Qadir, et al, 2022). The purpose of this process is to provide employees welfare and sustainability of environment. The crescent petroleum company focuses on the fostering safety culture as a main strategy to ensure compliance with global standards of regulatory (Qadir, et al, 2022). This tools and methods to management of health, safety and environment results in a motivated, engaged and productive workforce, leading the Crescent petroleum company to long-term success and increased output (Putra, et al, 2024).

1.1. RESEARCH PROBLEM

The operations in the energy sectors have been increased rapidly, especially in the extraction and production of LPG, Implementation of HSE management systems is the most important to employee welfare and operational efficiency (Juma, 2023). The development of ideas that emphasize these management systems has created a limited understanding of how these systems directly affect employee performance, especially in a specific area (Abarghoei, et al, 2024)

The main purpose of the research is to understand this gap by evaluating the influences of the management systems of health, safety, and environmental on employee performance in the Crescent Petroleum Company at the Khurmor LPG field. The importance of managing such systems stems from the perspectives and experiences of the employees to understand the impact of the systems and identify potential areas for improving the company's investment processes. (Qadir et al, 2022).

The problem of the study is all the challenges that face the work process and employees in the workplace in the Khurmor gas field. There have been many deaths and serious injuries in LPG production processes. In 2012, one employee died and four others were seriously injured in a gas explosion. Two of the injured employees died later (Reuters 2012). These challenges may have a negative effect on the management systems of operation and efficiency in the fields of health, safety and environment. Therefore, the study seeks to analyze employee views on the evaluation of these systems, and works to understand the quantitative support of these systems in performance, job satisfaction and

public safety, and provide practical insights to improve health, safety and environmental management in this particular context.

1.3. RESEARCH QUESTIONS

1. Are the management systems of health, safety and environmental implemented in Crescent Petroleum Company at Khurmor LPG field?
2. What are the levels of employee performance in Crescent Petroleum in 'Khurmor LPG Field?
3. Is there a correlation relationship between the management systems of health, safety and environment and employee performance in Crescent Petroleum Company in Khurmor LPG field?
4. Does the management systems of health, safety and environment have an influence on employee performance in Crescent Petroleum Company in Khurmor LPG field?

1.4. RESEARCH IMPORTANCE

This study is a particular importance for understanding how management systems of health, safety and environmental impacts employee performance within the liquefied petroleum gas (LPG) sector, focusing on Crescent Petroleum Company in the Khurmor field in the Qadir Karam in Kurdistan of Iraq. Based on the analysis of employee views, the study provides insights into how the effects of HSE practices can enhance workplace safety, enhance work efficiency, and improve job satisfaction, thereby directly affecting productivity and performance. In addition, the findings can guide the development of HSE policies, contribute to wider knowledge of the LPG industry, and support the Sustainable Development Goals by demonstrating the role of HSE systems in fostering safer and more sustainable working environments.

1.5. RESEARCH OBJECTIVES

1. To explain the level of employee performance in Crescent Petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas.
2. To understand the level of implementation of the management systems of health, safety and environment in Crescent Petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas.
3. To illustrate the correlation relationship between the variables of employee performance in one hand and management systems of health, safety and environmental in another hand in Crescent Petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas.
4. To determine the level of effects of the management systems of health, safety and environment on employee performance in Crescent Petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas.

1.6. RESEARCH HYPOTHESIS

First Hypothesis: The ordinal importance of the research variables and its dimensions different according to the nature of dependence on them by Crescent Petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas.

Second Hypothesis: There is a significant correlation between the variable of the management systems of Health, safety and environment in one hand and Employee performance in another hand in Crescent Petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas in both of the levels of variables and its dimensions.

Third Hypothesis: There is a positive and significant influence of Management systems of Health, safety and environment and its dimensions on Employee performance.

2. LITERATURE REVIEW

One of the most important systems in oil and gas management is the management systems of health, safety and environment, particularly in the high-risk process such as the extraction and production of Liquefied Petroleum Gas (LPG) (Nour, et al, 2021). The aim of this chapter is to review and investigate the influences of the management systems of HSE on employee performance, with a specific focus on Crescent petroleum Company in the field of Khurmor for production of Liquefied Petroleum Gas (Qadir, et al, 2022). The purpose in this chapter is to use some past research and resources for the newest understanding of the topic.

2.1. HEALTH, SAFETY, AND ENVIRONMENTAL MANAGEMENT SYSTEMS

The Industrial organizations are designing a special management framework called a Health, safety and environmental systems, which can help to managing, controlling and assessing health, safety and environment, and reducing and preventing of risks associated work places. (Sarkheil, et al, 2020). These systems promote organizations to practices of sustainability. According to the Organization of International Labor (ILO), the management systems of health, safety and environment helps to the eradication, minimization, isolation, reduction of incident and accident at

workplaces, and it also causes to reduce of human and natural disasters and human diseases, which enhances overall organizational performance (ILO, 2022).

2.2. IMPORTANCE OF HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEMS

The most important pillar of business in industrial processes is health, safety and environmental management (HSE), which increases in importance in industries such as oil and gas, because the most hazardous materials are used in such processes (Arif et al., 2022). This system plays a concrete role in protecting employees; encouraging employees to improve work efficiency, ensuring organizations comply with work rules, and engaging organizations and employees in promoting a culture of responsibility and awareness to avoid risks (Benson et al., 2024). Several other factors play a role in the importance of HSE management, including creating an environment for employee safety and welfare, this process plays a role in protecting the environment for the public interest, managing these three processes scientifically plays a role in raising reputation and trust risk and long-term sustainability (Arif et al., 2022).

2.3. EMPLOYEE PERFORMANCE

Employee performance can be defined as all the characteristics of an employee in being efficient at work, making an impact in the workplace, and feeling responsible for achieving organizational goals (Mahmood et al., 2015). In order to perform well, an employee must consider quality and quantity in work processes, and be able to adapt to new challenges and participate in a positive work environment. There are many factors to enhance employee performance namely motivation, job satisfaction, skill level, access to resources and support from management (Abdulla et al., 2019).

There are two important criteria for evaluating employee performance, namely outcomes achieved and behaviors demonstrated, such as teamwork, initiative, adherence to company policies and standards (Mahmood et al., 2015).

2.4. IMPORTANCE OF EMPLOYEE PERFORMANCE

Employee performance is one of the most important pillars of organizational work in business processes, because it can directly affect overall productivity, service quality and the long-term success and sustainability of organizations (Yanty et al., 2024). Here are the most important outcomes on which employee performance plays a role.

Employee performance plays a role in the quantity of production; the relationship between these two aspects is direct and important. Employee performance can play a role in determining the level of production quality, if positively involved in work processes will improve the quality of products in business processes (Abdulla et al., 2019). High employee performance can also lead organizations to achieve their goals. In addition, demonstrating good employee performance will reduce organizational expenses and waste of resources (Yanty et al., 2024). Another important aspect of employee performance is to keep employees in an organization for a long time. There are many other important factors that are directly related to employee performance such as employee engagement and retention, positive workplace culture, profitability and growth (Celestin et al., 2024).

2.5. IMPACT ON EMPLOYEE PERFORMANCE

In recent years, the relationship between Management systems of HSE and employee performance has been the subject of much research. For instance, a research by (Fernández-Muñiz et al, 2017) conducted; the researchers found that the practice and implementation of HSE had positive impacts on the employee performance, the systems made a motivation, and satisfaction feeling to the employees that led to increased productivity. The study suggests that if there is a safe and healthy working environment for employees it encourage a sense of security among employees, which in turn supplement their performance (Fernández-Muñiz et al., 2017).

Moreover, another study indicates that employees who feel their organization is committed to implementing the principles of the management systems of health, safety and environment are more likely to be more involved and illustrate dedication to their organization(Mearns et al., 2018). The study focuses that effective communication between individuals and groups within organization and training related to management systems of HSE is very important in shaping positive employee perceptions and behaviors (Mearns et al., 2018).

2.6. HSE MANAGEMENT IN THE OIL AND GAS SECTOR

Various challenges, hazards and risks will arise in the industrial of oil and gas, particularly in the extraction and production of liquefied petroleum gas. Ensuring compliance with HSE protocols is very important in this sector because it reduces risks to production processes and prevents disasters. A study by Khan and Abbasi (2020) emphasizes that a strong implementation of the management systems of HSE in the sector of oil and gas leads to significant developments in operational efficiency and risk reduction (Khan & Abbasi, 2020).

In the Middle East countries, especially in Iraq, there is a lot of focus on management of HSE because of the significant oil and gas reserves in those areas. Research by Al-Mutairi and Al-Kandari (2019) highlights that the implementation of a comprehensive management systems of HSE in the sector of oil and gas in the Middle East has led

to a significant reduction in workplace incident and accidents in one side and reduced environmental footprint, disasters, catastrophic, pollution and incidents in another side (Al-Mutairi & Al-Kandari, 2019).

2.7. CASE STUDY: CRESCENT PETROLEUM IN KHURMOR LPG FIELD

Crescent Petroleum, which extracts and produces of LPG in the Khurmor field, has made huge improvement in managing systems of HSE. The company reports that the implementations of these systems has led to improved safety and health records and have been a major factor in increased employee performance. The company's focus on ongoing training, development, monitoring, managing, controlling risk assessment, and serving and protecting the environment has been instrumental in achieving these outcomes (Crescent Petroleum, 2023). An analytical study conducted by Mohammed et al. in (2022) on the opinions of Crescent Petroleum employees, the study concluded that most employees believe that the HSE management system had a positive impact on their performance and well-being.

The study indicates that employees feel more motivated, secure and peace of mind in an environment where their health and safety are systematically protected (Mohammed et al., 2022). The literature suggests that there is a strong and effective relationship between HSE management systems and enhanced employee performance in the LPG industry. For companies like Crescent Petroleum, engaging in comprehensive HSE practices not only ensures compliance with regulations but also creates improvements in safety culture and wellbeing among employees. This leads to increased employee satisfaction, productivity growth and organizational success.

3. METHODOLOGY

The descriptive analysis method was used in this study because the research curriculum matches the characteristics and objectives of the study, it can answer the research questions. This method of research, which is analytical and descriptive, explains the objectives, analyzes the phenomena and data in the research, explains the relationships and causes between the components in a realistic and scientific logic. An important feature of this research method is that it combines the description of the case with its analysis, then explains the conclusions used in the collection of information and data.

3.1. THE MODEL

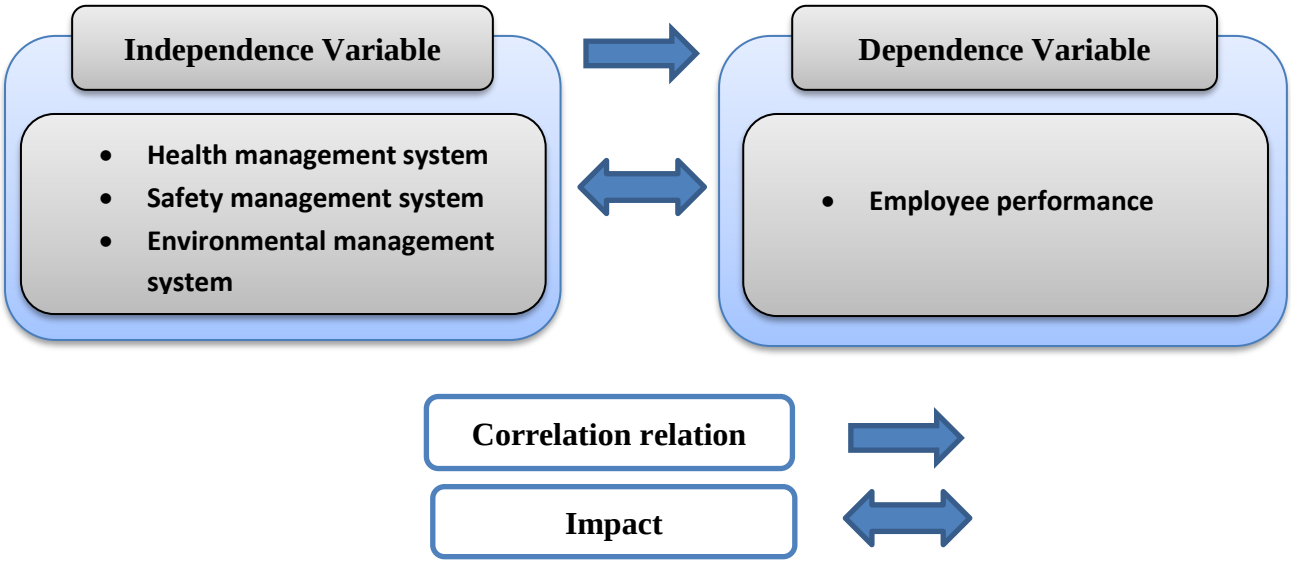

FIGURE 1. Model

3.2. THE BORDERS OF RESEARCH:

3.2.1. HUMAN BORDERS: includes all employees working for Crescent Petroleum in the Khurmor Liquefied Petroleum Gas Field.

3.2.2. LOCATION BORDERS: The Khurmor Liquefied Petroleum Gas Field was chosen as a study field. The reasons for choosing the site are due to its suitability to the nature of the variables in the study, it is also a convenient place to test the models and hypotheses in the study.

3.2.3. TIME LIMITS: The study time was from January to October 2024. This time included data collection, writing of the theoretical part, distribution and retrieval of questionnaires, and analysis of the data.

3.2.4. OBJECTIVE BORDERS: Cognitive boundaries embodied in two axes: management systems (health, safety and environment) as an independent variable, and employee performance as a dependent variable. These variables are suitable and fit variable in the fields of management of petroleum and human resource management.

3.3. METHODS OF COLLECTING AND ANALYZING DATA: In order to achieve the objectives and answer the research questions, two different types of sources have been used, the first for the theoretical aspects, which include English and Kurdish sources, as well as articles and theses. In addition to the articles and papers provided through the online sources related to the research topic, benefits have also been drawn from previous studies that were necessary for the scientific framework of this research.

3.3.1. THE QUESTIONNAIRE FORM: It is a suitable tool for gathering data and information for the practical aspects of this research. Most of the items are based on evaluation that used in research related to the research topic; some items have been reshaped to suit the needs of the research in the Kurdistan Region of Iraq. The research questionnaire form included two different sections, which are described as follows:

A. General Information: It is some general information about the people who answer the questions on the questionnaire form (Sex, Qualification, Responsibility in Crescent petroleum company. Age, Duration of work in (Crescent petroleum company) the current location, Total working time in the oil and gas company, and participating in oil and gas courses).

B. Management System (MS) variable: (15) paragraphs were assigned to measure the management system variable and its three dimensions (Health Management System HMS, Safety Management System SMS, Environmental Management System EMS).

C. Employee Performance (EP) variable: (5) items were assigned to measure this variable.

The questionnaires were based on the so-called five-point Likert scale , focusing of five response types, represented by (strongly agree, agree, neutral, disagree, strongly disagree) with weights ranging from (5) to (1) respectively it is marked. This allows the respondents to choose the appropriate response. Table (1) illustrates the content of the questionnaire form broken down according to the variables and its dimensions of the study.

Table **(1) structure of the questionnaire form**

Research Variable	Dimensions of variables	Number of items	Scientific Sources
General information	General information	7	Authors
Health, Safety and Environmental Management Systems	Health Management System	5	(ILO, 2022) (Mearns et al., 2018) (Khan & Abbasi, 2020).
	Safety Management System	5	
	Environmental Management System	5	
HSE Management Systems		**15**	
Employee Performance	Employee Performance	5	(Fernández-Muñiz et al., 2017)
Employee Performance		**5**	

Prepared by Researchers

D. Sex: There are Sex differences by number among the respondents, namely male and female, as shown in the table below:

Table **(2) Sex information of the study sample**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**Female**	2	.2	3.2	3.2
	Male	61	6.1	96.8	100.0
	Total	63	6.3	100.0	

Prepared by Researchers

Table 2 and figure 2 shows a total of 63 participants, revealing a significant gender imbalance at the Khurmor Liquefied Petroleum Gas Field. The overwhelming majority of participants were male, accounting for 61 individuals or 96.8% of the valid responses. In contrast, there were only 2 female participants, making up just 3.2% of the sample.

This notable gender disparity likely mirrors the wider demographic patterns in the petroleum industry, especially in field operations.

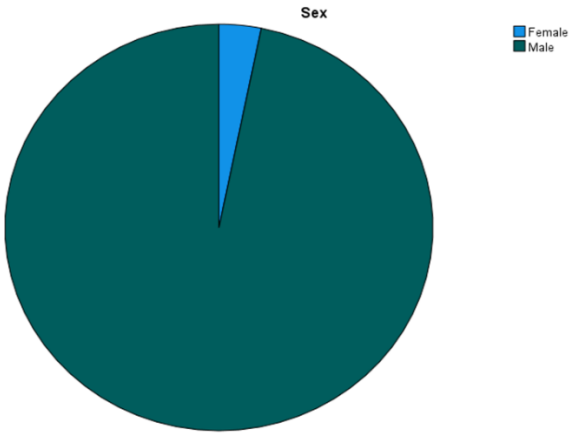

Figure **(2) Sex information of the study sample**

E. Qualification: Participants who answered the questions have different levels of qualifications, as shown in the table below:

Table **(3) Academic Qualification information of the study sample**

		Frequency	Valid Percent	Cumulative Percent
Valid	**Preparatory**	8	12.7	12.7
	Diploma	1	1.6	14.3
	Higher Diploma	2	3.2	17.5
	Bachelor	49	77.8	95.2
	Master	3	4.8	100.0
	Total	63	100.0	

The data in Table 3 and figure 3 revealed diverse educational backgrounds among the workforce of 63 participants employed in the Khurmor Liquefied Petroleum Gas Field. The workforce showed a diverse range of educational backgrounds, with a clear predominance of bachelor's degree holders, representing 77.8% of the sample (49 individuals). The second largest group consisted of preparatory-education participants, accounting for 12.7% of the sample (8 participants). A small number of participants held advanced degrees, with 4.8% (3 individuals) possessing master's degrees. Additionally, the study included 3.2% (2 participants) with higher diplomas and 1.6% (1 participant) with a diploma. These findings indicate a well-educated workforce, with 85.8% of the participants holding at least a bachelor's degree or higher. This high proportion of tertiary-educated employees likely reflects the technical and specialized nature of work in the liquefied petroleum gas industry. The presence of employees with preparatory education as the lowest qualification level suggests a range of roles within the field, possibly including technical and support positions.

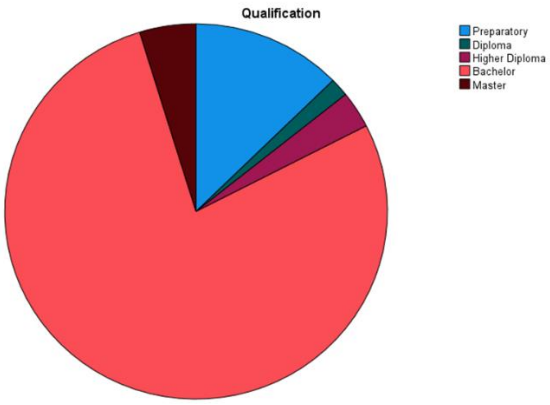

Figure **(3) Academic Qualification information of the study sample**

F. Responsibility: The responsibilities of the survey respondents vary, as shown in the table below:

Table (4) Responsibility information of the study sample

		Frequency	Valid Percent	Cumulative Percent
Valid	Employee	52	82.5	82.5
	Unit Manager	1	1.6	84.1
	Section Manager	2	3.2	87.3
	Supervisor	8	12.7	100.0
	Total	63	100.0	
Total		63		

The data in Table 4 and figure 4 show the job responsibilities of 63 employees at the Khurmor Liquefied Petroleum Gas Field. It revealed a typical hierarchical structure found in industrial settings. Most participants (82.5% of the sample) were Employees, indicating that they were mainly involved in front-line or operational roles. The next most common role was Supervisor, occupied by 12.7% of the sample. This suggests there is a supervisory layer overseeing the larger group of employees. At the higher levels of the organization, there were 2 Section Managers (3.2%) and 1 Unit Manager (1.6%). This distribution illustrates a pyramidal organizational structure, with a majority of employees at the base, fewer supervisors, and even fewer managers.

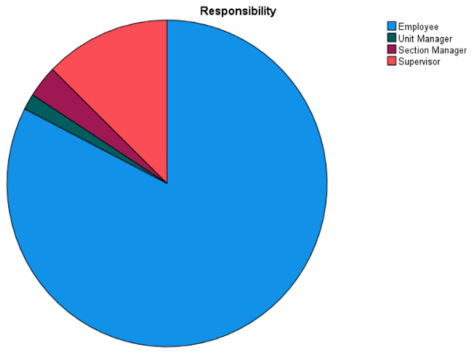

Figure (4) responsibility information of the study sample

G. Age: The ages of the survey respondents varied, as shown in the table below:

Table (5) Age information of the study sample

		Frequency	Valid Percent	Cumulative Percent
Valid	30 years and under	33	52.4	52.4
	31-40	30	47.6	100.0
	Total	63	100.0	
Total		999		

The data in Table 5 display the age distribution of 63 employees at the Khurmor Liquefied Petroleum Gas Field. The workforce was predominantly young, with two main age groups. The largest group consisted of 33 individuals (52.4% of the sample) who were aged 30 years and under. The second age group, 31-40 years old, comprised 30 participants (47.6% of the sample). The data indicates a significant presence of younger workers, with a slight skew towards the younger end of the spectrum. Notably, there were no participants over 40 years old, which could reflect industry trends, company hiring practices, or the physical demands of the work. This age distribution suggests a workforce combining the energy of younger workers with the growing experience of early to mid-career employees.

H. Duration of work in the Crescent petroleum company (current location): According to the experience of working in the oil and gas case, different experiences can be seen the survey respondents, as shown in the table below:

Table (6) Duration of work in the Crescent petroleum company (current location)

		Frequency	Valid Percent	Cumulative Percent
Valid	5 years and under	38	60.3	60.3
	6-10	18	28.6	88.9
	11 years and older	7	11.1	100.0
	Total	63	100.0	

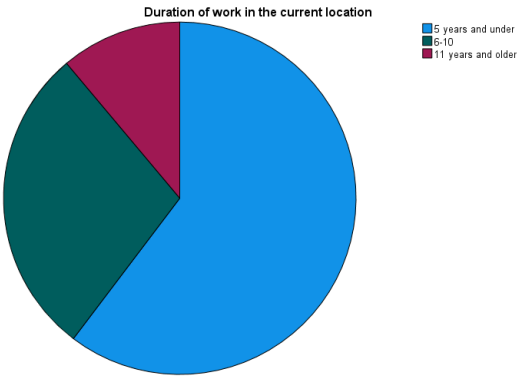

Figure (5) Duration of work in the current location

Table 6 and figure 5 illustrates the length of time 63 employees had been working at the Khurmor Liquefied Petroleum Gas Field. The findings showed that the workforce had employees with varying levels of experience in their current roles. The largest group, which comprised 38 individuals or 60.3% of the sample, had been working at their current location for 5 years or less. This significant proportion of relatively new employees suggests a recent period of hiring or expansion, or possibly a higher turnover rate in the industry. The second largest group consisted of 18 participants (28.6%) who had been in their current positions for 6 to 10 years, representing a cohort with moderate experience in the field. Lastly, a smaller group of 7 employees (11.1%) had the most extensive experience, having worked in their current location for 11 years or more.

Total working time in the Oil and Gas Companies: The length of time employee's work at oil and gas companies varies from employee to employee, as shown in the table below:

Table **(7) Total working time in the oil and gas companies.**

		Frequency	Valid Percent	Cumulative Percent
Valid	**5 years and under**	34	54.0	54.0
	6-10	21	33.3	87.3
	11 years and older	8	12.7	100.0
	Total	63	100.0	

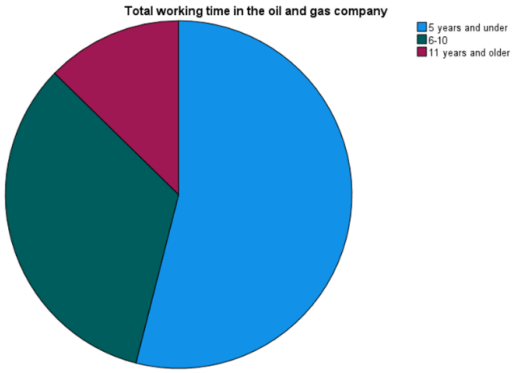

Figure (6) Duration of work in the oil and gas companies

Table 7 and figure 6 of the study examined the career duration of 63 employees in the oil and gas industry to gain insight into their cumulative experience. The largest group, comprising 34 individuals or 54.0% of the sample, had been working in the industry for 5 years or less. This suggests a significant influx of new talent into the sector in recent years. The second largest group included 21 participants (33.3%) who had 6 to 10 years of industry experience, representing a group with moderate industry experience. Lastly, a smaller group of 8 employees (12.7%) had the most extensive careers, having worked in the oil and gas sector for 11 years or more. This distribution reveals a workforce that is predominantly in the early to mid-stages of their oil and gas careers, with 87.3% having worked in the industry

for 10 years or less. The presence of a smaller group of long-term industry professionals indicates some retention of experienced workers, providing a valuable resource of deep industry knowledge.

3.3.2. RELIABILITY MEASUREMENT:

This section means the testing of the questionnaire would give the same results if reapplied another time under the same conditions. It is the measurement of extracting the coefficient of correlation between the items of the questionnaire. Reliability Analysis of this study id used the method of Alpha-Cronbach. In this method the Results are acceptable if the value is equal to or greater than (0.60) for management researches. The results of reliability measurement of the study have been demonstrated in Table (8).

Table (8) Reliability measurement through alpha-Cronbach method

Reliability Statistics	
Cronbach's Alpha	N of Items
.937	4

The study conducted a reliability analysis to assess the internal consistency of the measurement scales used in the research. The analysis resulted in a Cronbach's Alpha coefficient of 0.937 for a set of 4 items. This high alpha value indicates excellent internal consistency reliability among the items in the scale. Cronbach's Alpha values range from 0 to 1. Values above 0.9 are generally considered excellent, those between 0.8 and 0.9 are good, and those between 0.7 and 0.8 are acceptable. The obtained value of 0.937 falls well within the excellent range, suggesting that the 4 items in the scale are strongly interrelated and likely measure the same underlying construct. This high reliability coefficient provides strong evidence for the **consistency** and dependability of the measurement instrument used in the study. It indicates that the items work together cohesively and that the scale is likely to produce stable and consistent results.

4. HYPOTHETICAL TEST OF THE RESEARCH

This section describes and identifies the variables in the study, and verifies for the validity of the proposed research model by testing the research hypotheses and answering the questions in the study.

4.1. DESCRIPTIVE STATISTICS

Table **(9) descriptive Statistics of study variables and its dimensions**

	N	Minimum	Maximum	Mean	Std. Deviation
Health Management	63	1.00	5.00	3.9841	.85179
Safety Management	63	1.00	5.00	3.8762	.82104
Environmental Management	63	1.00	5.00	3.8095	.81946
Employee Performance	63	1.00	5.00	3.7439	.96581
Valid N (listwise)	63				

Table 9 presents descriptive statistics exploring the impact of Health, Safety, and Environmental Management Systems on Employee Performance. It offers a comprehensive overview of the data's central tendencies and variability across the four key variables: Health Management, Safety Management, Environmental Management, and Employee Performance.

4.2. EXAMINING THE CORRELATION RELATION BETWEEN THE RESEARCH VARIABLES:

Table **(10) Examining the correlation relation between the research variables**

		Health Management	Safety Management	Environmental Management	Employee Performance
Health Management	Pearson Correlation	1	.873**	.882**	.726**
	Sig. (2-tailed)		.000	.000	.000
	N	63	63	63	63
Safety Management	Pearson Correlation	.873**	1	.850**	.779**
	Sig. (2-tailed)	.000		.000	.000
	N	63	63	63	63
Environmental	Pearson Correlation	.882**	.850**	1	.685**

Management	Sig. (2-tailed)	.000	.000		.000
	N	63	63	63	63
Employee Performance	Pearson Correlation	.726**	.779**	.685**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	63	63	63	63
**. Correlation is significant at the 0.01 level (2-tailed).					

Data for each variable were obtained from 63 respondents (N = 63), with each measured on a 5-point Likert scale ranging from 1.00 to 5.00. The mean values indicate that respondents generally held positive views of their organizations' management practices. Specifically, Health Management received the highest mean score at 3.9841, indicating it was rated most favorably. In contrast, Employee Performance had the lowest mean score of 3.7439, suggesting somewhat less positive perceptions of this aspect compared to management practices. The standard deviations for these variables are all below 1, suggesting relatively consistent responses.

The standard deviation for Employee Performance was the highest, indicating slightly more variability in how respondents rated this aspect. In contrast, Health Management had the least variability with a standard deviation of 0.85179, indicating more consensuses among respondents. The study conducted a correlation analysis to examine the relationships between Health Management, Safety Management, Environmental Management, and Employee Performance at the Khurmor Liquefied Petroleum Gas Field. The analysis found strong, positive correlations between all variables, and all relationships were statistically significant at the 0.01 level.

Table **(11)ANOVA**[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	35.646	3	11.882	31.597	.000[b]
	Residual	22.187	59	.376		
	Total	57.833	62			
a. Dependent Variable: Employee Performance						
b. Predictors: (Constant), Environmental Management, Safety Management, Health Management						

Health Management had a very strong positive correlation with Safety Management (r = 0.873) and Environmental Management (r = 0.882), indicating that these aspects of management are closely interrelated. It also showed a strong positive correlation with Employee Performance (r = 0.726). Safety Management showed a very strong positive correlation with Environmental Management (r = 0.850) and the strongest correlation with Employee Performance (r = 0.779) among the three management aspects.

Environmental Management, while strongly correlated with Health and Safety Management, had the relatively weakest (though still strong) correlation with Employee Performance (r = 0.685). Employee Performance was positively and strongly correlated with all three management aspects, with Safety Management showing the strongest relationship, followed by Health Management and then Environmental Management.

Coefficients[a]

Table **(12) Dependent Variable**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.094	.390		.242	.810
	Health Management	.232	.223	.204	1.039	.303
	Safety Management	.731	.207	.621	3.524	.001
	Environmental Management	-.028	.215	-.024	-.131	.897
a. Dependent Variable: Employee Performance						

The study confidently employed multiple regression analysis to thoroughly investigate the impact of Health Management, Safety Management, and Environmental Management on Employee Performance in the Khurmor Liquefied Petroleum Gas Field. The ANOVA (Analysis of Variance) table was effectively utilized to assess the overall significance of the regression model.The regression model explained a sum of squares of 35.646, while the residual variance amounted to 22.187, resulting in a total of 57.833. The degrees of freedom for the regression model was 3, corresponding to the three predictor variables, while the residual degrees of freedom was 59, making a total of 62 degrees of freedom. The mean square for the regression model was 11.882, and for the residual, it was 0.376. The F-statistic, calculated as 31.597, signifies the overall significance of the regression model. The associated p-value (Sig.)

of 0.000 is less than the conventional significance level of 0.05, confirming the statistical significance of the regression model. This result indicates that the combination of Health Management, Safety Management, and Environmental Management significantly predicts Employee Performance. The very low p-value (p < 0.001) strongly suggests that the relationship between these predictor variables and Employee Performance is highly unlikely to have occurred by chance. The significant F-statistic confidently indicates that at least one of the predictor variables (Health Management, Safety Management, or Environmental Management) has a significant linear relationship with Employee Performance. This provides robust evidence for the relevance of these management practices in explaining variations in employee performance within the liquefied petroleum gas industry.

4.3. MODEL SUMMARY

The Model Summary table contains crucial information about the overall fit and explanatory power of the multiple regression models. This model thoroughly examines the influence of Health Management, Safety Management, and Environmental Management on Employee Performance in the Khurmor Liquefied Petroleum Gas Field. The multiple correlation coefficients (R) stand at a robust 0.785, signifying a strong positive relationship between the combination of predictor variables and the dependent variable, Employee Performance.

Table **(13) Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785[a]	.616	.597	.61323

a. Predictors: (Constant), Environmental Management, Safety Management, Health Management

Overall, these results demonstrate that the regression model, incorporating Health Management, Safety Management, and Environmental Management, has strong predictive power and explains a substantial portion of the variability in Employee Performance. The high R Square and Adjusted R Square values suggest that these management practices are indeed important factors in determining employee performance in the context of the liquefied petroleum gas industry. However, it's worth noting that approximately 38.4% of the variance in Employee Performance is still unexplained by this model.

4.3. Tests of Between-Subjects Effects

Table **(14) Dependent Variable: Employee Performance**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	57.757[a]	39	1.481	100.181	.000	.994
Intercept	426.362	1	426.362	28842.159	.000	.999
Health Management	1.355	5	.271	18.329	.000	.799
Safety Management	8.331	5	1.666	112.713	.000	.961
Environmental Management	4.731	7	.676	45.718	.000	.933
HealthManagement * SafetyManagement	.000	0	.	.	.	.000
HealthManagement * EnvironmentalManagement	.000	0	.	.	.	.000
SafetyManagement * EnvironmentalManagement	.062	1	.062	4.224	.051	.155
HealthManagement * SafetyManagement * EnvironmentalManagement	.000	0	.	.	.	.000
Error	.340	23	.015			
Total	942.160	63				
Corrected Total	58.097	62				

a. R Squared = .994 (Adjusted R Squared = .984)

The "Tests of Between-Subjects Effects" table provides an analysis of how each independent variable – Health Management, Safety Management, and Environmental Management - impacts Employee Performance. The Corrected Model shows a high F-value of 100.181 and a significant p-value ($p < .001$), indicating the model explains a substantial amount of variance in Employee Performance. The R Squared value of 0.994 and adjusted R Squared of 0.984 suggest the model is a strong fit. The Intercept has an exceptionally high F-value of 28842.159 and p-value < .001, with a partial eta squared of 0.999, showing the intercept significantly contributes to the overall variance in Employee Performance. Each independent variable significantly impacts Employee Performance. Health Management has an F-value of 18.329, p-value < .001, and partial eta squared of 0.799, indicating a large effect. Safety Management has the strongest effect, with an F-value of 112.713, p-value < .001, and partial eta squared of 0.961. Environmental Management also shows a significant effect, with an F-value of 45.718, p-value < .001, and partial eta squared of 0.933.

According to table (13), this clearly indicates that the three management practices, when considered together, have a substantial association with employee performance outcomes. The coefficient of determination (R Square) is an impressive 0.616, revealing that 61.6% of the variance in Employee Performance can be explained by the combined effects of Health Management, Safety Management, and Environmental Management. This compellingly demonstrates that these management practices account for a considerable portion of the differences observed in employee performance levels. The Adjusted R Square, a more conservative estimate accounting for the number of predictors, is 0.597, indicating that approximately 59.7% of the variance in Employee Performance is explained by the model. Additionally, the Standard Error of the Estimate is 0.61323, reflecting a low average deviation of predicted values from the observed values of Employee Performance, signifying a high level of prediction accuracy.

In summary, Safety Management has the strongest individual impact on Employee Performance, followed by Environmental Management and Health Management. Focusing on Safety Management and Environmental Management could yield the most substantial improvements in Employee Performance.

This study should be compared with several other studies conducted in the same field that address the effects of health, safety and environmental (HSE) management systems on employee performance. The results of these studies help to understand the benefits of HSE practices on productivity, morale and workplace safety.

First Study is the impact of health and safety management on employee productivity. This study was conducted by Wachira et al. (2020) the content of this study discusses the explored the relationship between health and safety management practices and employee productivity in manufacturing firms. The study was conducted in Kenya. Survey Used As the research method, 260 employees from several different companies participated in the survey. The study found a positive relationship between management, health and safety effects and increased employee productivity. Employees performed better when they felt safe and healthy in their workplace. These management processes have led to a reduction in workplace accidents (Wachira et al., 2020).

The second paper is to discuss the environmental management system and employee performance in the petroleum sector

This study conducted by Azapagic & Perdan (2019) is the impact of environmental management systems (EMS) on employee engagement and performance in European oil companies. The study interviewed 180 employees, all of whom work in oil refineries, and assessed their level of awareness and attitudes towards environmental management policies. The results showed that employees who participated in EMS programs had higher levels of efficiency than other employees. The study emphasized the role of EMS to increase HSE management, such environmental outcomes programs have improved health, safety and environmental management. It has created a safer, more committed and performing workforce (Azapagic & Perdan, 2019).

The results of both studies are consistent with the present study, indicating the appropriate selection of study variables and dimensions of each variable. It is also an indication of the adequacy of the study sample.

5. CONCLUSIONS AND RECOMMENDATIONS

This chapter includes the intellectual and field frameworks that the researcher has reached. It also presents the most important conclusions of the study in order to enrich the theoretical and field aspects. The second part of this chapter discusses the most important recommendations for future research to improve petroleum companies in the Kurdistan Region. The sections of this chapter are listed below:

5.1. CONCLUSIONS

In this section, the intellectual and field results of the study are presented, and based on the results of the statistical analysis; the conclusions related to the field aspect of the study are presented in Crescent Petroleum. The most important of these outcomes are:

The variable measurements in the study achieved a high level of reliability. This is a very clear indication of the accuracy and effectiveness of these measures in measuring the variables in the study, and indicates that the study was

conducted without any interference or complications, This indicates that it is possible to obtain the same results again if the test is repeated several more times on Crescent petroleum Company in Khurmor liquefied gas field. Correlational statistical results demonstrated that there is a direct and significant relationship at the level of variables between health, safety and environmental management system and employee performance in Crescent petroleum Company in Khurmor Liquefied Gas Field. Correlation statistical results demonstrated that there is a direct and significant relationship between health, safety and environmental management system dimensions and employee performance in Crescent petroleum Company in Khurmor Liquefied Gas Field at dimension levels.
The strongest relationship was between environmental management and employee performance. However, the weakest relationship was between health management and employee performance. The results showed that the management systems of health, safety and environment affected employee performance. This means that employee performance derived a lot of characteristics from the dimensions of the management systems of health, safety and environment, obtained by the present research.

5.2. RECOMMENDATIONS

This section is to provide some recommendations which can be used by oil and gas companies and other organizations in the future. They are presented as follows:

1. Alignment and integration of HSEMS into company strategy, this is done when assurance is created that health, safety and environmental policies are included in the company's strategic objectives in order to enhance employee engagement and performance.
2. Focus on employee training and capacity building by providing HSEMS training to employees to raise awareness and skills and commit employees to safety principles, leading to increased productivity and reduced risks.
3. The priority of companies must be to emphasize on fostering a culture of safety, which can be achieved by promoting a culture that prioritizes the safety of employees. This process encourages employees to participate in identifying risks and proposing mitigations of those risks.
4. Companies should have a thorough monitoring system. A strong mechanism can be designed to monitor and evaluate the effectiveness of HSEMS, which will improve employee performance.
5. Provide opportunities for employees to participate in decision making, which can have good results if employees are involved in the design and review of health and safety systems, which fosters ownership, commitment and improved overall performance.

REFERENCES

[1] A. Azapagic and S. Perdan, "Environmental management systems in the petroleum industry and their impact on employee performance," *J. Environ. Manag.*, vol. 245, pp. 445-452, 2019.
[2] A. Juma, "Safeguard Practices among Households on Handling Liquefied Petroleum Gas Cylinders for Better Health and Safety in the Urban Municipality of Zanzibar," Doctoral dissertation, The Open University of Tanzania, 2023.
[3] A. Nour, M. A. Massoud, M. Mokbel, and I. Alameddine, "Evaluating the integration of health, safety and environmental management practices in the oil and gas companies," *Journal of Environmental Science and Public Health*, vol. 5, no. 3, pp. 379-396, 2021.
[4] Al-Mutairi and S. Al-Kandari, "Environmental and safety management systems in the oil and gas industry: A Middle Eastern perspective," *Environmental Management*, vol. 63, pp. 269-282, 2019.
[5] Arif, A. Babar, and J. Iqbal, "Impact of health, safety, and environment management on organizational performance: A study in the oil and gas industry," *Journal of Safety Research*, vol. 81, pp. 55-64, 2022.
[6] B. U. Putra, S. Kot, A. H. H. Ibrahim, and I. Rajiani, "Human Resource Productivity: Integrating Resilience Engineering, Motivation, and Health Safety," *Production Engineering Archives*, vol. 30, no. 1, pp. 105-114, 2024.
[7] Benson, I. C. Obasi, D. V. Akinwande, and C. Ile, "The impact of interventions on health, safety and environment in the process industry," *Heliyon*, vol. 10, no. 1, 2024.
[8] C. Abarghoei, A. Akhawan, and R. Soltani, "Evaluation of the relationship between the establishment of the safety, health and environment management system on the performance of employees of the coking complex and refineries-Iranian Zarand Steel Company," *Occupational Medicine*, 2024.

[9] Celestin, M. Vasuki, S. Sujatha, and A. D. Kumar, "Enhancing Employee Satisfaction and Engagement to Boost Productivity: The Role of Leadership, Culture, and Recognition Programs," *International Journal of Computational Research and Development*, vol. 9, no. 2, pp. 67-74, 2024.
[10] Crescent Petroleum, *Sustainability Report 2023*, Crescent Petroleum, 2023.
[11] D. Abdulla, L. Alhakim, and P. Muhamad, "Marketing auditing and its impact on the performance of productive universities based on the interactive impact of the principles of academic governance," *7th International for Quality Assurance and Governance in Kufa University. Academic Governance a Way Towards Education Quality*, vol. 7, pp. 497-517, 2019.
[12] Fernández-Muñiz, J. M. Montes-Peón, and C. J. Vázquez-Ordás, "Safety management system: Development and validation of a multidimensional scale," *Journal of Loss Prevention in the Process Industries*, vol. 49, pp. 303-314, 2017.
[13] Fu and Y. Zhang, "Safety culture and employee performance: Evidence from the energy sector," *Safety Science*, vol. 142, 2021, Art. no. 105362.
[14] H. Y. Wai, "Cyber Security Training Practices and Employee Work Performance at Global Treasure Bank," Doctoral dissertation, MERAL Portal, 2024.
[15] I. Khan and S. A. Abbasi, "Techniques and methodologies for risk analysis in chemical process industries," *Journal of Loss Prevention in the Process Industries*, vol. 67, 2020, Art. no. 104253.
[16] International Labour Organization (ILO), "Occupational safety and health," Retrieved from ILO, 2022.
[17] Kashyap, A. Verma, and N. Singh, "Enhancing employee performance through safety management practices: Insights from the LPG industry," *Journal of Business Research*, vol. 155, 2023, Art. no. 104761.
[18] M. Lari, "A longitudinal study on the impact of occupational health and safety practices on employee productivity," *Safety Science*, vol. 170, 2024, Art. no. 106374.
[19] M. M. Mudhsh, A. S. A. Hassan, A. S. Maaodhah, A. M. S. Baadhem, and F. F. Al-Hosaini, "Impact of project management soft skills training on employee performance in the oil and gas projects in Yemen," *Technology and Business Model Innovation: Challenges and Opportunities*, vol. 2, pp. 206, 2024.
[20] M. Qadir, R. M. Nori, and D. F. Abdulla, "The Role of Green Human Resources Management in Achieving Organizational Sustainability: An analytical study of the opinions of administrative leaders," *Eurasian Journal of Management & Social Sciences*, vol. 3, no. 3, pp. 1-21, 2022.
[21] M. Wachira, S. Maina, and A. Wambui, "The impact of health and safety management practices on employee productivity in Kenyan manufacturing firms," *Int. J. Bus. Manag.*, vol. 15, no. 5, pp. 60-68, 2020.
[22] Mearns, L. Hope, M. T. Ford, and L. E. Tetrick, "Investment in workforce health: Exploring the implications for workforce safety climate and commitment," *Safety Science*, vol. 105, pp. 101-111, 2018.
[23] O. Odeyemi, "Integrating environmental and health and safety management system in the oil and gas sectors: A case study of Nigeria," 2022.
[24] O. Othman, D. Abdulla, and L. Bayiz, "The role of Occupational health and safety in improving employees performance: An exploratory study for the opinions of employees in BAZIAN Cement Plant," *Kurdistan Academic Association Journal*, Kurdistan Academic Association and KTRC, vol. 3, no. 3, pp. 351-377, 2015.
[25] Oh, "Innovation in HSE management for sustainable development," Master's thesis, J. Oh, 2023.
[26] R. Yanty, S. P. S. Patiro, and L. N. Wati, "The Role of Employee Empowerment in Mediating the Effect of Leader-Member Exchange on Employee Performance in Dekranasda Riau Islands Province 2021-2024," *Organization and Human Capital Development*, vol. 3, no. 1, pp. 108-122, 2024.
[27] Reuters, "Fire at Dana Gas LPG plant in Iraq kills one," *Reuters*, 2012. [Online]. Available: https://www.reuters.com/article/business/energy/fire-at-dana-gas-lpg-plant-in-iraq-kills-one-idUSL5E8HO0TK/. Accessed: Nov. 8, 2024.
[28] S. K. Ahmed, and R. A. Hussein, "The impact of HSE management systems on employee performance: A case study of Crescent Petroleum," *Journal of Safety Research*, vol. 75, pp. 88-95, 2022.
[29] S. Salih, "Capacity building fees provisions of the Kurdistan region production sharing contracts as a mandatory corporate social responsibility tool," *The Journal of World Energy Law & Business*, vol. 16, no. 4, pp. 339-353, 2023.
[30] S. Sharma and P. Bansal, "Environmental management systems and organizational performance: A study in the context of the LPG industry," *Environmental Management*, vol. 70, no. 3, pp. 485-499, 2022.

[31] Sarkheil, B. Tahery, B. Rayegani, J. Ramezani, H. Goshtasb, and A. Jahani, "Evaluating the current status of the national health, safety, and environment management system for integration, harmonization, and standardization of environmental protection," *Health Risk Analysis*, vol. 1, pp. 18-24, 2020.

[32] W. Chen, X. Liu, and J. Li, "The impact of health and wellness programs on employee productivity: A case study in the petroleum sector," *Journal of Occupational Health Psychology*, vol. 27, no. 2, pp. 235-247, 2022.

[33] Wang, K. X. Li, and Y. Xiao, "Measuring marine environmental efficiency of a cruise shipping company considering corporate social responsibility," *Marine Policy*, vol. 99, pp. 140-147, 2019.