Scholars Journal of Engineering and Technology

OPEN ACCESS

Abbreviated Key Title: Sch J Eng Tech
ISSN 2347-9523 (Print) | ISSN 2321-435X (Online)
Journal homepage: https://saspublishers.com

The Effects of ISO 45001:2018 Components on Injuries and Occupational Accidents: A Case Study in the Dhahra Field of the Waha Oil Company

Ali Hisain Mutaleb Abudabbus[1*]

[1]PhD Student, Faculty of Mechanical Engineering and Transport Systems, Institute of Psychology and Ergonomics, Sekr. MAR 3-1 Marchstr .23, D-10587 Berlin, Germany. Technical University Berlin

DOI: https://doi.org/10.36347/sjet.2024.v12i08.003 | **Received:** 07.07.2024 | **Accepted:** 16.08.2024 | **Published:** 21.08.2024

***Corresponding author:** Ali Hisain Mutaleb Abudabbus
PhD Student, Faculty of Mechanical Engineering and Transport Systems, Institute of Psychology and Ergonomics, Sekr. MAR 3-1 Marchstr .23, D-10587 Berlin, Germany. Technical University Berlin
Email: ali.h.mutalebabudabbus@campus.tu-berlin.de, brilliant.bodabose@gmail.com

Abstract **Original Research Article**

The study aimed to evaluate the impact of the components of the ISO 45001:2018 standard on occupational injuries and accidents in the Dahra field of the Waha Oil Company in Libya. To achieve this goal, the quantitative approach was employed, and a random sample of 200 workers in the Dahra field was targeted. Data were collected through a questionnaire distributed to the sample, from which 170 questionnaires were returned. The ISO 45001:2018 standard was measured through seven components referred to by the ISO45001:2018 organization in its 2024 edition, while injuries and occupational accidents were measured through a literature review of previous research and works. The study model was built based on the researcher's critical reviews, which resulted in seven hypotheses. Before testing the hypotheses, tests were conducted on the nature of the data, linearity, and homogeneity of variance. In light of this, multiple linear regression was determined to test the hypotheses. The results of the multiple regression analysis indicated that there are negative effects of the components of applying the standard specification ISO 45001 on occupational injuries and accidents. That is, the components of ISO 45001:2018 reduce these injuries and accidents. The current study recommends expanding the construction of causal models in which the application of ISO45001:2018 is a solution to organizational problems.

Keywords: ISO45001, Components of ISO45001, Injuries and Occupational Accidents.

INTRODUCTION

As of my last update in 2023, global statistics on injuries and work accidents vary significantly depending on the source, the definition of "accident," and the methodologies used for data collection. According to the International Labour Organization (ILO), approximately 2.78 million workers die due to occupational accidents or work-related diseases annually. This figure represents about 6.7 fatalities per 1000 workers. (https://www.phind.com).

In this regard, Characteristics of recurrent occupational accidents were studied using a dataset of a Finnish insurance company including 21,580 subjects having at least two compensated workplace accidents with the same working process. For more than two thirds (70%) of the subjects, the circumstances and causes of the first accident did not reoccur in the second accident but their recurrence was substantial, typically around 30%. Working process and characteristics of the first accident affected the reoccurrence. In services, the violence-related accidents reoccurred for every second subject but losing control of machine only for every eighth subject. Moreover, the latter accidents were more severe than the former accidents. On average, two times more days were lost in the second than in the first accident (Pietilä, Räsänen, Reiman, Ratilainen, & Helander).

Barkhordari, Malmir, and Malakoutikhah (2019) pointed out that although previous studies and the present study showed the effect of stress on accident and accident proneness, some hidden and external factors such as work–family conflict, effort–reward imbalance, and external locus of control that affect stress should also be considered. It helps industries face less occupational stress and, consequently, less occurrence rates of accidents.

This study investigates how to reduce occupational injuries and accidents in Al-Dahra oil field

of Waha Oil Company (WOC) by applying the impact of ISO 45001:2018 components.

LITERATURE REVIEW

COMPONENTS OF ISO45001:2018

ISO 45001 is an international standard that specifies requirements for occupational health and safety (OH&S) management systems. It provides a framework for organizations to manage OH&S risks and opportunities effectively to ensure the well-being of employees (www.phind.com).

ISO 45001 emphasizes a proactive approach to managing OH&S risks and opportunities. It requires organizations to integrate OH&S considerations into their business activities, continuously improve their OH&S performance, and engage with interested parties to share information and lessons learned. By following these factors, organizations can create safer working conditions, reduce workplace injuries and illnesses, and enhance overall employee well-being (www.phind.com). According to the key components of ISO 45001 are:

First, Context of the Organization: ISO 45001 Context of the Organisation is all about understanding how different factors impact an organisation's ability to keep its workers safe and healthy. It includes looking at the organisation's purpose, size, activities, and the needs of workers and others involved. Key elements of ISO 45001 Context assessment are purpose alignment, internal and external factors, worker needs and expectations, Legal and regulatory requirements (Taylor, 2023).

Second, leadership and Commitment: Top Management are required to demonstrate leadership and emphasize the importance of effective safety and conforming to the OH&S requirements. Moreover, leadership must also ensure that the OH&S Management System is achieving its intended results, and that continual improvement is driven within the organisation. The leadership and commitment requirements under ISO 45001 are effective promotion of safety, initial commitment to ISO 45001, and involvement of senior management (*Keen, 2022)*.

Third, Planning of ISO45001: Organizations need to plan how to address OH&S risks and opportunities. This involves setting OH&S objectives and planning actions to achieve them, as well as determining the necessary resources and arranging for their availability (www.phind.com).

Fourth, support of ISO45001: Providing the infrastructure and other resources needed to support the OH&S management system. This includes establishing communication processes, documenting information, and managing documentation (www.phind.com).

Fifth, Operation: Ensuring that all operations are conducted in a way that takes into account the identified OH&S risks and opportunities. This includes providing safe work equipment, implementing emergency preparedness programs, and ensuring compliance with legal and other requirements (www.phind.com).

Sixth, performance evaluation: ISO 45001 performance assessment provides guidance and requirements for assessing the effectiveness and efficiency of controls and processes implemented and monitoring the achievement of occupational health and safety objectives. ISO 45001-performance assessment enables organizations to systematically assess the effectiveness of their occupational health and safety management system in achieving desired outcomes and complying with legal and other requirements. According to ISO 45001, organizations must implement, establish and maintain a process for assessing compliance with legal and other requirements by defining methods for assessing compliance, evaluating compliance and taking necessary actions, and maintaining documented information about the results obtained from compliance assessments (Taylor, 2023).

Lastly, Management Review: The organization should conduct a systematic review of its occupational health and safety management, including discussion of changes in internal and external issues and their potential impact on the strategic direction of the organization. The organization’s management review should also include discussion of the performance of the external provider and supplier, and an assessment of risk management procedures *(Keen, 2024)*.

INJURIES AND OCCUPATIONAL ACCIDENTS

Injuries and occupational accidents are significant concerns in various industries, affecting both the well-being of employees and the overall productivity of businesses. To address these issues, it's crucial to understand the causes and implement preventive measures.

According to the LODS website, based on firm-level data of Korean manufacturing industries, in its study that analyzed the quantitative effects of occupational accidents on corporate performance using econometric techniques, it revealed that an increase in occupational accidents reduces sales per employee, operating profit per employee, operating profit-to-sales ratio, and sales growth rate at a statistically significant level. Specifically, a 1% increase in the occupational accident rate reduces sales per employee by about 12.15~14.31 million KRW, reduces operating profit per employee by about 2.11~2.47 million KRW, reduces operating profit-to-sales ratio by about 1.11~1.21%, and reduces sales growth rate by about 0.45~0.71% **(**Kim, & Park, 2021).

Petrenko, Chencheva, Zozulia, Shevchenko, and Lohvinkov (2024) analyzed the causes of occupational injuries, identified risk factors for employees, and improved safety and accident prevention

standards at the workplace. The results of their study provided a detailed picture of the changing course of injuries among industrial workers in Ukraine, which is closely related to their length of service and experience in the enterprise. Based on this understanding, a specific risk assessment formula was derived that explains the relationship between injuries and length of service. In addition, a comprehensive analysis of the structure of injuries during different work shifts revealed a clear tendency for accidents to occur in the evening and at night, partly due to the psychological and physiological stress experienced by employees during these periods and the influence of microclimatic working conditions.

Swaen, van Amelsvoort, Bültmann, Slangen, & Kant (2004) tested the relationship between psychosocial job characteristics and the risk of occupational injury in the Maastricht Study of Work Burnout, a prospective cohort study of employees (n = 7051) from a wide range of companies and organizations. After adjusting for demographic variables, fatigue, and factors describing the type of work environment that a job requires, emotional demands, and conflicts with supervisor and/or colleagues are risk factors for occupational injury.

The Phind website indicated that the most important causes of accidents in the workplace are the lack of safety measures that can lead to the absence of appropriate safety protocols and equipment, which can lead to accidents. In addition, insufficient personal protective equipment such as helmets, gloves, safety glasses and seat belts can expose workers to risks. In addition, overtime and fatigue represented by excessive working hours due to may increase the likelihood of making mistakes. Addressing employment levels and promoting work-life balance can reduce the incidence of injuries associated with overwork. On the other hand, neglecting the maintenance of machines, vehicles and tools and designing them without adequate safety features may expose workers to injuries (https://www.phind.com).

FRAMEWORK AND HYPOTHESES

ISO 45001, the International Standard for Occupational Health and Safety (OH&S) Management Systems, has emerged as a pivotal tool for organizations aiming to enhance workplace safety and health. Introduced in 2018, this standard provides a framework for managing OH&S risks and improving performance in this area. The impact of ISO 45001 on reducing occupational accidents and enhancing workplace safety has been a subject of interest among researchers, practitioners, and policymakers.

The components of ISO 45001—leadership commitment, worker participation, hazard identification and risk assessment, legal compliance, emergency preparedness, and continual improvement—work together to create a comprehensive OH&S management system. By addressing both the physical and cultural aspects of workplace safety, ISO 45001 helps organizations significantly reduce injuries and occupational accidents, enhancing overall worker well-being and organizational performance (International Organization for Standardization, 2024).

Sehsah, El-Gilany, & Ibrahim's (2020) study aimed to measure the prevalence of personal protective equipment use, accidents and associated factors among construction workers in Egypt. The results indicated that about 60% of workers used PPE during work. The main reasons for non-use were discomfort, lack of knowledge on how to use it, and poor fit. 64.3% of workers reported occupational accidents in the last 12 months. The main types of accidents were being struck by falling objects, falling from height, and tool-related accidents. Safety training was the significant independent predictor of PPE use (AOR = 2.0). However, age, marital status, smoking, safety training, and PPE use were also significant independent predictors of accidents (AOR = 2.4, 3.1, 0.5, 0.5, and 0.2, respectively).

Research on the effectiveness of ISO 45001 in reducing occupational accidents presents mixed findings. While some studies report a statistically significant reduction in industrial accidents following the implementation of ISO 45001, others do not observe such effects. This discrepancy may stem from variations in how organizations implement the standard, differences in baseline safety conditions, and the complexity of measuring the impact of ISO 45001 across diverse industries and regions (Joo & Baek, 2024). On this basis, the current study examines the effect of each component of ISO 45001:2018 on work accidents and injuries. Therefore, the results of the study provide a more comprehensive explanation of the results of the relationship.

According to the above discussion, the study framework can be assumed to include the components of ISO 45001 as independent variables, and occupational injuries and accidents as the dependent variable as shown in the figure 1.

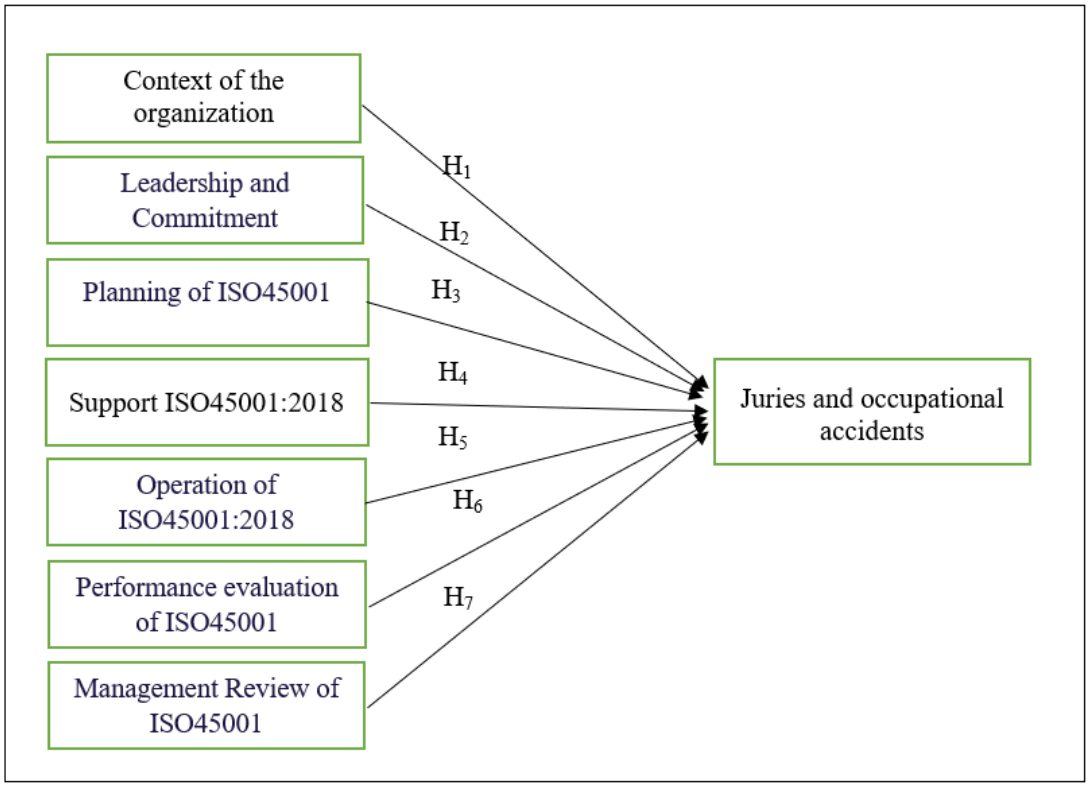

Figure 1: Theoretical Framework

The framework shows seven hypotheses that need to be tested and are structured as follows:
Therefore, the research hypotheses can be formulated as follows:

1. The context of the organization does not affect juries and occupational accidents.
2. **Leadership and Commitment of ISO45001:2018** does not affect juries and occupational accidents.
3. **Planning** does not affect juries and occupational accidents.
4. **Support ISO45001:2018** does not affect juries and occupational accidents.
5. **Operation of ISO45001:2018** does not affect juries and occupational accidents.
6. **Performance Evaluation of ISO45001:2018** does not affect juries and occupational accidents.
7. **Management Review of ISO45001:2018** does not affect juries and occupational accidents.

METHODOLOGY

Given the nature of the study objectives and its foundation on hypotheses, the quantitative design is the most appropriate.

The researcher used a simple random sample of 170 workers in the Dahra field of the Oasis Company in Libya. The questionnaire was used as a tool for collecting data. ISO 45001:2018 was measured through components (3 items for each component, except for the planning component which is measured by four items), and each component contains a set of paragraphs International Organization for Standardization, 2018). On the other hand, injuries and work accidents were measured by five items (Atombo *et al.*, 2017; Segbenya & Yeboah, 2022). All items are measured on a three-point Likert scale from 1 = disagree to 3 = agree. The statistical method used to test the hypotheses will be determined after examining the assumptions necessary for the data set.

RESULTS

DISTRIBUTION ASSUMPTION

Coefficients of both skewness and kurtosis were used to determine the nature of the data distribution of univariate data. Standard coefficient of skewness should be between (±1), while kurtosis is between (±3) (Awang, 2015). The results of the test in Table 1 indicated that the coefficients of both skewness and kurtosis fell within the range (±1 and ±3 respectively), therefore it can be considered that the study data follow a normal distribution.

The results in Table 1 revealed that the skewness and kurtosis values were as recommended, and therefore it can be said that the data follows a normal distribution.

Table 1: Normality Test of the Univariable

Component	Skewness		Kurtosis	
	Statistics	Std. Error	Statistics	Std. Error
Context of the organization	-.466	.186	-.363	.370
Leadership and Commitment	.947	.186	1.190	.370
Planning of ISO45001	.044	.186	2.161	.370
Support ISO45001:2018	-.068	.186	1.379	.370
Operation of ISO45001:2018	-.127	.186	-.425	.370
Performance evaluation of ISO45001	-.355	.186	-.416	.370
Management Review of ISO45001	-.343	.186	-.129	.370
Job performance	.032	.186	.503	.370

LINEARITY ASSUMPTION

The results of the data linearity test as shown in Figure 2 showed that the points were clearly close on a straight line, and therefore there is no evidence that this assumption was violated.

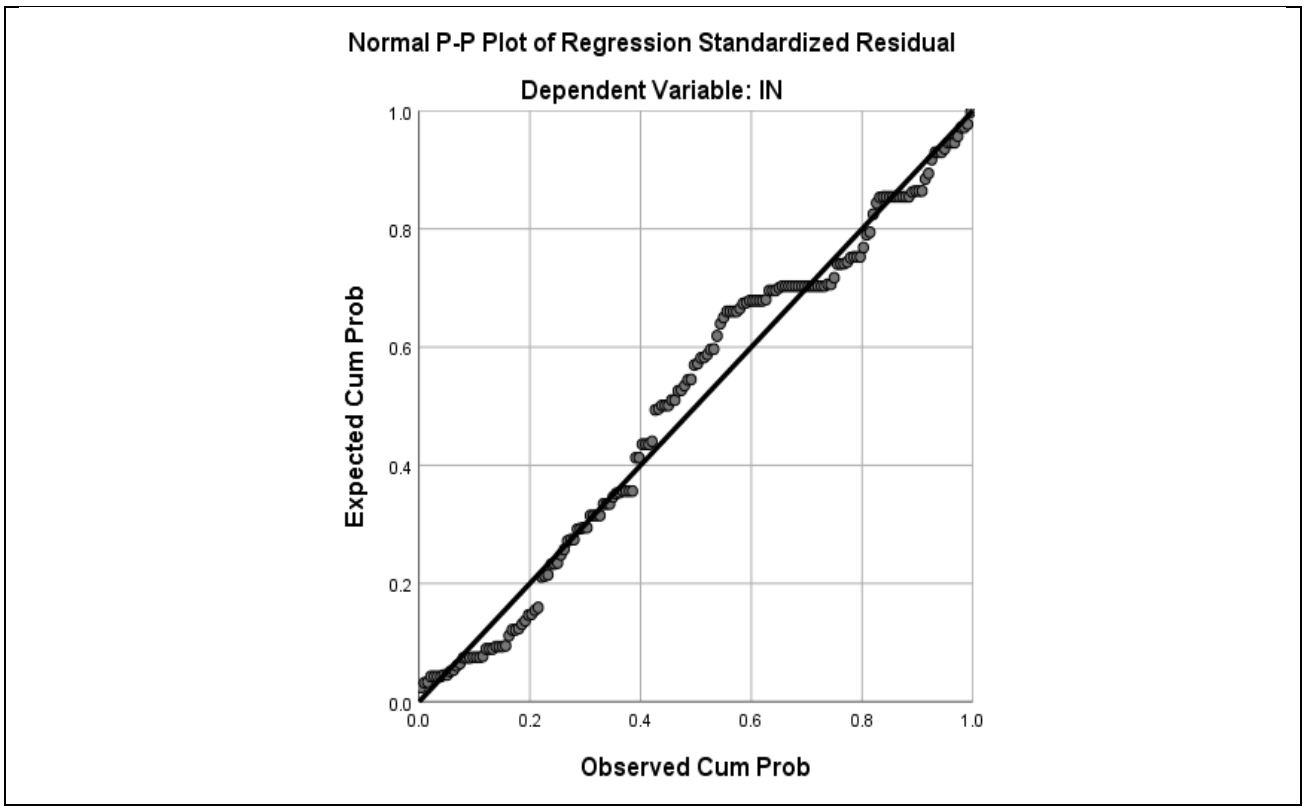

Figure 2: Linearity Assumption

HOMOSCEDASTICITY ASSUMPTION

Figure 3 appears the results of the homoscedasticity test through scatter plot diagrams of standardised residuals. These results indicate that homoscedasticity exists in the set of IVs (components of ISO45001:2018) and the variance of the DV (injuries and occupational accidents). Furthermore, a visual inspection of the distribution of residuals suggests an absence of heteroscedasticity.

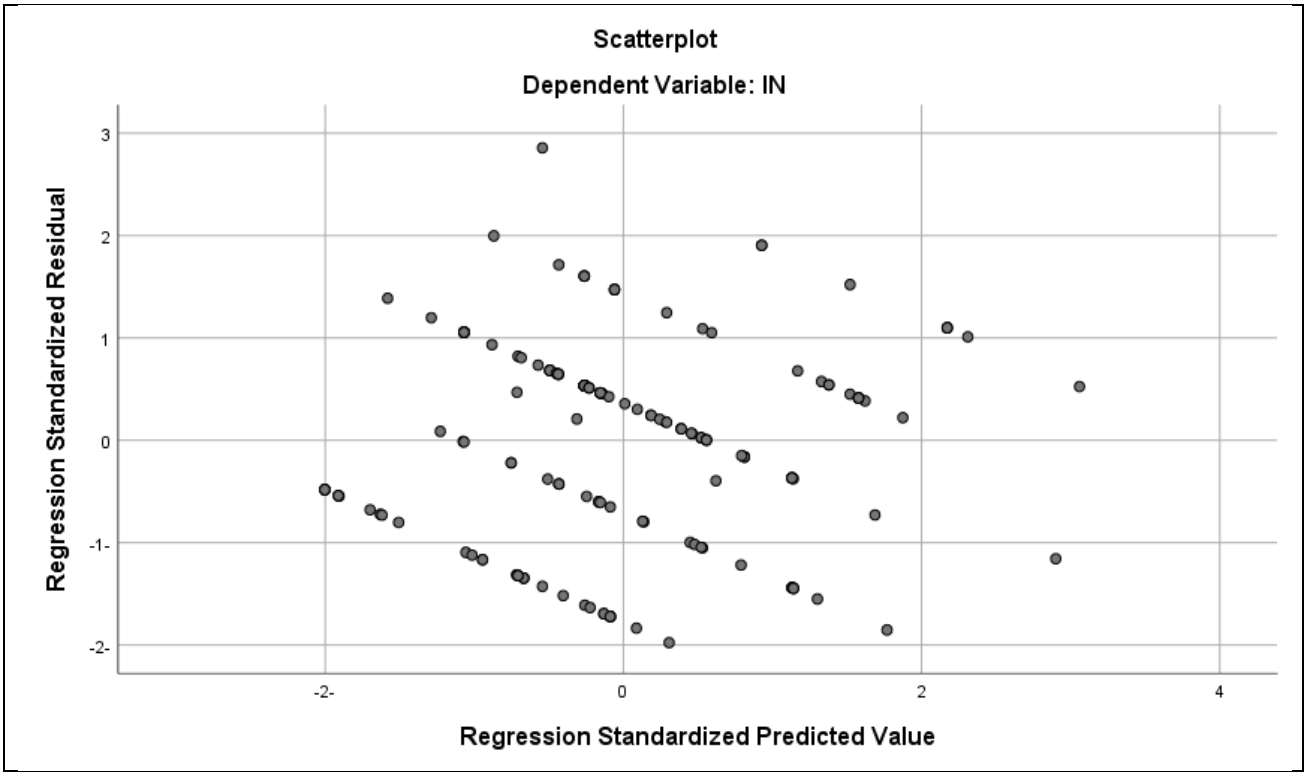

Figure 3: Homoscedasticity Assumption

THE MULTICOLLINEARITY ASSUMPTION

The multicollinearity test was used to investigate the correlations among independents variables, in which coefficients of correlation should not exceed .85 (Hair, Black, Babin, & Anderson ,2010). Person's test revealed that all coefficients of correlations less than .85, which, means there is no multicollinearity among all the independent variables.

EXPLORATORY FACTOR ANALYSIS

In order to obtain an appropriate factor structure for the analysis, exploratory factor analysis (EPA) was used a number of times, and the results of the analysis were as shown in Table 2. The factors were extracted by principal components method, and the varimax for rotation was used in the EFA. The findings indicated that 8 items were excluded and-19 items were kept. Moreover, the results also indicated the integration of the planning of ISO45001 component with the performance evaluation of ISO45001 into one factor.

The results also provided strong evidence of data quality and suitability for factor analysis, as (KMO') value exceeded (.74), Bartlett's Test of Sphericity was 2780, df = (171), and p- value less than (.05). Table 3 explains Rotated Component Matrix of EFA.

Descriptive Analysis

In this section, means and standard deviations were used to describe whether the workers' expectations about the degree of application of ISO components and the level of injuries are high or low in the Dhahra field of Waha Oil Company. The mean is considered an indicator of these levels according to the five-point Likert scale, which indicates that the arithmetic mean that falls in the range (1-1.79) is very weak, the mean that falls in the range (1.80 - 2.59) is weak, the mean that falls in the range (2.60 - 3.39) is average, the mean that falls in the range (3.40 to 4.19) is high, and the mean that falls in the level (4.20 to 5) is very high (Abudabbus, 2024).

Table 2: Rotated Component Matrix of EFA

	Factors				
	1	2	3	4	5
ISO1				.912	
ISO2				.872	
ISO3				.825	
ISO4			.888		
ISO5			.933		
ISO6			.905		
ISO7		.708			
ISO8		.761			
ISO9		.872			
ISO10		.508			
ISO11					.744
ISO12					.673
ISO14					.728
ISO15					.820
ISO18		.644			
ISO19		.512			
IN10	.900				
IN20	.949				
IN30	.952				

The results of the descriptive analysis indicated that the respondents' expectations regarding the application of the components of ISO 45001 were average because they fell within the level (2.60-3.39) mentioned above, with the exception of the leadership and communications component, whose application expectations were weak (mean = 2.49). Moreover, the respondents' opinions indicated that the level of accidents and work injuries within the Dhahra oilfield was average (mean = 2.66).

HYPOTHESIS TESTING

Since the assumptions of linearity and homogeneity of residuals were met, multiple regression analysis was employed to test the study hypotheses. The coefficients of r, r^2, and adjusted $r^2$are shown in Table 3.

The results of the regression analysis showed that the correlation value of the ISO45001 components with job performance was (.52), which means that it is a moderate correlation (Sekaran & Bougie 2016), and that the value of (Adjusted R^2) = 25%, which means that the ISO45001 components explain 25% of the variance occurring in injures and occupational accidents, and subsequently 75% is explained by other factors that were not addressed in the current study.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square
1	.52	.27	.25

Table 4 revealed the results of the ANOVA analysis, where the F value was 15 with two degrees of freedom (df= 4 and 165), and the significance level = .000, and it is less than .05, subsequently, we accept that the ISO45001 components have effect on the injuries and occupational accidents in Al-Dhahra field at Al-Waha Oil Company.

Table 4: ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.505	4	13.876	15.431	.000
	Residual	148.378	165	.899		
	Total	203.883	169			

Finally, multiple regression analysis revealed the ISO45001 components that had an impact on occupational injuries and accidents, and the type of impact is shown in Table 5. The results indicated that all ISO45001:2018 components had a significant effect (Sig. < 0.05) on injuries and occupational accidents, and the nature of the effect was negative (all Beta values were negative). The context of the organization had a negative effect on injuries and occupational accidents, as the effect size was (-.19). This means that whenever this component increased by one unit, injuries decreased by 19%. Similarly, a one-unit increase in leadership and commitment, planning and performance evaluation, and support and operation reduces injuries and occupational accidents by magnitudes of .19, .22, and .26 respectively. In short, the application of ISO components would reduce injuries and work accidents within the Dhahra field of Waha Oil Company.

Table 5: Effects of ISO45001:2018 Components

Model		Unstandardized Coefficients		Standardized Coefficient	t	Sig.
		B	Std. Error	Beta		
1	Constant	6.436	.497		12.95	.000
	C_O	-.231	.082	-.195	-2.80	.006
	L_C	-.307	.108	-.193	-2.83	.005
	PP	-.385	.122	-.220	-3.15	.002
	SO	-.350	.092	-.262	-3.79	.000

C_O= Context of the Organization; L_C= **Leadership and Commitment;** PP= **Planning and Performance evaluation of ISO45001:2018;** SO= Support and Operation.

DISCUSSION AND RECOMMONDATION

The purpose of the study is to investigate the components of ISO 45001 as predictors of occupational injuries and accidents. Seven components of ISO were used, and exploratory factor analysis was performed to reduce the components of ISO to four components. The results of the regression analysis indicated that the components of ISO are suitable for predicting injuries and work accidents in the Dhahra field of Waha Oil Company, as the results indicated that these components explain 22% of the variance in occupational injuries and accidents, while 78% is explained by other factors not studied in the current study. Therefore, it is recommended to develop the current study to include other variables such as employee satisfaction, absenteeism, and turnover. Despite the scarcity of

empirical studies that addressed ISO outcomes, there are some that linked ISO45001:2018 to the level of operational performance (Fahmi, Mustofa, Rochmad, & Sulastri, 2021), financial performance (Jannah *et al.*, 2020), and employee performance (Abudabbus, 2024; Purwanto *et al.*, 2020).

In contrast, ISO45001:2018 has received more attention from qualitative studies than empirical studies. For example, Malinda and Sudiantono (2022) conducted a literature review of the benefits of implementing ISO 45001 occupational health and safety management systems and implementation suggestions in the defense industry, while Fadhil (2021) evaluated the occupational health and safety management system based on the international standard (ISO 45001:2018). As for Liu, Liu, Li, and Wen. (2022), they identified and analyzed the barriers to the effectiveness of ISO 45001 certification in Chinese organizations based on the DEMATEL-ISM approach.

According to the above, the study recommends focusing on building relational and causal models and on in its light, experimental studies can be conducted that can provide important contributions to this field, especially in models of direct and indirect effects.

REFERENCES

- Abudabbus, A.H. (2024). "The Effects of ISO 45001 Components on Employees' Job Performance: Evidence from the Dahra Field at the Libyan Waha Oil Company". *Scholars Journal of Economics, Business and Management*, 11(7), 214-221. Doi: 10.36347/sjebm.2024.v11i07.005.
- Atombo, C., Wu, C., Tettehfio, E.O., Nyamuame, G.Y., & Agbo, A.A. (2017). "Safety and Health Perceptions in Work-related Transport Activities in Ghanaian Industries". *Safety and Health at Work*, 8, 175-182.
- Barkhordari, A., Malmir, B., & Malakoutikhah, M. (2019). "An Analysis of Individual and Social Factors Affecting Occupational Accidents". Safety and Health at Work, 10(2), 205-212.
- Fadhil, S. A. L. (2021). "Evaluate the application of the Occupational Health and Safety Management System based on International Standard (ISO 45001: 2018)": A Case Study in the Iraqi Ministry of Education. Journal of Techniques, 3(3).
- Fahmi, K., Mustofa, A., Rochmad, I., & Sulastri, E. (2021). "Effect ISO9001:2015, ISO14001:2015 and ISO45001:2018 on Operational Performance of Automotive Industries". *Journal Industrial Engineering & Management Research*, 2(1), 13-25.
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate Data Analysis: A Global Perspective*. New Jersey: Pearson Educational Inc.
- Jannah, M., Fahlevi, M., Paulina, J., Nugroho, B.S., Purwanto, A., Subarkah, M.A., Kurniati, E., Wibowo8, T.S., Kasbuntoro, Kalbuana, N., & Cahyono, Y. (2020). "Effect of ISO 9001, ISO 45001 and ISO 14000 toward Financial Performance of Indonesian Manufacturing". *Sys Rev Pharm*, 11(10):894-902.
- Joo, I & Baek, K. (2024). "The consequences of ISO 45001: preliminary analysis of cases in Korea". *Journal of Occup Health*, 66(1).
- *Keen, R. (23 February 2022). ISO9001checklist.* Leadership and Commitment [ISO 45001]. https://www.iso-9001-checklist.co.uk/.
- *Keen, R. (9 February 2024).* Management Review [ISO 45001, with Procedure]. https://www.iso-9001-checklist.co.uk/.
- Kim, D.K., & Park, S. (2021). "An analysis of the effects of occupational accidents on corporate management performance". Safety Science,138 , doi.org/10.1016/j.ssci.2021.105228
- Liu, X., Liu, Y., Li, H., & Wen, D. (2022). "Identification and analysis of barriers to the effectiveness of ISO 45001 certification in Chinese certified organisations: A DEMATEL-ISM approach". Journal of Cleaner Production, 383(10), (n.p).
- Malinda, A., & Soediantono, D. (2022). "Benefits of Implementing ISO 45001 Occupational Health and Safety Management Systems and Implementation Suggestion in the Defense Industry: A Literature Review". *Journal of Industrial Engineering & Management Research*, 3(2), n.p.
- Petrenko, Chencheva, O., Zozulia, S., Shevchenko, V., & Lohvinkov. (2024). "A Methodology for Determining Risks Based on the Analysis of Injuries to Employees of Industrial Enterprises". Municipal economy cities, *1*(182), 215–222. https://doi.org/10.33042/2522-1809-2024-1-182-215-222.
- Pietilä, J., Räsänen, T., Reiman, A., Ratilainen, H., & Helander, E. (2018). "Characteristics and determinants of recurrent occupational accidents". Safety Science, 108, 269-277.
- Purwanto, A., Hadi , Y.K., Abidin, R.Z., Suhendra , Prabowo, R.F., & Julyanto, O. (2020). "Exploring Impact of Occupational Health and Safety ISO45001 Implementation on Employee Performance: Evidence from Indonesian Industries", Journal of Critical Reviews, 7(15), 1981-1990.
- Segbenya, M. & Yeboah, E. (2022). "Effect of Occupational Health and Safety on Employee Performance in the Ghanaian Construction Sector". *Environmental Health Insights*, 16, 1–11.
- Sehsah, R., El-Gilany, A.H., & Ibrahim, A.M. (2020). "Personal protective equipment (PPE) use and its relation to accidents among construction workers". *Med Lav*, 11(4), 285–295, doi: 10.23749/mdl.v111i4.9398.
- Swaen, G.M.H., van Amelsvoort, L.P.G.M., Bültmann, U., Slangen, J.J.M., & Kant, I.J. (2004). "Psychosocial Work Characteristics as Risk Factors

for Being Injured in an Occupational Accident". *Journal of Occupational and Environmental Medicine* 46(6), 521-527. *DOI:* 10.1097/01.jom.0000128150.94272.12.

- Taylor, E. (29 June 2023). Knowledge academy. ISO 45001 Context of the Organisation - A Detailed Explanation. https://www.theknowledgeacademy.com/.