

# **EXPLORING IMPACT OF OCCUPATIONAL HEALTH AND SAFETY ISO 45001 IMPLEMENTATION ON EMPLOYEE PERFORMANCE: EVIDENCE FROM INDONESIAN INDUSTRIES**

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**ABSTRACT:** According to the International Labour Organization, more than 7.600 people die from work-related accidents or diseases every single day. This problem should be prevented and controlled so that they do not happen again in the future. Therefore, ISO 45001 is here to help organizations do this. With the publication of ISO 45001: 2018, it is hoped that this can improve the ISO 45001 management system in countries around the world, including Indonesia. Data collection is done by online questionnaire by google form, then data processing uses partial least square with the LISRELL program. Respondents in this research were 180 of top management of Indonesian industries which has implemented ISO 45001:2018, respondents were selected by the snowball sampling method, each respondent helped distribute questionnaires to other respondents. The results of this study are context of the organization has significant effect on employee performance, leadership has significant effect on employee performance, Planning has significant effect on employee performance. Support has significant effect on employee performance, operation has significant effect on employee performance, performance evaluation has significant effect on employee performance, **Improvements significant effect on employee Performance**

**KEYWORDS:** ISO 45001, Employee Performance, Indonesian Industries

## **I. INTRODUCTION**

According to the International Labour Organization, more than 7.600 people die from work-related accidents or diseases every single day. That's why an ISO committee of occupational health & safety experts set to work to develop an International Standard with the potential to save almost three million lives each year. Structured in a similar way to other ISO management systems, the approach will be familiar to users of standards such as ISO 14001 or ISO 9001. ISO 45001 builds on the success of earlier international standards in this area such as ISO 45001, the International Labour Organization's ILO-ISO 45001 Guidelines, various national standards and the ILO's international labour standards and conventions. Based on the International Labor Organization (ILO), 2.78 million fatal accidents occur at annual work. This means, every day, nearly 7.7 million people die from work-related illnesses or injuries. In addition, there are around 374 million injuries and illnesses resulting from non-fatal work accidents every year [1]. Even in Indonesia, the number of work accidents in 2017 increased by 20% from 2016 last year. Total work accidents in 2017 in Indonesia were 123 thousand cases with a claim value of more than Rp 971 billion. This figure increased from 2016 with a claim value of only Rp. 792 billion. Every day,

thousands of lives are lost due to accidents or occupational diseases. Deaths to these workers should be prevented and controlled so that they do not happen again in the future. Therefore, ISO 45001 is here to help organizations do this. With the publication of ISO 45001: 2018, it is hoped that this can improve the ISO 45001 management system in countries around the world, including Indonesia. ISO 45001: 2018 is designed to help organizations manage ISO 45001 risks and proactively improve ISO 45001 performance [2].

ISO 45001: 2018 was published on March 12, 2018 and this standard is a guideline in the implementation of an occupational health and safety management system by providing a series of powerful and effective processes to improve OHS performance in the workplace. ISO 45001: 2018 is also designed to assist organizations of all sizes and industries, which are expected to reduce workplace accidents and diseases throughout the world. With the birth of ISO 45001: 2018 it is hoped that this can improve the safety of workers in countries around the world. ISO 45001: 2018 is designed to be able to be integrated with other ISO management systems especially those that have implemented Annex SL, such as: ISO 9001: 2015 and ISO 14001: 2015. With this capability, it is expected that organizations that have implemented the latest ISO standards with Annex SL will be easier to integrate ISO 45001: 2018 into the existing management system. This standard uses the Plan-Do-Check-Act (PDCA) model, which provides a framework for organizations to plan what they must do in place to minimize the risk of harm. These steps should pay attention to problems that can cause long-term health problems and absence from work, as well as things that cause accidents [3].

ISO 45001: 2018 replaced OHSAS 18001: 2007, as the world's leading reference for the application of health and safety in the workplace. Organizations that have received OHSAS 18001 certification will have a retention period of three years to switch to this new ISO 45001: 2018 standard. ISO 45001: 2018 is an international standard that sets requirements for occupational health and safety (OH&S) management systems, with guidelines for their use, to enable an organization to proactively improve its OH&S performance in preventing work accidents and occupational diseases. ISO 45001: 2018 it is intended to be applicable to every organization regardless of size, type and nature. All requirements are intended to be integrated into the organization's own management process.[4]

ISO 45001: 2018 enables an organization, through its OH&S management system, to integrate other aspects of health and safety, such as health / welfare workers; However, it should be noted that an organization may be required by applicable legal requirements to also resolve the issue. ISO 45001: 2018 is designed to be able to be integrated with other ISO management systems especially those that have implemented Annex SL, such as: ISO 9001: 2015 and ISO 14001: 2015. With this capability, it is expected that organizations that have implemented the latest ISO standards with Annex SL will be easier to integrate ISO 45001: 2018 into the existing management system. This standard uses the Plan-Do-Check-Act (PDCA) model, which provides a framework for organizations to plan what they must do in place to minimize the risk of harm. These steps should pay attention to problems that can cause long-term health problems and absence from work, as well as things that cause accidents. ISO 45001: 2018 will replace OHSAS 18001: 2007, as the world's leading reference for the application of health and safety at workplace. Organizations that have received the OHSAS 18001 certification will have a retention period of three years to switch to this new ISO45001: 2018 standard [5].

ISO 45001: 2018 — Occupational health and safety management systems — Requirements with guidance for use, released on March 12, 2018. ISO 45001: 2018 is the first international standard in the world that sets requirements or guidelines for occupational safety and health management systems (SMK3 ). ISO 45001: 2018 can be said as "milestone". This standard provides a strong and effective framework for reducing risks at work and creating a safe and healthy workplace for workers, contractors, suppliers, visitors, and guests, which allows an organization to proactively improve its SMK3 performance. Despite ISO 45001 refer to OHSAS 18001 — as the first benchmark for K3 - ISO 45001: 2018 is a new and different standard, not a revision or an update. Gradually, ISO 45001: 2018 will replace OHSAS 18001: 2007 for the next three years. The main benefits of implementing ISO 45001: 2018 include increasing the effectiveness of planned, measured, structured and integrated occupational safety and health protection, preventing and reducing Occupational accidents or occupational diseases, Reducing absence and turnover rates, to encourage productivity Reducing the cost of insurance premiums, Creating a K3 culture, where workers are encouraged to be actively involved in OHS, Strengthening the leadership role (top management) to proactively improve OHS performance, Ability to meet obligations to laws and regulations and OHS requirements, Improve the company's reputation because it has reached international standards. ISO 45001: 2018 uses the Plan-Do-Check-Act (PDCA) model in its implementation, which provides a simple and effective framework for organizations to plan what they have to do in the workplace so that OHS risk can be minimized. The clause in ISO 45001: 2018 , 1. Scope, 2. Normative References, 3. Terms and Definitions, 4. Context of the Organization, 5. Leadership, 6. Planning, 7. Support, 8. Operation, 9. Performance Evaluation, 10. Improvement [6].

The benefits of using ISO 45001: 2018, an OH&S based ISO 45001 management system will enable an organization to improve its OH&S performance by, developing and implementing OH&S policies and OH&S objectives; Establish a systematic process that considers "context" and that takes into account risks and opportunities, as well as legal and other requirements; Determines OH&S hazards and risks associated with their activities, seeks to eliminate them, or places in control to minimize their potential effects; Establish operational controls to manage its OH&S risks and legal requirements and other raise awareness of its OH&S risks; Evaluate its OH&S performance and try to improve it, through taking appropriate action workers ensure taking an active role in OH&S matters; in combination these steps will ensure that the organization's reputation as a safe place to work will be promoted, and can have more direct benefits, such as: Increasing its ability to respond to regulatory compliance issues; Reducing the overall cost of incidents; Reducing downtime and operating disruption costs; Reducing the cost of insurance premiums, Reducing absenteeism and turnover rates, Recognition for achieving international benchmarks [7]

Every day, thousands of lives are lost due to accidents or occupational diseases. Deaths to these workers should be prevented and controlled so that they do not happen again in the future. Therefore, ISO 45001 is here to help organizations do this. With the publication of ISO 45001: 2018, it is hoped that this can improve the ISO 45001 management system in countries around the world, including Indonesia. ISO 45001: 2018 is designed to help organizations manage ISO 45001 risks and proactively improve ISO 45001 performance. Based on BPJS Labor data, in 2018 there have been 114,148 workplace accidents in the workplace. While in 2019, there were only 77,295 cases, down 33.05%. This study aims to find and obtain a relationship between the impact of the application of ISO 45001: 2018 with the performance of employees in several industries in Indonesia.[8].

## II. METHOD

This research is quantitative and the method used in this research is a survey method and data collection by distributing. The first step in developing the survey was to set the survey instrument, the independent variable is the result from qualitative phase, namely X1, X2, X3, X4, X5 and X6. Each question item is given five answer options, namely: strongly agree (SS) score 5, agree (S) score 4, disagree (KS) score 3, no agree (TS) score 2, and strongly disagree (STS) score 1. Data collection is done by online questionnaire via google form, then data processing uses partial least square with the LISRELL program. Respondents in this research were 180 of top management of Indonesian industries which has implemented ISO 45001:2018, respondents were selected by the snowball sampling method, each respondent helped distribute questionnaires to other respondents.

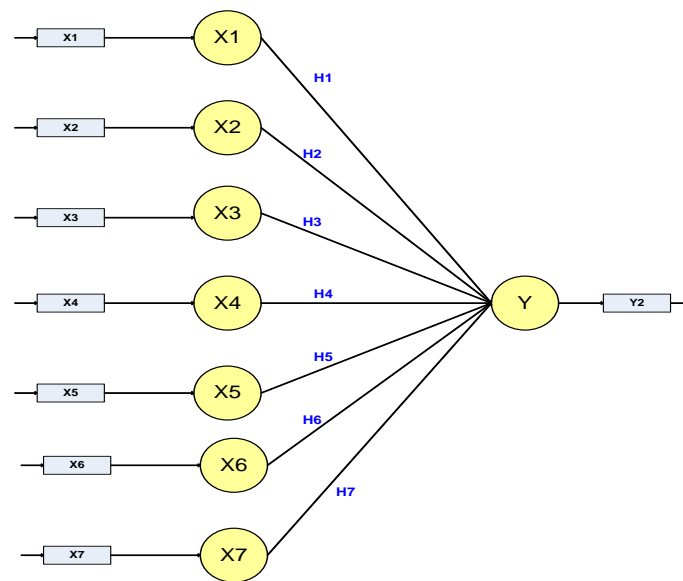
Respondents in this research were 180 of top management of Indonesian industries which has implemented ISO 45001:2018 form metal industries were 34 respondents consist of male is 19 and female is 15, form rubber industries were 25 respondents consist of male is 14 and female is 11, Form chemical industries were 25 respondents consist of male is 12 and female is 13, Form plastic l industries were 35 respondents consist of male is 19 and female is 16, Form paper industries were 33 respondents consist of male is 17 and female is 16, Form glass industries were 28 respondents consist of male is 11 and female is 17.

**Table 1. Respondent Distribution**

Kind of Industries	Male	Female	Total
Metal	19	15	34
Rubber	14	11	25
Chemical	12	13	25
Plactic	19	16	35
Paper	17	16	33
Glass	11	17	28
TOTAL	92	88	180

The independent variables as follows (X1) Context of the Organization, (X2) Leadership, (X3) Planning, (X4) Support, (X5) Operation, (X6) Performance Evaluation, (X7) Improvement., So that this quantitative research model can arrange the model of research framework as follows

The dependent variables as follows (Y) employee performance, According to Robbins (2006) employee performance has six indicators, namely: Quality. Work quality is measured by the employee's perception of the quality of work produced and the perfection of the task of the skills and abilities of employees. Quantity. Represents the amount produced expressed in terms such as the number of units, the number of activity cycles completed. Punctuality. Represents the level of activity completed at the beginning of the stated time, viewed from the point of coordination with the output results and maximizes the time available for other activities. Effectiveness. Represents the level of use of organizational resources (energy, money, technology, raw materials) maximized with the intention of increasing the yield of each unit in the use of resources. Independence. Is the level of an employee who will be able to carry out work duties. Work commitment. Is a level where employees have a work commitment with the agency and employee responsibilities towards the office.



**Figure 1. Research Model**

The clauses in ISO 45001: 2018 , 1. Scope, 2. Normative References, 3. Terms and Definitions, 4. Context of the Organization, 5. Leadership, 6. Planning, 7. Support, 8. Operation,9. Performance Evaluation, 10. Improvement.

There are seven research hypothesis in this research:

H1: (X1) Context of the Organization of ISO 45001: 2018 has significant effect on Employee Performance (Y).

H2: (X2) Leadership of ISO 45001: 2018 has significant effect on Employee Performance (Y).

H3: (X3) Planning of ISO 45001: 2018 has significant effect on Employee Performance (Y).

H4: (X4) Support of ISO 45001: 2018 has significant effect on Employee Performance (Y).

H5: (X5) Operation of ISO 45001: 2018 has significant effect on Employee Performance (Y).

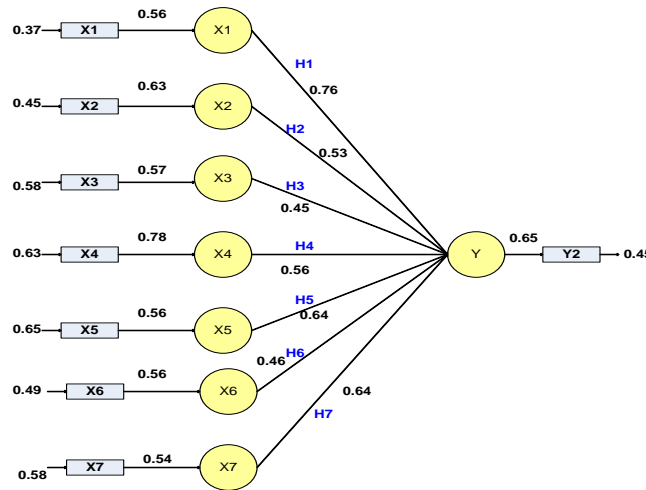
H6: (X6) Performance Evaluation of ISO 45001: 2018 has significant effect on Employee Performance (Y).

H6: (X7) Improvements of ISO 45001: 2018 significant effect on Employee Performance (Y).

**III. RESULT AND DISCUSSION**

The method of data analysis was carried out with a Structural Equation Model (SEM) using the Linear Structural Model (LISREL) version 8.71 from Joreskog and Sorbom (2008). Confirmatory Factor Anaysis (CFA) testing is carried out by looking at the loading factor value (> 0.5) and t count value (> 1.96). A factor load of 0.50 or more is considered to have a validity strong enough to explain latent constructs (Hair et all, 2010), Ghozali (2012).

Sharma (1996) explains that the weakest loading factor that can be accepted is 0.40. Hair et al (2010) states that constructs have good reliability is if the value of Construct Reliability (CR)  $\geq 0.70$  and the extracted variance value (VR)  $\geq 0.50$ . Hair et al (2010) adds that the interpretation of the reliability construct size can be said to be good if the value is more than 0.40. Data analysis was carried out using the LISREL program with the criteria for loading factor values ( $> 0.5$ ) and t arithmetic values ( $> 1.96$ ) whose results can be seen in the following figure:

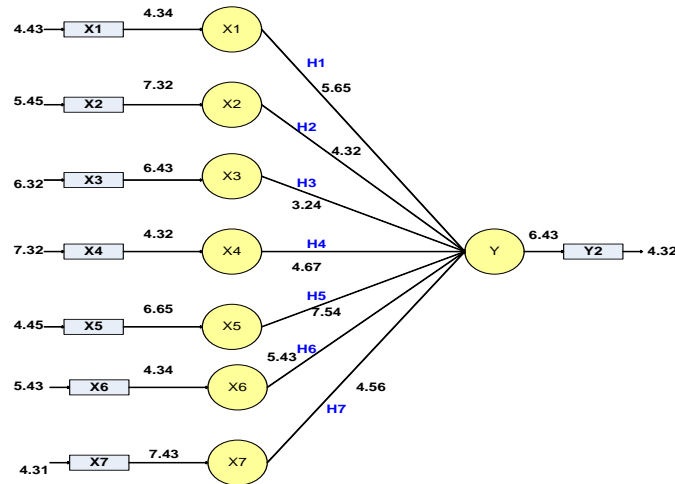


**Figure 2. Loading Factor Confirmatory Factor Analysis**

The first level of analysis is carried out from the latent construct of the aspects to the indicators. Based on the results of the analysis above shows that all factors loading values  $> 0.5$  and all values of t count needed to test the significance of loading factor values greater than 1.96. This means that of the 7 (seven ) of indicators are all valid and significant items. The summary of the results of the analysis can be seen in the following table:

**Table 3: Indicators Construct Validity Analysis**

No	Indicators	Loading Factor	t-Value	Remark
1	X1	0.56	4.32	Significant
2	X2	0.63	7.32	Significant
3	X3	0.57	6.43	Significant
4	X4	0.78	4.32	Significant
5	X5	0.56	6.65	Significant
6	X6	0.56	4.34	Significant
7	X7	0.54	7.43	Significant



**Figure 3. t-Value Factor Confirmatory Factor Analysis**

The second level of analysis is carried out from the latent construct to its aspect construct. Based on the test results above shows that the factor loading values are all > 0.5 and all the calculated t values needed to test the significance of the factor loading values are greater than 1.96. The summary of the results of the analysis can be seen in the following table.

**Table 4: Variables Construct Validity Analysis**

No	Indicators	Loading Factor	t-Value	Remark
1	X1	0.76	5.65	Significant
2	X2	0.53	4.32	Significant
3	X3	0.45	3.24	Significant
4	X4	0.56	4.67	Significant
5	X5	0.64	7.54	Significant
6	X6	0.46	5.43	Significant
7	X7	0.64	4.56	Significant

These results indicate that 11 variables are valid and significant to measure the latent variables Constraints. The validity results are also supported by the value of Chi Square (r) which produces p value of 105.3 with a p-value of 0.145 ( $p > 0.05$ ). Based on the formula of construct reliability calculation, the results of CR = 0.95 and VE = 0.78, which means that Constraints have good reliability. Hair, et al., (2010) state that constructs have good reliability if the value of Construct Reliability (CR)  $\geq 0.07$  and the Variance Extracted value (VE)  $\geq 0.40$ .

Furthermore, for the suitability of the model (model fit), in general it is good. As for the criteria for the model fit is as in the following table.

**Table 5. Model Fit Criteria**

No	Index Fit	Value	Value Standard	Remark
1	Chi Square p	105.3	> 0.05	Fit
2	RMSEA	0.034	< 0.080	Fit
3	NFI	0.93	> 0.90	Fit
4	NNFI	0.92	> 0.90	Fit
5	CFI	0.94	> 0.90	Fit

6	IFI	0.94	> 0.90	Fit
7	GFI	0.93	> 0.90	Fit
8	AGFI	0.81	> 0.90	Not Fit

Table 6. Indicators Construct Reliability Analysis

No	Indicators	Loading Factor	Error	CR	VE
1	X1	0.56	0.37		
2	X2	0.63	0.45		
3	X3	0.57	0.58		
4	X4	0.78	0.63	<b>0.95</b>	<b>0.78</b>
5	X5	0.56	0.65		
6	X6	0.56	0.49		
7	X7	0.54	0.58		

Based on the analysis results it is known that 6 out of 7 index fit states that the model is fit. These results indicate that the (Y) dependent variable model is fit with empirical data. Based on the results of the analysis of the construct validity and the construct reliability then all aspects and items that make up the (Y) dependent are valid and reliable.

The equation model for the relationship between dependent variable publication inhibition and independent variable is obtained as follows:

$$Y = 0.76 X1 + 0.53 X2 + 0.45 X3 + 0.56X4 + 0.64 X5 + 0.46X6 + 0.64 X7 \text{ and R square } 0.94.$$

The R square is 0.94 mean the affects the dependent variable The independent variables as follows (X1) Context of the Organization, (X2) Leadership, (X3) Planning, (X4) Support, (X5) Operation, (X6) Performance Evaluation, (X7) Improvement by 94% while 6% is influenced by other factors.

Based on data analysis using quantitative methods the following results are obtained:

**Hypothesis 1: Context of the Organization has significant effect on Employee Performance.**

The relationship between independent variables **X1 Context of the Organization** of ISO 45001:2018 with Employee Performance obtained loading factor value of **0.76** and t-value of **5.65** so that it can be concluded that the **Context of the Organization** has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [9] found the Context of the Organization of ISO 45001:2018 has a positive and significant effect on Employee Performance. Overall has a significant effect on the dependent variable or overall occupational safety and health variables have a significant effect on the performance of company employees. In production activities to reduce the occurrence of oil spills that can cause environmental impacts, make improvements to facilities as well as emergency response prevention training can be done to control events caused by human factors and production equipment [10].

**Hypothesis 2: Leadership has significant effect on Employee Performance .**

The relationship between independent variables Leadership of ISO 45001:2018 with Employee Performance obtained loading factor value of 0.53 and t-value of 4.32 so that it can be concluded that the Leadership has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [9].[10].[11] who found the Leadership of ISO 45001:2018 has a positive and significant effect on Employee Performance. That there is no difference in the level of performance (performance) of the company and the level of conformity between employee expectations and company

performance between before and after the application of ISO 45001. This can be the cause of the high number of work accidents included in the first aid category. While for the level of expectation (importance) of employees there is a significant difference between before and after the application of ISO 45001 [11].

**Hypothesis 3 : Planning has significant effect on Employee Performance .**

The relationship between independent variables Planning of ISO 45001:2018 with Employee Performance obtained loading factor value of 0.45 and t-value of 4.32 so that it can be concluded that the Planning has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [10],[11],[12] found the Planning of ISO 45001:2018 has a positive and significant effect on Employee Performance. This can be due to an increase in employee understanding of the importance of ISO 45001, which is the result of socialization and training on ISO 45001 as well as improvements made by the company in order to improve conditions at work and improve company facilities related to work accident prevention. The results of the Linear Regression Test show the effect of variable X1 (work safety), on variable X2 (work health) on variable Y (employee performance). This shows that occupational safety and health have a positive effect on employee performance. The ISO 45001 variable has a positive and significant effect on company performance, making employees safe, comfortable and minimizing work accidents so productivity increases [13].

**Hypothesis 4: Support has significant effect on Employee Performance .**

The relationship between independent variables Support of ISO 45001:2018 with Employee Performance obtained loading factor value of 0.56 and t-value of 3.24 so that it can be concluded that the Support has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [13],[14],[15] found the Support of ISO 45001:2018 has a positive and significant effect on employee performance. Overall has a significant effect on the dependent variable or overall occupational safety and health variables have a significant effect on the performance of company employees. In production activities to reduce the occurrence of oil spills that can cause environmental impacts, make improvements to facilities as well as emergency response prevention training can be done to control events caused by human factors and production equipment [16].

**Hypothesis 5: Operation has significant effect on Employee Performance .**

The relationship between independent variables Operation of ISO 45001:2018 with Employee Performance obtained loading factor value of 0.64 and t-value of 4.67 so that it can be concluded that the Operation has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [17],[18],[19] who found the Operation of ISO 45001:2018 has a positive and significant effect on Employee Performance. Overall has a significant effect on the dependent variable or overall occupational safety and health variables have a significant effect on the performance of company employees. This can be due to an increase in employee understanding of the importance of ISO 45001, which is the result of socialization and training on ISO 45001 as well as improvements made by the company in order to improve conditions at work and improve company facilities related to work accident prevention. The results of the Linear Regression Test show the effect of variable X1 (work safety), on variable X2 (work health) on variable Y (employee performance). This shows that occupational safety and health have a positive effect on employee performance. The ISO 45001 variable has a positive and significant effect on company performance, making employees safe, comfortable and minimizing work accidents so productivity increases.

**Hypothesis 6: Performance Evaluation has significant effect on Employee Performance .**

The relationship between independent variables Performance Evaluation of ISO 45001:2018 with Employee Performance obtained loading factor value of 0.46 and t-value of 5.43 so that it can be concluded that the Performance Evaluation has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [18],[19]. who found the Performance Evaluation of ISO 45001:2018 has a positive and significant effect on Employee Performance. Overall has a significant effect on the dependent variable or overall occupational safety and health variables have a significant effect on the performance of company employees. In production activities to reduce the occurrence of oil spills that can cause environmental impacts, make improvements to facilities as well as emergency response prevention



training can be done to control events caused by human factors and production equipment. This shows that occupational safety and health have a positive effect on employee performance. The ISO 45001 variable has a positive and significant effect on company performance, making employees safe, comfortable and minimizing work accidents so productivity increases.

#### **Hypothesis 7 : Improvements significant effect on Employee Performance.**

The relationship between independent variables Improvements of ISO 45001:2018 with Employee Performance obtained loading factor value of 0.64 and t-value of 4.56 so that it can be concluded that the Improvements has a positive and significant effect on Employee Performance. These results are the same as the results of research with a quantitative method conducted by [17].[18].[19] who found the Improvements of ISO 45001:2018 has a positive and significant effect on Employee Performance. This can be due to an increase in employee understanding of the importance of ISO 45001, which is the result of socialization and training on ISO 45001 as well as improvements made by the company in order to improve conditions at work and improve company facilities related to work accident prevention. The results of the Linear Regression Test show the effect of variable X1 (work safety), on variable X2 (work health) on variable Y (employee performance). This shows that occupational safety and health have a positive effect on employee performance. The ISO 45001 variable has a positive and significant effect on company performance, making employees safe, comfortable and minimizing work accidents so productivity increases.

#### **IV. CONCLUSION**

Based on the analysis of research data context of the organization has significant effect on Employee Performance, leadership has significant effect on Employee Performance, Planning has significant effect on Employee Performance, Support has significant effect on Employee Performance, Operation has significant effect on Employee Performance, Performance Evaluation has significant effect on Employee Performance, Improvements significant effect on Employee Performance. Benefits of ISO 45001 are Healthier and safer workplaces, ISO 45001: 2018 aims to reduce work-related mortality and encourage employee involvement to avoid accidents, work-related illnesses, and improve fitness. Maximize productivity, Manage an ever-expanding risk profile through a systematic process to maintain the health of your employees, and minimize the time lost to get optimal daily results. Globally recognized ISO 45001 increases the standard limits for occupational health and safety, and sets new standards to provide competitive advantages to suppliers when entering a tender to obtain contracts with international companies. Overall has a significant effect on the dependent variable or overall occupational safety and health variables have a significant effect on the performance of company employees. In production activities to reduce the occurrence of oil spills that can cause environmental impacts, make improvements to facilities as well as emergency response prevention training can be done to control events caused by human factors and production equipment. That there is no difference in the level of performance (performance) of the company and the level of conformity between employee expectations and company performance between before and after the application of ISO 45001. This can be the cause of the high number of work accidents included in the first aid category as can be seen in table 1. While for the level of expectation (importance) of employees there is a significant difference between before and after the application of ISO 45001. This can be due to an increase in employee understanding of the importance of ISO 45001, which is the result of socialization and training on ISO 45001 as well as improvements made by the company in order to improve conditions at work and improve company facilities related to work accident prevention. The results of the Linear Regression Test show the effect of variable X1 (work safety), on variable X2 (work health) on variable Y (employee performance). This shows that occupational safety and health have a positive effect on employee performance. The ISO 45001 variable has a positive and significant effect on company performance, making employees safe, comfortable and minimizing work accidents so productivity increases.\

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