

HSSE (Health, Safety, Security, and Environment) Knowledge Program Prioritization Using Kepner-Tregoe Model in PT. Pertamina EP Regional 2 Zone 7

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ABSTRACT

PT. Pertamina EP Regional 2 Zone 7 is an upstream oil and gas company that conducts high-risk activities. Although various HSSE knowledge programs have already been implemented, there are an average of 9 incident cases each year during 2018-2022, and this is not in accordance with the company's target of zero incidents each year. Based on root cause analysis, this is because the HSSE knowledge program that was carried out did not focus on specific primary causes of an incident. To help solve the issue, this research will analyze the prioritization of HSSE knowledge program that are relevant with specific primary causes of incident data in PT. Pertamina EP Regional 2 Zone 7. The prioritization of the HSSE knowledge program is started by determining the relevant HSSE knowledge program for a specific primary cause based on company procedure, PHE-SCAT, and focus group discussion. Then the prioritization will be based on related literature, Focus Group Discussion, and Kepner-Tregoe SMART Decision Analysis. Last is the implementation of a prioritized HSSE knowledge program that will be based on SWOT analysis and Focus Group Discussion. With this research, prioritization of PT Pertamina EP Regional 2 Zone 7 HSSE knowledge programs that are more focused and relevant to the primary causes of an incident can be determined so that employees' HSSE understanding can be further improved to address the primary causes of incidents and zero incident target can be achieved.

Keywords: HSSE knowledge program, incident's primary cause, Kepner-Tregoe, prioritization.

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I. INTRODUCTION

The oil and gas industry, primarily in Indonesia, consists of three main parts, which are upstream (exploration, exploitation, and production), midstream (refinery), and downstream (distribution and sales). The upstream oil and gas activities involve high-risk and hazardous activities because hydrocarbons and natural gas are flammable substances and can endanger the environment if they contaminate the land and water. The oil and gas upstream and downstream incident data published by the Directorate General of Oil and Gas Ministry of Energy and Mineral Resources (Ditjen Migas) shows that the HSSE implementation in upstream oil and gas needs improvement.

As an upstream oil and gas industry, PT. Pertamina EP Regional 2 Zone 7 (hereafter, PEP Z7) is a high-risk industry with an average of nine incidents per year in 2018-2022. To decrease the likelihood of incidents, PEP Z7 has implemented the HSSE Management System, incident prevention program, and HSSE knowledge program for all levels of employees. From the explanation above, it can be seen that achieving zero incidents in an oil and gas operation and production activity is very challenging and requires the cooperation and collaboration of all employees of the company.

II. BUSINESS ISSUE

Based on the data recorded, there were 45 work-related and 10 non-work-related incidents during 2018-2022 in PEP Z7. Work-related incidents occur at the workplace, during working hours, and related to the work process.

From the investigation conducted by PT. Pertamina Hulu Energy using PHE-SCAT (Systematic Cause Analysis Technique), the primary cause of incidents has been identified as the lack of competence and improper motivation, especially for work-related incidents.

As a follow-up on the identified primary cause of incidents, PEP Z7 has implemented various HSSE Knowledge programs for all levels of employees, but incidents still occur. This situation did not meet the company's zero-incident target. Regarding this, a root cause analysis is conducted using the 5 Why's analysis and the root cause and business issue identified is the lack of prioritization or rank analysis of the HSSE knowledge program based on each primary cause of incidents.

As the fulfilment of PDCA concept of risk management, this research will explore the organization of implementation of HSSE knowledge program that will help the employees and company to prevent similar accidents in the future. Hence, the research questions that emerge as the

evaluation from the business issue are as follows:

1. What is the HSSE knowledge program relevant to each of the primary causes of incidents?
2. What is the priority of the HSSE knowledge program alternative relevant to the dominant primary causes to reduce incidents?
3. How should the company implement the prioritized HSSE knowledge program relevant to each dominant primary cause?

The HSSE knowledge programs are intended to increase the level of employees' HSSE knowledge so that all employees can carry out production operations while still complying with HSSE aspects and regulations, which in turn can minimize the possibility of incidents occurring and achieve the company target of zero-incident and maintain the business continuity of PEP Z7. In line with the business issue and research question, the objectives of this research are:

1. To identify which HSSE Knowledge program is relevant to each incident's dominant primary cause.
2. To determine the priority/rank of the HSSE knowledge program relevant to each of the primary causes of incidents.
3. To propose the appropriate implementation strategies of the prioritized HSSE knowledge program relevant to each primary cause.

III. LITERATURE REVIEW

In conducting incident investigations, PEP Z7 uses several procedures in conducting incident investigations to determine the primary causes of an incident and provide suggestions for follow-up improvements so that incidents do not recur. The procedures used are *Tata Kerja Organisasi (TKO) Pelaporan dan Investigasi Insiden* (Incident Reporting & Investigation) No. B8-001/PHE04000/2021-S9-Rev.1, and *TKO Peningkatan dan Pengembangan Proses Belajar Aspek HSSE* (HSSE Aspect Learning Process Improvement and Development) No. B8-006/PHE04000/2021-S9.

PHE-SCAT is an incident investigation analysis tool developed and adopted from DNV-SCAT tools. PHE-SCAT is a structured method for investigating incidents, identifying the root causes of incidents, analyzing contributing factors, and developing effective corrective actions. The methodology used follows a systematic approach to uncover the primary causes of an incident rather than focusing solely on the immediate or superficial factors. It helps investigators to understand the complex interactions between various elements that led to the incident, including technical, organizational, and human aspects.

The Kepner-Tregoe decision-making model is a structured approach that helps individuals and teams make well-informed decisions by systematically evaluating and analyzing the available information. It was developed by Charles H. Kepner and Benjamin B. Tregoe in the 1960s. The Kepner-Tregoe model consists of four key steps, namely, situation appraisal, problem analysis, decision analysis, and potential problem analysis (Kepner, Tregoe, 2008). For this research, the step that will be used is

decision analysis, where once the problem is understood, decision analysis helps in evaluating alternative solutions. Decision Analysis is a systematic procedure based on the thinking pattern we use when making choices. Good decision-making, like good problem-solving, depends heavily on experience and judgment. The decision-maker generates alternatives to address the problem and evaluates each alternative based on criteria combined with the must and wants category for each alternative using the Simple Multi-Attribute Rating Technique (SMART).

Based on "Evaluating Training Programs" by Donald Kirkpatrick and James Kirkpatrick (2006), there are ten requirements for an effective training program that are crucial for ensuring successful training initiatives. These requirements serve as guidelines for designing and implementing knowledge programs that lead to measurable outcomes and contribute to organizational goals.

The SWOT framework classifies the factors relevant to a company's strategic decision-making into four categories: strengths, weaknesses, opportunities, and threats (Grant, 2018). SWOT analysis provides a comprehensive overview of the current strategic position of the organization. Strengths and weaknesses are internal factors that are under the control of the organization, while opportunities and threats are external factors that arise from the organization's operating environment. By aligning the company's external opportunities and threats with internal strengths and weaknesses, PEP Z7 can identify the best strategies to implement a priority HSSE knowledge program.

IV. RESEARCH METHODOLOGY

This research consists of three main parts: classifying, prioritizing, and implementing the HSSE knowledge program. The purpose of classifying is to sort and classify which HSSE knowledge program is relevant to the characteristics of each of the dominant primary causes. After that, the next step is conducting prioritizing, which start with generating criteria for each of the six dominant primary cause and finishes by determining the prioritized HSSE knowledge program for each of the six dominant primary causes.

For the final part, the implementation will start with listing the company's external opportunities and threats, the company's internal strengths and weaknesses, and conducting a SWOT analysis to obtain the most suitable implementation strategy for implementing the prioritized HSSE knowledge program. A diagram of the research methodology that will be used for this research can be seen in Fig. 1.

On the classifying part, the first step is conducting a primary causes risk analysis on the 2018-2022 PEP Z7 annual report to obtain the number of incidents during 2018-2022. This research will be based on work-related incidents because the primary causes of work-related incidents can be controlled by PEP Z7 using all company-appropriate devices and procedures. The next step is analyzing work-related incident data to identify the primary causes using the PHE-SCAT tool listed in the company procedure.

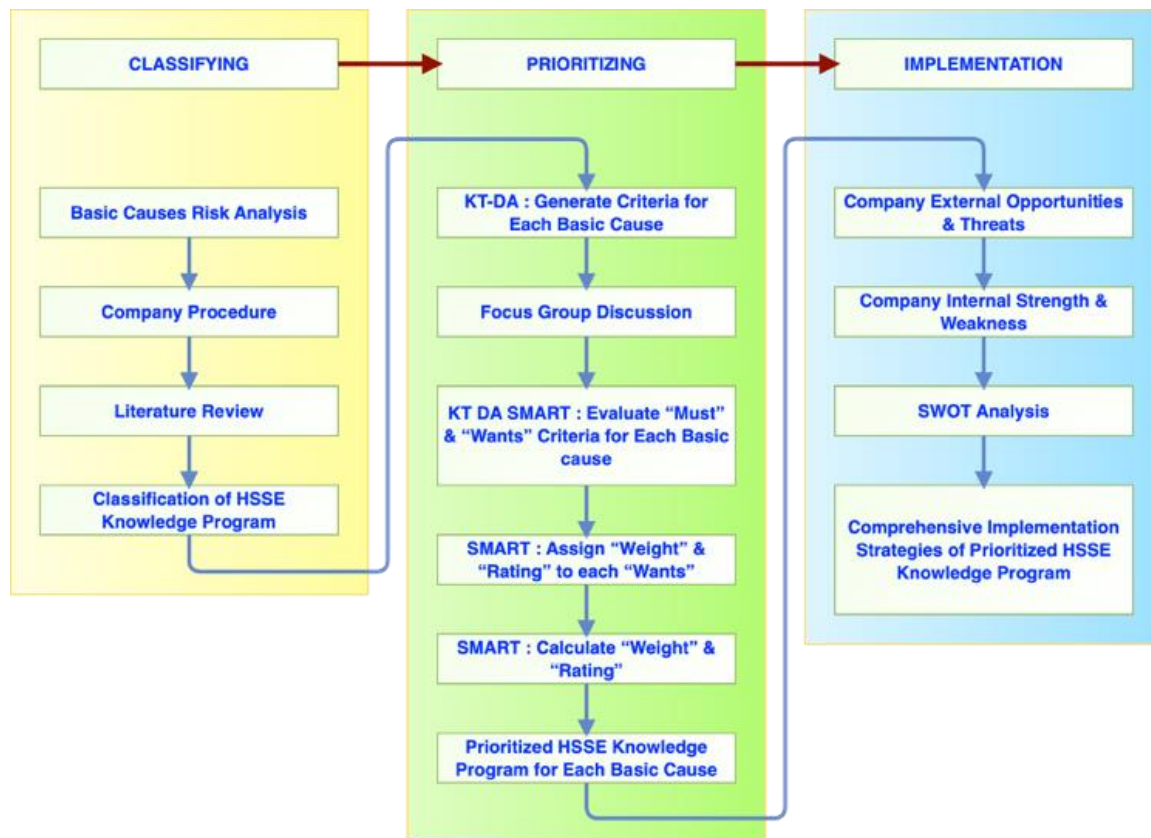


Fig. 1. The research methodology.

Next, analysis is conducted to sort out which primary causes have high, high to moderate, moderate, moderate to low, or low risk. The purpose of this action is to further analyze which primary causes have high risk, including the characteristics of each of the high-risk primary causes, and these high-risk primary causes will be the dominant primary causes that will be used as a basis of the HSSE knowledge program prioritization.

The analysis will be conducted using PT. Pertamina EP Risk Matrix that is listed in company procedure. The usage of high-risk primary causes is the basis of the research because high-risk primary causes have a potentially major and catastrophic impact on the company; it needs immediate action to prevent another incident from occurring in PEP Z7.

The next step is conducting an analysis of company procedure and HSSE training matrix history that is relevant to the HSSE knowledge program to obtain insight regarding the HSSE knowledge program that has been established and can be used as a reference to each of the dominant primary causes.

Using a combination of dominant primary causes that have been analyzed and their characteristics, focus group discussion, and HSSE knowledge program that has already been established, the classification of the HSSE knowledge program that is connected and relevant to each of the dominant primary causes is determined.

Next, in the prioritization part, Kepner-Tregoe Decision Analysis SMART (Simple Multi-Attribute Rating Technique) "Must" and "Wants" will be applied alongside focus group discussion to help determine the prioritization of HSSE knowledge for each dominant primary cause. The first step in prioritizing is generating criteria for each of the dominant primary causes. Reference for the criteria will be

taken from company procedures and literature that will provide insight regarding relevant criteria for delivering effective and appropriate HSSE knowledge programs for the recipient. After that, a focus group discussion will be conducted and involving HSSE experts from PT. Pertamina EP Regional 2. The focus group discussion will be conducted in a semi-structured interview style.

The first goal of focus group discussion is to help suggest the allocation of the generated criteria of each dominant primary cause into two categories, "must" and "wants." Then, the weight for each criterion that has been allocated to "wants" with a scale from 1-10, where 10 is the most important, and 1 is the least important. Next is to screen the HSSE knowledge program through the "must" criteria.

HSSE knowledge program that satisfies all "must" criteria will go through to "wants" evaluation. Then, a rating with a scale from 1-10 was assigned for each of the HSSE knowledge programs that passed the "must" screening to measure how well it satisfies the wants. Rating 10 is the most important, and 1 is the least important. These objectives give us a comparative picture of alternatives—a sense of how the alternatives perform relative to each other. Then, calculate the score for each HSSE knowledge by multiplying the weight and ratings of each HSSE knowledge program to determine the rank of the HSSE knowledge program. The highest score is the prioritized HSSE knowledge program. These steps are repeated for each dominant primary cause to determine the prioritized HSSE knowledge program for each dominant primary cause.

In the implementation part, the main analysis used to support the HSSE knowledge program implementation strategy is the SWOT analysis. Conducting a SWOT matrix analysis would help PEP Z7 provide valuable insights that

can help determine a comprehensive strategy to implement the prioritized HSSE knowledge program.

The first step in the implementation part is composing a list of PEP Z7's key external opportunities and threats. In this step, external opportunities and threats will be able to describe the current and future oil and gas operations and production of PEP Z7 can also impact the opportunity for implementation of HSSE is considered. The next step is composing a list of PEP Z7's key internal strengths and weaknesses.

Then, we composed Strength-Opportunities (S-O) strategies by matching internal strengths with external opportunities. With these strategies, PEP Z7 can position itself in which internal strengths can be used to take advantage of external trends and events when implementing the HSSE knowledge program.

Next, the same process was conducted to obtain the Weakness-Opportunity (W-O), Strength-Threat (S-T), and Weakness-Threat (W-T) strategy. W-O strategies will help the company to maximize key external opportunities to implement the HSSE knowledge program and mitigate internal weaknesses that prevent it from exploiting those opportunities.

On S-T strategies, the company will be able to use its strengths to avoid or reduce the impact of external threats when implementing the HSSE knowledge program. Meanwhile, W-T strategies are defensive tactics that are applied to reduce internal weaknesses and avoid external threats when implementing the HSSE knowledge program.

In the end, the best strategy to implement HSSE knowledge programs will be the one that maximizes the company's strengths, minimizes weaknesses, seizes opportunities, and mitigates threats.

V. DATA COLLECTION AND ANALYSIS METHOD

For this research, data collection methods will be using primary and secondary data collecting. Primary data will be collected from focus group discussions with HSSE Subject Matter Expert (SME) in PT. Pertamina EP Regional 2. Secondary data will be collected from annual HSSE reports, company procedures, company presentations, Ditjen Migas annual report, and the company website.

Focus group discussion will be using a semi-structured interview approach, where the interviewer has a list of themes related to the HSSE knowledge program, risk analysis, and primary causes of the incident and provides the opportunity to explore the HSSE knowledge program alternatives and criteria that are relevant to each of primary causes of the incident.

The annual HSSE report that will be used is PEP Z7 HSSE reports from the year 2018 to 2022 contain important safety data such as safety man-hours, number of incidents, and the primary causes of the incidents. For this research, the methods that will be used are combination methods of quantitative and qualitative data. These methods are often used in combination to gain a comprehensive understanding of the data and address this research objective effectively. A brief overview of the HSSE knowledge program data analysis methods is provided in Table I.

TABLE I: DATA COLLECTION METHODS

No	Stages	Analysis	Methods
1	Classifying	Incident Record	- Annual Report Review - PHE-SCAT
		Primary causes	- Pareto Diagram - Risk Matrix Analysis
		HSSE Knowledge Program Relevance	- Literature Review - Focus Group Discussion
2	Prioritizing	Generate Criteria	- Literature Review - Focus Group Discussion
		Evaluate Criteria & Calculate Programs	- Kepner Tregoe: SMART
3	Implementation	HSSE Knowledge	- SWOT Analysis
		Program Strategies	- Focus Group Discussion

VI. RESULTS

A. Classifying

For the classifying part, the first result obtained is six high-risk primary causes that will become dominant primary causes based on HSSE knowledge program prioritization from work-related incidents between 2018 and 2022 Primary cause Risk analysis using PT. Pertamina EP risk matrix. The six high-risk primary causes are:

1. Lack of competence,
2. Improper motivation,
3. Inadequate communication/ information,
4. Inadequate inspection, control, and maintenance,
5. Inadequate supervision/ coaching, and
6. Inadequate work standards.

The analysis of the PT. Pertamina EP risk matrix revealed six high-risk primary causes:

1. Lack of competence,
2. Improper motivation,
3. Inadequate communication/ information,
4. Inadequate inspection, control, and maintenance,
5. Inadequate supervision/ coaching, and
6. Inadequate work standards.

Next, from company procedure analysis, training matrix record, and literature review, a list of HSSE knowledge programs that could be suitable for the classification of HSSE knowledge programs is obtained. Then, this list is used in focus group discussions to help classify the HSSE knowledge program list to each of the dominant primary causes that are relevant. Focus group discussion is attended by 5 (five) PT. Pertamina EP Regional 2 workers with an average of 17 (seventeen) years of experience. The classification of relevant HSSE knowledge programs for each of the dominant primary causes can be seen in Table II.

B. Prioritizing

Next in the prioritizing part is determining the criteria for "Must" and "Wants" that will be used for determined the prioritize HSSE knowledge program for each of dominant primary causes. The results of the criteria for "Must" and "Wants" and the description of each criterion that has been generated from the analysis process can be seen in Table III.

TABLE II: CLASSIFIED HSSE KNOWLEDGE PROGRAMS

Lack of competence	Basic HSSE Training
	HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling)
	HSSE Induction & Orientation
	Corporate Life Saving Rules & HSSE Golden Rules
	Behaviour Based Safety
Improper motivation	Onsite Coaching Program for Site Leaders
	Kinerja Operasi for Operation Excellence (KOFOE)
	Onsite Coaching Program for Site Leaders
	Safety Culture for Leaders
	Behaviour Based Safety
Inadequate communication/information	HSSE for leaders
	Corporate Life Saving Rules & HSSE Golden Rules
	Basic HSSE Training
	HSSE Awareness & Compliance - Advance HSSE Learning
	Safety Culture for Leaders
Inadequate inspection, control, and maintenance	Onsite Coaching Program for Site Leaders
	Behaviour Based Safety
	Pengawas Utama K3 Migas
	Sistem Manajemen K3
	Kinerja Operasi for Operation Excellence (KOFOE)
Inadequate supervision/coaching	MAH-Bowtie-SECE & Barrier Management
	HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling)
	Corporate Life Saving Rules & HSSE Golden Rules
	Risk Management - ISO 31000
	Pengawas Utama K3 Migas
Inadequate work standards	Safety Culture for Leaders
	HSSE Promotion and encouragement
	Behaviour Based Safety
	HSSE Awareness & Compliance - Advance HSSE Learning
	HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling)
	Kinerja Operasi for Operation Excellence (KOFOE)
	Contractor Safety Management System (CSMS) Full Cycle
	Corporate Life Saving Rules & HSSE Golden Rules
	Basic HSSE Training

Next, the results are weighted for each “Wants” from 1-10 according to their relative importance to the HSSE knowledge program. The weight for each “Wants” is decided through focus group discussion because the input from expert attendees is significantly helpful in maintaining the validity of the weight given.

Here are the weights given to each of the “Wants,” with the basis of weight:

1) Targeted Participant Attendance: 10

Human is part of the solution, and the key element for a successful HSSE knowledge program is the attendance of the relevant participants to the dominant primary cause and incident investigation recommendation.

2) Schedule Fit to the Availability of Participants: 9

The schedule of HSSE knowledge programs does not conflict with the work schedule of the targeted participants. Hence, the approval of attendance is given by their respective department leader.

3) Appropriate Facilities: 6

Facilities that are appropriate for executing an impactful HSSE knowledge program are crucial for creating a conducive learning environment and enhancing the HSSE knowledge of the participants while minimizing the cost of using facilities.

4) Appropriate Instructors: 5

The type of instructor is important to deliver better understanding, especially when the type of HSSE knowledge program is certified. PT. Pertamina EP Regional 2 has many instructors from within the company; internal resources can still meet the need for instructors that are not mandatory from outside.

TABLE III: “MUST” AND “WANTS” CRITERIA

List Type	Criterion	Description
"Must"	Meeting the needs of participants	The HSSE knowledge program must and able to meet the needs of participants, based on the characteristics of the basic causes from incident investigation.
	Clear and measurable objectives	Clear and measurable objectives for the participants is established for the HSSE knowledge program. The HSSE knowledge program will be able to increase HSSE knowledge of participants (specifically the knowledge related to the basic cause), increase HSSE skills that need to be implemented during daily activities, and able to change the HSSE attitudes of participants.
"Wants"	Content relevance to the basic cause	The content of the HSSE knowledge program should be based and relevant on the characteristics of basic causes. It should cover the necessary knowledge and skills that participants need to acquire. The content of the HSSE knowledge program able to be organized in a logical and structured manner to facilitate effective learning.
	Targeted participant attendance	The HSSE training program implemented is capable and can be attended by all targeted levels of workers according to the characteristics of the basic issues and incident investigation report.
"Wants"	Schedule fit to the availability of participants	The scheduling of the HSSE knowledge programs are fit to meet some factors such as participants' availability, company and department priorities, and logistical availability. A well-planned schedule ensures that participants can fully commit to the training without conflicted with their main obligations.
	Appropriate facilities	The selected facilities to execute HSSE knowledge programs should be able to accommodate the programs needs and objective, and support effective HSSE learning, while minimizing costs for facilities. The facilities are also able to boost participants motivation to learn and understood HSSE knowledge.
"Wants"	Appropriate instructors	Skill and knowledge level of instructors are essential for delivering HSSE knowledge to participants, especially when the type of HSSE knowledge programs is certified type and the instructor is assigned by the certification board. The selection process of instructor should consider instructors' expertise in the relevant basic cause, instructional skills, and ability to engage participants to better understand the basic causes characteristics, while instructor cost minimizing is still achievable.
	Monitoring and evaluation	Monitoring and evaluation is essential to determine the effectiveness and impact of the HSSE knowledge program. It involves collecting feedback from participants, assessing learning outcomes, and measuring the program's overall success.

5) *Monitoring and evaluation: 7*

Monitoring and evaluating the implementation of the HSSE knowledge program is important to measure the program’s effectiveness in enhancing participants’ HSSE knowledge, which will benefit in reducing incidents.

After the above results, next is the result of prioritizing the HSSE knowledge program for each of the dominant primary causes. The result is elaborate as follows.

TABLE IV: “MUST” SCREEN – LACK OF COMPETENCE

"Must" Criteria	HSSE Knowledge Program Relevant List						
	A	B	C	D	E	F	G
Meeting the needs of participants	Go	No-go	Go	Go	No-go	No-go	Go
Clear and measurable objectives	Go	Go	Go	Go	Go	Go	Go
Content relevance to the basic cause	Go	No-go	Go	Go	No-go	Go	Go

Note. A: Basic HSSE Training; B: HIRARC (Hazard Identification, Risk Analysis, and Risk Controlling); C: HSSE Induction and Orientation; D: Corporate Life Saving Rules and HSSE Golden Rules; E: Behaviour-based Safety; F: Onsite Coaching Program for Site Leaders; G: KOFOE (Kinerja Operasi for Operation Excellence).

C. *Lack of Competence*

The result of the lack of competence primary cause of the HSSE knowledge program “Must” screening can be seen in Table IV, the “Wants” rating calculation can be seen in

Table V, and the explanation of the relevance of each HSSE knowledge program with each “Wants” ratings can be seen on Table VI.

From the calculation of each “wants” rating to each of the HSSE knowledge programs, the prioritized HSSE knowledge program for lack of competence primary cause is the Corporate Life Saving Rules and HSSE Golden Rules program.

TABLE V: “WANTS” RATING CALCULATION – LACK OF COMPETENCE

"Wants" Criteria	Weight	HSSE Knowledge Program Relevant List							
		A		C		D		G	
		Rating	Score	Rating	Score	Rating	Score	Rating	Score
Targeted participant attendance	10	9	90	9	90	10	100	9	90
Schedule fit to the availability of participants	9	6	54	8	72	8	72	4	36
Appropriate facilities	6	9	54	6	36	7	42	5	30
Appropriate instructors	5	5	25	6	30	6	30	5	25
Monitoring and evaluation	7	9	63	7	49	9	63	4	28
Total Score			286		277		307		209

Note. A: Basic HSSE Training; C: HSSE Induction & Orientation; D: Corporate Life Saving Rules & HSSE Golden Rules; G: KOFOE (Kinerja Operasi for Operation Excellence).

TABLE VI: “WANTS” RATINGS EXPLANATION – LACK OF COMPETENCE

A. Basic HSSE Training		C. HSSE Induction & Orientation		D. Corporate Life Saving Rules & HSSE Golden Rules		G. KOFOE (Kinerja Operasi for Operation Excellence)	
Notes	Rating	Notes	Rating	Notes	Rating	Notes	Rating
All levels of employees can attend the program.	9	Due to the "on the spot" and "general" type of program, hence all levels of employees can attend the program.	9	The program can be attended by all levels of workers, and it's mandatory for all levels of workers to attend the program.	10	All levels of employees can attend the program.	9
Duration of this program usually took 3-4 days; hence it would be difficult to ask approval employees superior to fully attended the program.	6	Duration of this program usually took 1-2 days; hence it would be more suitable for all level of employees to fully attended the program.	8	The duration of the program is two-three days and can be conducted online hence it will give more flexibilities on when and how to attend.	8	Duration of this program usually took 3-4 days on offsite location; hence it would be difficult to ask approval employees superior to fully attended the program.	4
The program conducted in centralized HSSE training centre, which is optimized for HSSE knowledge improvement activity, while the cost can set to minimum.	9	The program location is combination of office or HSSE training centre and work site, but due to the duration the facilities didn't give maximal HSSE learning output. Also, the cost will be more than minimum.	6	When offline, the program conducted in centralized HSSE training centre, which is optimized for HSSE knowledge improvement activity. But if online option is chosen, there is not enough appropriate facilities to support learning experiences. Either offline or online, the cost will be minimum.	7	The program conducted in offsite location facilities, which is limited to support learning experiences. The cost will also more expensively compared to onsite facilities.	5
Instructor is from internal PEP Z7; hence the cost will also be minimum.	5	The required instructors do not have to be highly qualified and have experience as HSSE officer in the oil and gas industry for more than 10 years.	6	The required instructors do not have to be highly qualified and have experience as HSSE officer in the oil and gas industry for more than 10 years.	6	Instructor is from internal PT. Pertamina EP, hence didn't need high qualification instructor, but it will require additional cost.	5
Easy to monitor and evaluate from daily operations activity reporting.	9	Easy to monitor and evaluate from daily operations activity reporting, but on limited parameter.	7	Easy to monitor and evaluate from weekly operations activity reporting, and monthly management walkthrough.	9	Monitoring and evaluation requires internal audit that conducted yearly.	4

D. Improper Motivation

The result of improper motivation, the primary cause of the HSSE knowledge program “Must” screening, can be seen in Table VII, the “Wants” rating calculation can be seen in Table VIII, and the explanation of the relevance of each HSSE knowledge program to each “Wants” rating can be seen on Table IX.

From the calculation of each “wants” rating to each of the HSSE knowledge programs, the prioritized HSSE knowledge program for improper motivation primary cause is the Onsite Coaching Program for Site Leaders program.

TABLE VII: “MUST” SCREEN – IMPROPER MOTIVATION

"Must" Criteria	HSSE Knowledge Program Relevant List						
	A	B	C	D	E	F	G
Meeting the needs of participants	Go	Go	Go	Go	Go	Go	No-go
Clear and measurable objectives	Go	Go	Go	Go	No-go	No-go	Go
Content relevance to the basic cause	Go	Go	Go	No-go	Go	Go	Go

Notes. A: Basic HSSE Training; B: HIRARC (Hazard Identification, Risk Analysis, and Risk Controlling); C: HSSE Induction and Orientation; D: Corporate Life Saving Rules and HSSE Golden Rules; E: Behaviour-based Safety; F: Onsite Coaching Program for Site Leaders; G: KOFOE (Kinerja Operasi for Operation Excellence).

E. Inadequate Communication/Information

The result of inadequate communication/information primary cause of the HSSE knowledge program “Must” screening can be seen in Table X, the “Wants” rating calculation can be seen in Table XI, and the explanation of the relevances of each HSSE knowledge program with each “Wants” ratings can be seen on Table XII.

From the calculation of each “wants” rating to each of the

HSSE knowledge programs, the prioritized HSSE knowledge program for inadequate communication/information is the Safety Culture for Leaders program.

TABLE VIII: “WANTS” RATING CALCULATION – IMPROPER MOTIVATION

"Wants" Criteria	Weight	HSSE Knowledge Program Relevant List					
		A		B		C	
		Rating	Score	Rating	Score	Rating	Score
Targeted participant attendance	10	10	100	6	60	7	70
Schedule fit to the availability of participants	9	5	45	8	72	6	54
Appropriate facilities	6	9	54	7	42	9	54
Appropriate instructors	5	5	25	6	30	9	45
Monitoring and evaluation	7	9	63	5	35	6	42
Total Score			287		239		265

Note. A: Basic HSSE Training; B: Safety Culture for Leaders; C: Behaviour-based Safety.

TABLE X: “MUST” SCREEN – INADEQUATE COMMUNICATION/INFORMATION

"Must" Criteria	HSSE Knowledge Program Relevant List				
	A	B	C	D	E
Meeting the needs of participants	Go	Go	Go	Go	No-go
Clear and measurable objectives	Go	Go	Go	No-go	Go
Content relevance to the basic cause	Go	Go	Go	Go	Go

Note. A: Safety Culture for Leaders; B: Onsite Coaching Program for Site Leaders; C: Behaviour-based Safety; D: Sistem Manajemen K3 Pengawas Utama K3 Migas (Sertifikasi).

TABLE IX: “WANTS” RATINGS EXPLANATION – IMPROPER MOTIVATION

A. Basic HSSE Training		C. HSSE Induction & Orientation		D. Corporate Life Saving Rules & HSSE Golden Rules	
Notes	Rating	Notes	Rating	Notes	Rating
All levels of employees can attend the program, from assistant manager to operator.	10	Targeted participants only for leaders, either field leaders or zone leaders.	6	Targeted participants from supervisor to manager.	7
Duration of this program took 2-3 weeks; hence it would need effort to convincing the targeted participants superior to allowed attended the program.	5	Duration of this program is 2 days, combination of theory presentation and group simulation.	8	Duration of this program usually took 1-5 days, depends on the outcome of the observation activity.	6
The facilities that will be used is combination of company internal classroom and site for simulation and practice purpose, hence the cost will be minimum.	9	The program use facilities using facilities outside company assets, such as hotels, hence the facilities cost will be average to maximum.	7	Facilities that will be used is strongly suggested on site (production facility and rig), to achieve optimum observation	9
Instructor is from external (private consultant); hence the cost will also be average to maximum.	5	Instructor is from external but only one instructor, hence the cost will be average.	6	Instructor is from internal PT. Pertamina EP Regional 2; hence the cost will be minimum.	9
Easy to monitor and evaluate because the structure of the program is covers monitoring and evaluation.	9	Considering that the program participants involved are dominantly leaders, it is necessary to develop a specific system to monitor and evaluate the results of this program.	5	Observers need to regularly check the workers that previously observed to check the effectiveness of the program.	6

TABLE XI: "WANTS" RATING CALCULATION – INADEQUATE COMMUNICATION/INFORMATION

"Wants" Criteria	Weight	HSSE Knowledge Program Relevant List					
		A		B		C	
		Rating	Score	Rating	Score	Rating	Score
Targeted participant attendance	10	9	90	7	70	7	70
Schedule fit to the availability of participants	9	9	81	5	45	6	54
Appropriate facilities	6	7	42	9	54	9	54
Appropriate instructors	5	6	30	5	25	6	30
Monitoring and evaluation	7	8	56	9	63	6	42
Total Score			299		257		250

Note. A: Safety Culture for Leaders; B: Onsite Coaching Program for Site Leaders; C: Behaviour-based Safety.

TABLE XIV: "WANTS" RATING CALCULATION – INADEQUATE INSPECTION, CONTROL, AND MAINTENANCE

"Wants" Criteria	Weight	HSSE Knowledge Program Relevant List					
		C		D		E	
		Rating	Score	Rating	Score	Rating	Score
Targeted participant attendance	10	9	90	10	100	6	60
Schedule fit to the availability of participants	9	7	63	8	72	5	45
Appropriate facilities	6	9	54	7	42	6	36
Appropriate instructors	5	8	40	6	30	6	30
Monitoring and evaluation	7	8	56	6	42	8	56
Total Score			303		286		227

Note. A: Safety Culture for Leaders; B: Onsite Coaching Program for Site Leaders; C: Behaviour-based Safety.

TABLE XIII: "MUST" SCREEN – INADEQUATE INSPECTION, CONTROL, AND MAINTENANCE

"Must" Criteria	HSSE Knowledge Program Relevant List				
	A	B	C	D	E
Meeting the needs of participants	Go	No-go	Go	Go	Go
Clear and measurable objectives	Go	Go	Go	Go	Go
Content relevance to the basic cause	No-go	Go	Go	Go	Go

Note. A: KOFOE (Kinerja Operasi for Operation Excellence); B: MAH-Bowtie-Safety Environment Critical Equipment & Barrier Management; C: HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling); D: Corporate Life Saving Rules & HSSE Golden Rules; E: Risk Management - ISO 31000.

F. Inadequate Inspection, Control, and Maintenance

The result of inadequate inspection, control, & maintenance primary cause of the HSSE knowledge program "Must" screening can be seen in Table XIII, the "Wants" rating calculation can be seen in Table XIV, and the explanation of the relevance of each HSSE knowledge program to each "Wants" rating can be seen on Table XV.

From the calculation of each "wants" rating to each of the HSSE knowledge programs, the prioritized HSSE knowledge program for inadequate inspection, control, & maintenance primary cause is the HIRARC (Hazard Identification, Risk Analysis, and Risk Controlling) program.

TABLE XII: "WANTS" RATINGS EXPLANATION – INADEQUATE COMMUNICATION/INFORMATION

A. Safety Culture for Leaders		B. Onsite Coaching Program for		C. Behaviour Based Safety	
Notes	Rating	Notes	Rating	Notes	Rating
This program are intended for field and zone leaders, where this is in line with the targeted participants.	9	All levels of employees can attend the program, from assistant manager to operator, but the basic cause characteristics would be more suitable to be solved by assistant manager level above.	7	Targeted participants from supervisor to manager, but the basic cause characteristics would be more suitable to be solved by assistant manager level above.	7
Duration of this program is 2 days, and because it's attended by leader, the schedule approval would be easier.	9	Duration of this program took 2-3 weeks; hence it would need effort to convincing the targeted participants superior to allowed attended the program.	5	Duration of this program usually took 1-5 days, depends on the outcome of the observation activity.	6
The program use facilities using facilities outside company assets, such as hotels, hence the facilities cost will be average to maximum.		The facilities that will be used is combination of company internal classroom and site for simulation and practice purpose, hence the cost will be minimum.	9	Facilities that will be used is strongly suggested on site (production facility and rig), to achieve optimum observation result. Since the facilities used is company owned, the cost will be minimum.	9
Instructor is from external but only one instructor, hence the cost will be average.	6	Instructor is from external (private consultant), hence the cost will also be average to maximum.	5	Instructor is from internal PT. Pertamina EP Regional 2; hence the cost will be minimum, but it would be better if the instructor from external with competent communication skills.	6
Since the basic cause characteristic is regarding communication where leaders are conducting monthly management walkthrough, monitoring, and evaluation could be more structured.	8	Easy to monitor and evaluate because the structure of the program is covers monitoring and evaluation.	9	Observers need to regularly check the workers that previously observed to check the effectiveness of the program.	6

TABLE XV: "WANTS" RATINGS EXPLANATION – INADEQUATE INSPECTION, CONTROL, AND MAINTENANCE

C. HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling)		D. Corporate Life Saving Rules & HSSE Golden Rules		E. Risk Management - ISO 31000	
Notes	Rating	Notes	Rating	Notes	Rating
All levels of employees can attend this program, especially employees that had enough experiences.	9	The program can be attended by all levels of workers, and it's mandatory for all levels of workers to attend the program.	10	Only management level employees can attend the program.	6
Duration of the program usually took 2-3 days; hence it would need convincing for the management to release their subordinates.	7	The duration of the program is two-three days and can be conducted online hence it will give more flexibilities on when and how to attend.	8	The program usually took 4-5 days, because it's a certified program and requires careful implementation of program in accordance with certification procedures.	5
Facilities that will be used is company internal facilities such as HSSE training centre and meeting room, hence learning experiences will be optimum while facilities cost can be minimized.	9	When offline, the program conducted in centralized HSSE training centre, which is optimized for HSSE knowledge improvement activity. But if online option is chosen, there is not enough appropriate facilities to support learning experiences. Either offline or online, the cost will be minimum.	7	Implementation of this program uses external facilities to maximize learning experiences, hence the cost will be averaged to maximum.	6
Instructor from internal PT. Pertamina EP Regional 2, hence instructor cost can be minimized.	8	The required instructors do not have to be highly qualified and have experience as HSSE officer in the oil and gas industry for more than 10 years.	6	Instructor from external, and already qualified from BNSP as a certified instructor, hence the cost will be averaged to maximum.	6
Monitoring and evaluation can be done at least monthly through management walkthrough.	8	Especially for this basic cause, monitoring and evaluation can be done monthly, but only on limited parameter.	6	Monitoring and evaluation already determined, along with the timeline, hence it will be more structured.	8

TABLE XVIII: "WANTS" RATINGS EXPLANATION – INADEQUATE SUPERVISION/COACHING

A. Pengawas Utama K3 Migas (Sertifikasi)		C. HSSE Promotion and encouragement		D. Behaviour Based Safety	
Notes	Rating	Notes	Rating	Notes	Rating
Minimum employees level to attend this program is supervisor, and suitable with the targeted attendant.	9	Minimum employees level to attend this program is assistant manager, and quite relevant with the targeted attendant.	8	Targeted participants from supervisor to manager, and this program in line with the target participant.	10
The program usually took 4-5 days, because it's a certified program from Ditjen Migas, and requires careful implementation of program in accordance with certification procedures.	5	The program usually took 3-4 days, because it's a certified program from internal Pertamina, and requires careful implementation of program in accordance with certification procedures.	6	Duration of this program usually took 1-5 days, depends on the outcome of the observation activity.	6
Implementation of this program uses external facilities to maximize learning experiences, and located in East Java, hence the cost will be maximum.	5	Implementation of this program uses external facilities to maximize learning experiences, hence the cost will be average to maximum.	6	Facilities that will be used is strongly suggested on site (production facility and rig), to achieve optimum observation result. Since the facilities used is company owned, the cost will be minimum.	9
Instructor from external, and already qualified from BNSP as a certified instructor, hence the cost will be averaged to maximum.	6	Instructor is from internal PT. Pertamina Hulu Energi, hence the cost will be minimum.	7	Instructor is from internal PT. Pertamina EP Regional 2; hence the cost will be minimum, and for this basic cause it's adequate.	8
Monitoring and evaluation already determined, along with the timeline, hence it will be more structured.	8	System for monitoring and evaluation already structured, hence make supervision more practical.	7	Observers need to regularly check the workers through the supervisors; hence the system will be more structured.	7

G. Inadequate Supervision/Coaching

The result of inadequate supervision/coaching, the primary cause of HSSE knowledge program "Must" screening, can be seen in Table XVI, the "Wants" rating calculation can be seen in Table XVII, and the explanation of the relevance of each HSSE knowledge program to each "Wants" ratings can be seen in Table XVII.

From the calculation of each "wants" rating to each of the HSSE knowledge programs, the prioritized HSSE knowledge program for inadequate supervision/coaching primary cause is the Behaviour Based Safety program.

A. Inadequate Work Standards

The result of inadequate work standards, the primary cause of the HSSE knowledge program "Must" screening, can be seen in Table XIX, the "Wants" rating calculation can be seen in Table XX, and the explanation of the relevance of each HSSE knowledge program to each "Wants" ratings can be seen on Table XXI.

TABLE XVI: "MUST" SCREEN – INADEQUATE SUPERVISION/COACHING

"Must" Criteria	HSSE Knowledge Program Relevant List				
	A	B	C	D	E
Meeting the needs of participants	Go	Go	Go	Go	Go
Clear and measurable objectives	Go	Go	Go	Go	Go
Content relevance to the basic cause	Go	No-go	Go	Go	No-go

Note. A: Pengawas Utama K3 Migas (Sertifikasi); B: B.Safety Culture for Leaders; C: HSSE Promotion and Encouragement; D: Behaviour-based Safety; E: HSSE Awareness & Compliance - Advance HSSE Learning.

From the calculation of each "wants" rating to each of the HSSE knowledge programs, the prioritized HSSE knowledge program for inadequate work standards primary cause is the HIRARC (Hazard Identification, Risk Analysis, and Risk Controlling) program.

TABLE XVII: "WANTS" RATING CALCULATION – INADEQUATE SUPERVISION/COACHING

"Wants" Criteria	Weight	HSSE Knowledge Program Relevant List					
		A		C		D	
		Rating	Score	Rating	Score	Rating	Score
Targeted participant attendance	10	9	90	8	80	10	100
Schedule fit to the availability of participants	9	5	45	6	54	6	54
Appropriate facilities	6	5	30	6	36	9	54
Appropriate instructors	5	6	30	7	35	8	40
Monitoring and evaluation	7	8	56	7	49	7	49
Total Score			251		254		297

Note. A: Pengawas Utama K3 Migas (Sertifikasi); C: HSSE Promotion and Encouragement; D: Behaviour-based Safety.

TABLE XIX: "MUST" SCREEN – INADEQUATE WORK STANDARDS

"Must" Criteria	HSSE Knowledge Program Relevant List				
	A	B	C	D	E
Meeting the needs of participants	Go	Go	Go	Go	Go
Clear and measurable objectives	Go	Go	Go	Go	Go
Content relevance to the basic cause	Go	No-go	Go	Go	No-go

Note. A: Pengawas Utama K3 Migas (Sertifikasi); B: Safety Culture for Leaders; C: HSSE Promotion and Encouragement; D: Behaviour-based Safety; E: HSSE Awareness & Compliance - Advance HSSE Learning.

B. Implementation Strategy

For the implementation part, the main method that will be used is a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, combined with a focus group discussion with HSSE and Field operation experts to give the best input

regarding the most appropriate strategies from the feasible strategies that have been identified. SWOT analysis will focus on HSSE issues within PEP Z7 oil and exploitation and production activity.

TABLE XX: "WANTS" RATING CALCULATION – INADEQUATE WORK STANDARDS

"Wants" Criteria	Weight	HSSE Knowledge Program Relevant List					
		A		B		D	
		Rating	Score	Rating	Score	Rating	Score
Targeted participant attendance	10	9	90	9	90	10	100
Schedule fit to the availability of participants	9	7	63	4	36	8	72
Appropriate facilities	6	9	54	5	30	7	42
Appropriate instructors	5	7	35	5	25	6	30
Monitoring and evaluation	7	8	56	4	28	5	35
Total Score			298		209		279

Note. A: HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling); B: KOFOE (Kinerja Operasi for Operation Excellence); D: Corporate Life Saving Rules & HSSE Golden Rules.

1) Internal Analysis: Strengths and Weaknesses

Internal strengths are the positive attributes and resources within PEP Z7 HSSE implementation in operation and production activity, especially the HSSE knowledge program. In comparison, internal weaknesses are areas within an organization that may hinder PEP Z7 HSSE's performance. The focus group discussion shows PEP Z7's internal strengths and weaknesses. The internal strengths and weaknesses can be seen in Table XXII.

TABLE XXI: "WANTS" RATINGS EXPLANATION – INADEQUATE WORK STANDARDS

A. HIRARC (Hazard Identification, Risk Analysis, & Risk Controlling)	B. Kinerja Operasi for Operation Excellence (KOFOE)	D. Corporate Life Saving Rules & HSSE Golden Rules
Notes	Notes	Notes
Rating	Rating	Rating
All levels of employees can attend this program, especially employees that had enough experiences.	All levels of employees can attend the program.	The program can be attended by all levels of workers, and it's mandatory for all levels of workers to attend the program.
9	9	10
Duration of the program usually took 2-3 days; hence it would need convincing for the management to release their subordinates.	Duration of this program usually took 3-4 days on offsite location; hence it would be difficult to ask approval employees superior to fully attended the program.	The duration of the program is two-three days and can be conducted online hence it will give more flexibilities on when and how to attend.
7	4	8
Facilities that will be used is company internal facilities such as HSSE training centre and meeting room, hence learning experiences will be optimum while facilities cost can be minimized.	The program conducted in offsite location facilities, which is limited to support learning experiences. The cost will also more expensively compared to onsite facilities.	When offline, the program conducted in centralized HSSE training centre, which is optimized for HSSE knowledge improvement activity. But if online option is chosen, there is not enough appropriate facilities to support learning experiences. Either offline or online, the cost will be minimum.
9	5	7
Because the goals is to identified risk and their mitigation, also the required standards, it would take two Instructor from internal PT. Pertamina Hulu Energi or PT. Pertamina EP Regional 2, hence instructor cost is minimum to average.	Instructor is from internal PT. Pertamina EP Regional 2, hence didn't need high qualification instructor, but it will require additional cost.	The required instructors do not have to be highly qualified and have experience as HSSE officer in the oil and gas industry for more than 10 years.
7	5	6
Regarding risk and work standards, monitoring and evaluation can be done at least monthly and yearly through management walkthrough and yearly management meeting.	Monitoring and evaluation requires internal audit that conducted yearly.	Monitoring and evaluation can be done monthly and yearly, but only on limited parameter.
8	4	5

TABLE XXII: INTERNAL ANALYSIS: STRENGTHS AND WEAKNESSES

Variable	Description
Internal strength	Organizational Commitment A strong commitment from the board of directors and board of commissioner regarding HSSE priority implementation within the company's operation. and production activity can facilitate the acceptance and adoption of the HSSE knowledge program by employees.
	Available Resources PT. Pertamina EP Regional 2 Zone 7 existing infrastructure, facilities, and financial resources can be leveraged to support the implementation of the HSSE knowledge program effectively.
	Dedicated Workforce Having a competent and dedicated workforce that is receptive to training and development initiatives can enhance the success of the HSSE knowledge program.
Internal weakness	Limited Infrastructure Insufficient training facilities, outdated technology, or inadequate systems for monitoring and evaluation the effectiveness of HSSE knowledge program and employees HSSE comprehension progress can create challenges for the HSSE knowledge program implementation.
	Lack of Awareness Limited understanding or awareness of the importance and benefits of HSSE within the organization may hinder the engagement and participation of employees in the HSSE knowledge programs.
	Resistance to Change Employee resistance or reluctance to embrace HSSE as a priority and way of life can impede the implementation of HSSE knowledge programs.

TABLE XXIII: EXTERNAL ANALYSIS: OPPORTUNITIES AND THREATS

Variable	Description
External Opportunities	Regulatory Obligation There are several laws and regulations that require PT. Pertamina EP Regional 2 Zone 7 to implement HSSE practices to ensure safe work environment and avoid incidents.
	Industry Trends Increasing awareness and emphasis on HSSE across the energy industry, including award from government body regarding HSSE, can create a conducive environment for enforcing HSSE regulations and clauses.
	Collaborative Partnerships Establish collaboration with government stakeholders and academic institutions that can provide additional resources, expertise, and credibility regarding the implementation of effective and efficient HSSE aspects.
External Threats	Technology Innovation As technology in the oil and gas industry continues to evolve, HSSE knowledge programs must continue to adjust so that HSSE implementation is in line with technological developments.
	Economic Constraints Economic fluctuations, budget constraints, or cost-cutting measures may limit the resources available for implementing the prioritize HSSE knowledge program.
	Social Disturbance Dynamic social conditions cause many security disturbances to company assets and operations which can lead to incidents that result in fatalities and operational disruptions.

2) External Analysis: Opportunities and Threats

External opportunities are favorable factors in the external environment that can benefit PEP Z7 HSSE implementation in operation and production activity, especially the HSSE knowledge program.

External threats are factors in the external environment that could potentially harm PEP Z7 HSSE implementation in operation and production performance. From the focus group discussion, the external opportunities and threats can be seen in Table XXIII.

3) SWOT Analysis

The next step is to develop strategies from the internal and external analysis that has been previously identified using the SWOT matrix. The strategies are S-O (strengths-opportunities) strategies, W-O (weaknesses-opportunities) strategies, S-T (strengths-threats) strategies, and WT (weaknesses-threats) Strategies. The SWOT matrix can be seen in Table XXIV.

TABLE XXIV: PT PERTAMINA EP Z7 HSSE SWOT MATRIX

	Strength (S)	Weakness (W)
	- Organizational commitment - Available resources - Dedicated workforce	- Resistance to change - Lack of awareness - Limited infrastructure
Opportunity (O)	S-O Strategy	W-O Strategy
- Regulatory obligation - Industry trends - Collaborative partnership	- Develop strategic partnership - Resources improvement - Award booster	- Change management initiatives - Infrastructure Improvement - External providers collaboration
Threat (T)	S-T Strategy	W-T Strategy
- Technology concerns - Economic constraints - Social disturbance	- HSSE Knowledge Program Economic Benefit - Foster stakeholder engagement - Continual improvement	- Cost-effective HSSE knowledge program - Improve awareness - Facility improvement Plans

TABLE XXV: SELECTED SWOT STRATEGIES

Strategy Type	Selected Strategy	Description
S-T Strategy	Continual improvement	Regularly evaluate and update the resources of HSSE knowledge program based on industry technology advancements, regulatory changes, and feedback from employees and stakeholders. By continuously improving the program and adapting to emerging challenges, PT. Pertamina EP can maintain its competitive position and ensure the HSSE knowledge program's long-term success.
S-O Strategy	Develop strategic partnerships	Leverage Pertamina's strong organizational HSSE commitment and available resources to form strategic partnerships with industry associations, academic institutions, and regulatory bodies. Collaboration regarding HSSE knowledge programs initiatives, share HSSE best practices, and access additional resources and expertise to enhance the effectiveness and credibility of the HSSE knowledge program.
W-O Strategy	External providers collaboration	Collaborating with external HSSE knowledge provider, leveraging their expertise and facilities, to deliver specialized HSSE knowledge program modules or expanding PT. Pertamina EP knowledge program capabilities to increase HSSE awareness from the employees.
W-T Strategy	Facility improvement plans	Identified the insufficient HSSE knowledge facilities and the outdated technology through comprehensive internal assessment. Then develop multi years improvement plans to upgrade the insufficient HSSE knowledge facilities and the outdated technology to ensure they meet industry standards and technology innovation and support the effective delivery of the HSSE knowledge program.

From the focus group discussion, the suggested business solution regarding the implementation strategies of HSSE knowledge program priority can be seen in Table XXV.

VII. IMPLEMENTATION PLAN

HSSE knowledge program implementation plan will be included in PEP Z7 2024 Objective, Target, & Program (OTP). OTP is an HSSE plan and realization dashboard monitoring tool on a yearly basis that is used in PEP Z7 to make sure the HSSE action plan is realized and executed.

The composition of OTP consists of a Major Program, a Detailed Program, a Target, a Time Frame and Schedule, and the Target of the HSSE Program (with their specific units). The OTP assigns the resources needed to implement the HSSE knowledge program, such as the Sub-department in charge (Health, Safety, Security, or Environment) and the budget allocation needed. OTP also contains output or product expected as the result of program implementation in the operation area, where the output should be inputted monthly.

Management of OTP implementation is covered on PT. Pertamina Hulu Energi procedure number B08-006/PEP04100/2022-S9, *Penetapan Objective, Target, dan Program (OTP) HSSE*. Hence, the usage of OTP as an implementation plan for HSSE knowledge program priority is mandatory.

VIII. RECOMMENDATIONS

Following are some recommendations that can be given from the implementation of this research.

1. Conducting a more comprehensive after-program evaluation to measure the effect of the prioritized HSSE knowledge program on the employees,
2. Analyzing the HSSE culture perception among the employees after receiving the HSSE knowledge program. This analysis will be helpful in capturing what level of HSSE culture exists among the employees of PT. Pertamina EP Regional 2 Zone 7.
3. Continued and regularly broadcast of HSSE fundamental and practical aspects to the employees to develop and maintain HSSE awareness of employees,
4. Support from management through approval of the HSSE knowledge program and HSSE campaign is important to encourage employees to attend the HSSE knowledge program,
5. Follow-up research based on non-work-related incident primary causes relevant to HSSE knowledge programs.

CONFLICT OF INTEREST

The authors declare that they do not have any conflict of interest.

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